Attachment 16
Transportation Discipline Report

CAPITOL LAKE – DESCHUTES ESTUARY

Long-Term Management Project Environmental Impact Statement

Transportation Discipline Report

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Executive Summary

This Transportation Discipline Report describes the potential impacts of the Capitol Lake – Deschutes Estuary Long-Term Management Project on surface transportation elements that include vehicle traffic on the street system, transit, nonmotorized travel (walking, bicycling), rail, and parking. The Capitol Lake – Deschutes Estuary includes the 260-acre Capitol Lake Basin, located on the Washington State Capitol Campus, in Olympia, Washington. Long-term management strategies and actions are needed to address issues in the Capitol Lake – Deschutes Estuary project area. An Environmental Impact Statement (EIS) is being prepared to document the potential environmental impacts of various alternatives and determine how these alternatives would meet the long-term management objectives identified for the watershed.

The study area for transportation includes all roadways, nonmotorized facilities, transit, and rail facilities located within and adjacent to the project area, as well as streets that could carry truck trips hauling materials to and from the site during construction, and streets that could experience additional traffic generated by closure of the 5th Avenue Bridge during construction. Potential disruptions of the vehicular, transit, rail, pedestrian, or bicycle network, either during construction (short-term and temporary) or after project completion (long-term), were determined by reviewing the overlap of each alternative footprint with the streets, pedestrian and bicycle facilities, transit routes, and rail facilities within the transportation study area. The effect of traffic and parking demand generated by each of the project alternatives was also evaluated.

The analysis examines the No Action Alternative, as well as three action alternatives (Managed Lake, Estuary, and Hybrid).

The No Action Alternative would not result in construction impacts on transportation because the project would not be built. The No Action Alternative would also not construct new facilities considered to be beneficial to the transportation network, including new 5th Avenue vehicular and pedestrian bridges and boardwalks, but would maintain the existing condition. Potential long-term operational impacts would be related to limited ongoing maintenance of the 5th Avenue Dam and ongoing sedimentation of the Capitol Lake, since no sediment management strategies would be implemented. These activities could infrequently generate a small number of vehicle trips that are expected to primarily occur during

off-peak times of the day and would be consistent with the types of maintenance trips that currently occur. Vehicle trips associated with ongoing maintenance of the No Action Alternative would have a negligible effect on traffic operations.

Under all action alternatives, transportation impacts would primarily occur during project construction. Project construction could result in temporary narrowing or closure of streets, sidewalks, or bicycle facilities adjacent to construction activities. Hauling of construction equipment and materials to the site would generate truck trips.

All three action alternatives would reuse dredged material to build habitat at the project site, which would substantially reduce the amount of material that would need to be hauled offsite. With the Managed Lake Alternative, all dredged material would be transferred and used onsite and there would be no offsite hauling of dredged material during construction. The Hybrid Alternative would have the most dredged material hauled offsite because it would have less habitat constructed with addition of the reflecting pool. The Estuary Alternative would also have some dredged material hauled offsite.

Truck trips generated by all construction activities for the action alternatives—including delivery of equipment and materials to the site, and hauling dredged or demolished material away from the site—are expected to generate an average of 5 trips or fewer per hour. There would also be periods during the overall 4- to 8-year construction duration when no truck trips would occur. Most truck trips would occur during off-peak times of day (outside of commuter peak hours). These trips may be noticeable to nearby residents and businesses and may cause very small increases in average delay at intersections along the truck haul routes. The small amount of delay added by these truck trips would have a **less-than-significant** impact on traffic operations.

Additionally, construction workers would generate commute trips and parking demand at the project site. Construction worker commute trips would vary depending on the construction activity occurring on any given day (expected to range between 15 and 40 trips inbound in the morning prior the beginning of the workday, and outbound in the evening after the workday is completed). Based upon typical construction shifts, most construction employee commute trips are expected to occur during off-peak times of day.

As a best management practice, Enterprise Services would prepare a Construction Traffic Management Plan (CTMP) and Traffic Control Plan prior to construction. The CTMP would detail temporary roadway, lane, sidewalk and bike facility closures; coning plans; traffic control plans such as the use of flaggers; truck haul routes; and contractor parking. Traffic control would follow established state and federal guidelines. Haul routes would utilize streets designated as truck routes to the greatest extent possible and would be established in coordination with the Cities of Olympia and Tumwater.

The CTMP and Traffic Control Plan would be submitted to and approved by the City (or Cities) with jurisdiction prior to the start of construction. Implementation of the CTMP and Traffic Control Plan is expected to reduce impacts resulting from temporary narrowing of streets, sidewalks, or bike lanes, construction-generated truck trips, and construction employee trips and parking to **less-than-significant** levels.

Because the project site is directly served by railroad, it may be possible to use rail to support construction activities. The feasibility of using rail would depend on a number of factors to be determined by the project contractor prior to construction. Although use of trucks to support construction activities is expected to have small impact on traffic operations, use of rail to support some or all of the construction activities would reduce truck trips and lower traffic operational impacts along truck haul routes. Since the train volumes associated with construction activity would be consistent with existing activity on the tracks, the impact on traffic operations at crossings would be **less-than-significant**.

Construction of all action alternatives would include a period in which the 5th Avenue Bridge would be closed. For the Managed Lake Alternative, the bridge would be narrowed or closed for up to about 7 weeks while jet grouting occurs. For the Estuary and Hybrid Alternatives, the bridge would be closed for up to about 5.5 years during the period of removal and reconstruction of the 5th Avenue Bridge. In addition to the measures described above, the CTMP would also establish the vehicular and non-motorized detours during the period that the 5th Avenue Bridge would be closed, and traffic control measures to be implemented along the detour route, and potentially along other alternative routes that could experience traffic increases. Mitigation identified for the 5th Avenue Bridge closure also includes development of a public communication strategy that would give ample advance notice to residents and employees of the impending bridge closure. Provision of adequate notice is expected to result in some level of reduction of overall traffic volumes across the waterway (e.g. some people would change work commute and/or travel habits to avoid using the bridge during peak hours during the period the detour is in place). Potential impacts to pedestrian and bicycle travel during the 5th Avenue Bridge closure could be addressed by constructing the new pedestrian bridge prior to its closure. Alternatively, construction of a temporary trail trestle could be considered in order to maintain the trail loop connecting Heritage Park and Deschutes Parkway during the time the 5th Avenue Bridge is closed and prior to construction of the new pedestrian bridge.

Although mitigation measures would avoid or minimize all adverse traffic impacts identified for construction and long-term operation of the three action alternatives, during periods when the 5th Avenue Bridge would be closed, traffic increases along 4th Avenue detour route still could result in congested operations during some periods of peak traffic demand, resulting in a **significant unavoidable** impacts.

For the Managed Lake Alternative, if closure of the 5th Avenue Bridge is needed during some or all of the period jet grouting occurs, and a temporary connection between 4th Avenue and Deschutes Parkway is not constructed, all detoured vehicles and buses would be required to use the routes around the south end of the Middle Basin. This would substantially increase travel time between the east and west sides of the waterway and likely degrade operations along the detour routes to LOS F during peak times of day, resulting in **significant unavoidable** impacts.

With all action alternatives, the transportation system would be fully restored after construction is completed and no adverse long-term impacts to the multimodal transportation network would result. Provision of a new pedestrian bridge would support many policies established by the City of Olympia that seek to support and improve pedestrian and bicycle travel throughout the city and is considered a **substantial transportation benefit**. Likewise, construction of boardwalks in the South and Middle

Basins would enhance the pedestrian environment, supporting the City's policies encouraging non-motorized travel, and is considered a **moderate transportation benefit.**

All action alternatives would provide a dock in the Middle Basin and hand-carried boat launch in the North Basin. These amenities would generate vehicular or non-motorized trips that are consistent with those generated by existing recreational activities in the project area. Parking demand would continue to be supported by the existing parking supply at Marathon Park as allowed in the current Washington Administrative Code, and on Deschutes Parkway SW. Any trips generated would have a negligible effect on traffic operations or parking and are considered **less-than-significant**. There are ongoing maintenance activities associated with all action alternatives that could infrequently generate a small number of vehicle trips that would have a negligible effect on traffic operations and are considered **less-than-significant**.

With the Estuary or Hybrid Alternatives, the new 5th Avenue Bridge would have the same configuration as the existing bridge, so it would have no effect on vehicular traffic operations as compared to the No Action and Managed Lake Alternatives that would retain the existing bridge. However, replacement of the bridge is considered to provide a **substantial transportation benefit** because it would extend the design life of a major element of Olympia's transportation network and reduce overall maintenance needs related to the bridge

The primary long-term operational transportation impact for each of the three action alternatives would result from recurring maintenance dredging, ranging from about 5- to 20-year intervals between the alternatives. The quantity and duration of dredging activity would also vary between the three alternatives; for the Estuary or Hybrid alternative, it would also vary between different maintenance years. However, for all three alternatives, if all dredged material were hauled by truck, rail, or a combination of both, it is likely that traffic operations at some intersections would degrade to LOS F during some times of the day. In this case, the impact on traffic operations is expected to be **significant**. For the Managed Lake Alternative, this is considered a **significant unavoidable impact**.

With the Estuary or Hybrid Alternative, removal of the 5th Avenue Dam offers opportunity for the dredged material to be hauled away from the site by barge for offloading for upland disposal, either instead of or in combination with hauling by truck and/or rail. Impacts to surface transportation could be eliminated or reduced to less-than-significant levels if some or all of dredged material is hauled by barge. Therefore, for the Estuary or Hybrid Alternative, this impact would only be significant and unavoidable if use of barge is found to be infeasible at the time that the dredging is needed.

Construction and operation impacts of the No Action and action alternatives are summarized in Tables ES.1 and ES.2.

Table ES.1 Summary of Construction Impacts and Mitigation Measures

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
Managed Lake Alternative			
Street Capacity, Sidewalk, or Bike Lane Restrictions	Less-than-significant	Implement a Construction Transportation Management Plan (CTMP) and Traffic Control Plan with measures described in Section 5.7.1.1.	No
Construction Worker Trips and Parking	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Prohibit construction employee parking in residential neighborhoods, Capitol Campus, and downtown streets.	No
Truck Trips Generated by Mobilization and Deliveries	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1, the following additional measures could be considered: • Apply time-of-day restrictions for construction trips. • Use rail to reduce truck trips.	No
Truck Trips Generated by Export of Dredged Material	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1, the following additional measures could be considered: • Apply time-of-day restrictions for construction trips. • Use rail to reduce truck trips.	No
Rail Operations	Less-than-significant	Coordinate with rail owner to ensure that construction activities do not interfere with scheduled rail trips across the project area.	No

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
Vehicle Traffic Operations During Potential 5th Avenue Bridge Closure	**Significant**	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Coordinate with City of Olympia to establish and sign traffic detour, which is expected to utilize the 4th Avenue Bridge and new connection to Deschutes Parkway SW that would be constructed with the project. • Develop and implement a public communication strategy, to encourage alternative transportation choices and reduce overall volumes crossing the waterway.	*With connection between 4th Ave W and Deschutes Pkwy SW:* **Yes,** potentially during some periods of peak traffic demand. *Without connection between 4th Ave W and Deschutes Pkwy SW:* **Yes,** during all periods of the day.
Transit During Potential 5th Avenue Bridge Closure	*With connection between 4th Ave W and Deschutes Pkwy SW:* Less-than-significant *Without connection between 4th Ave W and Deschutes Pkwy SW:* **Significant**	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Coordinate with Intercity Transit to reroute affected bus routes to the 4th Avenue Bridge. • Move bus stops for 5th Avenue routes to 4th Avenue, about 300 to 500 feet away.	*With connection between 4th Ave W and Deschutes Pkwy SW:* **No**. *Without connection between 4th Ave W and Deschutes Pkwy SW:* **Yes**
Pedestrian and Bicycle Traffic During 5th Avenue Bridge Closure	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Construct the pedestrian bridge prior to closure of the 5th Avenue Bridge. • Alternatively, construct a temporary trail trestle during the time the 5th Avenue Bridge is closed.	No
Pavement Degradation Due to Construction Traffic	Less-than-significant	Restore pavement after construction is completed.	No

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
Estuary Alternative			
Street Capacity, Sidewalk, or Bike Lane Restrictions	Less-than-significant	Implement a CTMP and Traffic Control Plan with measures described in Section 5.7.1.1.	No
Construction Worker Trips and Parking	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Prohibit construction employee parking in residential neighborhoods, Capitol Campus, and downtown streets.	No
Truck Trips Generated by Mobilization and Deliveries	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1, the following additional measures could be considered: • Apply time-of-day restrictions for construction trips. • Use rail to reduce truck trips.	No
Truck Trips Generated by Export of Dredged Material	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1, the following additional measures could be considered: • Apply time-of-day restrictions for construction trips. • Use rail to reduce truck trips.	No
Rail Operations	Less-than-significant	Coordinate with rail owner to ensure that construction activities do not interfere with scheduled rail trips across the project area.	No

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
Vehicle Traffic Operations During 5th Avenue Bridge Closure	**Significant**	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Coordinate with City of Olympia to establish and sign traffic detour, which is expected to utilize the 4th Avenue Bridge and new connection to Deschutes Parkway SW that would be constructed with the project. • Develop and implement a public communication strategy, to encourage alternative transportation choices and reduce overall volumes crossing the waterway.	**Yes**, potentially during some periods of peak traffic demand
Transit During 5th Avenue Bridge Closure	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Coordinate with Intercity Transit to reroute affected bus routes to the 4th Avenue Bridge. • Move bus stops for 5th Avenue routes to 4th Avenue, about 300 to 500 feet away.	No
Pedestrian and Bicycle Traffic During 5th Avenue Bridge Closure	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Construct the pedestrian bridge prior to closure of the 5th Avenue Bridge. • Alternatively, construct a temporary trail trestle during the time the 5th Avenue Bridge is closed.	No
Pavement Degradation Due to Construction Traffic	Less-than-significant	Restore pavement after construction is completed.	No

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
Hybrid Alternative			
Street Capacity, Sidewalk, or Bike Lane Restrictions	Less-than-significant	Implement a CTMP and Traffic Control Plan with measures described in Section 5.7.1.1.	No
Construction Worker Trips and Parking	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Prohibit construction employee parking in residential neighborhoods, Capitol Campus, and downtown streets	No
Truck Trips Generated by Mobilization and Deliveries	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1, the following additional measures could be considered: • Apply time-of-day restrictions for construction trips. • Use rail to reduce truck trips.	No
Truck Trips Generated by Export of Dredged Material	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1, the following additional measures could be considered: • Apply time-of-day restrictions for construction trips. • Use rail to reduce truck trips.	No
Rail Operations	Less-than-significant	Coordinate with rail owner to ensure that construction activities do not interfere with scheduled rail trips across the project area.	No

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
Vehicle Traffic Operations During 5th Avenue Bridge Closure	**Significant**	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Coordinate with City of Olympia to establish and sign traffic detour, which is expected to utilize the 4th Avenue Bridge and new connection to Deschutes Parkway SW that would be constructed with the project. • Develop and implement a public communication strategy, to encourage alternative transportation choices and reduce overall volumes crossing the waterway.	**Yes**, potentially during some periods of peak traffic demand
Transit During 5th Avenue Bridge Closure	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Coordinate with Intercity Transit to reroute affected bus routes to the 4th Avenue Bridge. • Move bus stops for 5th Avenue routes to 4th Avenue, about 300 to 500 feet away.	No
Pedestrian and Bicycle Traffic During 5th Avenue Bridge Closure	Less-than-significant	In addition to implementation of a CTMP with measures described in Section 5.7.1.1: • Construct the pedestrian bridge prior to closure of the 5th Avenue Bridge. • Alternatively, construct a temporary trail trestle during the time the 5th Avenue Bridge is closed.	No
Pavement Degradation Due to Construction Traffic	Less-than-significant	Restore pavement after construction is completed.	No

Table ES.2 Summary of Operations Impacts (including Benefits) and Mitigation Measures

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
No Action Alternative			
Traffic Generated by Ongoing Minor Maintenance	Less-than-significant	N/A	N/A
Managed Lake Alternative			
New 5th Avenue Pedestrian Bridge	**Substantial transportation benefit**	N/A	N/A
New Boardwalks	Moderate transportation benefit	N/A	N/A
Traffic Generated by New Recreational Elements	Less-than-significant	None	No
Traffic Generated by Ongoing Minor Maintenance	Less-than-significant	None	No
Truck/Rail Trips Generated by Maintenance Dredging Activity	**Significant**	Implement a CTMP	**Yes**
Estuary Alternative			
New 5th Avenue Bridge	**Substantial transportation benefit**	N/A	N/A
New Pedestrian Bridge	**Substantial transportation benefit**	N/A	N/A
New Boardwalks	Moderate transportation benefit	N/A	N/A
Traffic Generated by New Recreational Elements	Less-than-significant	None	No
Traffic Generated by Ongoing Minor Maintenance	Less-than-significant	None	No

	Impact Finding	Minimization and Other Mitigation Measures	Significant and Unavoidable Adverse Impact
Truck/Rail Trips Generated by Maintenance Dredging Activity	**Significant**	• Implementation of a CTMP • Use of barge to haul dredged material for offloading for upland disposal.	No, *if use of barge is feasible* **Yes,** *if use of barge is not feasible*
Hybrid Alternative			
New 5th Avenue Bridge	**Substantial transportation benefit**	N/A	N/A
New Pedestrian Bridge	**Substantial transportation benefit**	N/A	N/A
New Boardwalks	Moderate transportation benefit	N/A	N/A
Traffic Generated by New Recreational Elements	Less-than-significant	None	No
Traffic Generated by Ongoing Minor Maintenance	Less-than-significant	None	No
Truck/Rail Trips Generated by Maintenance Dredging Activity	**Significant**	• Implementation of a CTMP • Use of barge to haul dredged material for offloading for upland disposal.	No, *if use of barge is feasible* **Yes,** *if use of barge is not feasible*

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List of Acronyms and Abbreviations

Acronyms/ Abbreviations	Definition
ADA	Americans with Disabilities Act
CTMP	Construction Transportation Management Plan
CTR	Commute Trip Reduction
EIS	Environmental Impact Statement
Enterprise Services	Washington State Department of Enterprise Services
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
GIS	geographic information system
GMA	Growth Management Act
I-5	Interstate 5
LOS	Level of Service
MUTCD	Manual on Uniform Traffic Control Devices
OYLO	Olympia & Belmore Railroad
SEPA	State Environmental Policy Act
US-101	US Highway 101
WSDOT	Washington State Department of Transportation

1.0 Introduction and Project Description

1.1 PROJECT DESCRIPTION

The Capitol Lake – Deschutes Estuary includes the 260-acre Capitol Lake Basin, located on the Washington State Capitol Campus, in Olympia, Washington. The waterbody has long been a valued community amenity. Capitol Lake was formed in 1951 following construction of a dam and provided an important recreational resource. Historically, the Deschutes Estuary was used by local tribes for subsistence and ceremonial purposes. Today, the expansive waterbody is closed to active public use. There are a number of environmental issues including the presence of invasive species, exceedances of water quality (WQ) standards, and inadequate sediment management.

The Washington State Department of Enterprise Services (Enterprise Services) is responsible for the stewardship, preservation, operation, and maintenance of the Capitol Lake Basin. The 260-acre Capitol Lake Basin is maintained by Enterprise Services under long-term lease agreement from the Washington Department of Natural Resources.

In 2016, as part of Phase 1 of long-term planning, a diverse group of stakeholders, in collaboration with the state, identified shared goals for long-term management and agreed an Environmental Impact Statement (EIS) was needed to evaluate a range of alternatives and identify a preferred alternative. In 2018, the state began the EIS process. The EIS evaluates four alternatives, including a Managed Lake, Estuary, Hybrid, and a No Action Alternative.

The long-term management alternatives are evaluated against the shared project goals of: improving water quality; managing sediment accumulation and future deposition; improving ecological functions; and enhancing community use of the resource. Refer to Figure 1.1 for the project area for long-term management. The Final EIS will identify a preferred environmentally and economically sustainable long-term management alternative for the Capitol Lake – Deschutes Estuary.

The EIS process maintains engagement with the existing Work Groups, which include the local governments, resource agencies, and tribe. It also provides for expanded engagement opportunities for the public, such as a community sounding board.

Figure 1.1 Project Area

1.2 SUMMARY OF PROJECT ALTERNATIVES

1.2.1 Managed Lake Alternative

The Managed Lake Alternative would retain the 5th Avenue Dam in its existing configuration. The 5th Avenue Dam would be overhauled to significantly extend the serviceable life of the structure. The reflecting pool within the North Basin would be maintained, and active recreational use would be restored in this area. Sediment would be managed through initial construction dredging and recurring maintenance dredging in the North Basin only. Sediment from construction dredging would be used to create habitat areas in the Middle Basin to support improved ecological function, habitat complexity, and diversity. Sediment would continue to accumulate and over time would promote a transition to freshwater wetlands in the South and Middle Basins. Boardwalks, a 5th Avenue Pedestrian Bridge, a dock, and a boat launch would be constructed for community use.

If selected as the Preferred Alternative, adaptive management plans would be developed to maintain water quality, improve ecological functions, and manage invasive species during the design and permitting process.

1.2.2 Estuary Alternative

Under the Estuary Alternative, the 5th Avenue Dam would be removed, and an approximately 500-foot-wide (150-meter-wide) opening would be established in its place. This would reintroduce tidal hydrology to the Capitol Lake Basin, returning the area to estuarine conditions where saltwater from Budd Inlet would mix with freshwater from the Deschutes River. Sediment would be managed through initial construction dredging in the Capitol Lake Basin and recurring maintenance dredging within West Bay. Dredged materials from construction dredging would be used to create habitat areas in the Middle and North Basins to promote ecological diversity, though tideflats would be the predominant habitat type. Boardwalks, a 5th Avenue Pedestrian Bridge, a dock, and a boat launch would be constructed for community use. This alternative also includes stabilization along the entire length of Deschutes Parkway to avoid undercutting or destabilization from the tidal flow. Existing utilities and other infrastructure would be upgraded and/or protected from reintroduced tidal hydrology and saltwater conditions.

If selected as the Preferred Alternative, adaptive management plans would be developed to improve ecological functions and manage invasive species during the design and permitting process.

1.2.3 Hybrid Alternative

Under the Hybrid Alternative, the 5th Avenue Dam would be removed, and an approximately 500-foot-wide (150-meter-wide) opening would be established in its place. Tidal hydrology would be reintroduced to the western portion of the North Basin and to the Middle and South Basins. Within the North Basin, a curved and approximately 2,600-foot-long (790-meter-long) barrier wall with a walkway would be constructed to create an approximately 45-acre saltwater reflecting pool adjacent to Heritage Park. A freshwater (groundwater-fed) reflecting pool was also evaluated for this EIS. Construction and

maintenance of this smaller reflecting pool, in addition to restored estuarine conditions in part of the Capitol Lake Basin, gives this alternative its classification as a hybrid. Sediment would be managed through initial construction dredging in the Capitol Lake Basin and recurring maintenance dredging within West Bay. In the Middle and North Basins, constructed habitat areas would promote ecological diversity, though tideflats would be the predominant habitat type. Boardwalks, a 5th Avenue Pedestrian Bridge, a dock, and a boat launch would be constructed for community use. This alternative also includes stabilization along the entire length of Deschutes Parkway to avoid scour or destabilization. Existing utilities and other infrastructure would be upgraded and/or protected from reintroduced tidal hydrology and saltwater conditions.

If selected as the Preferred Alternative, adaptive management plans would be developed before operation of the alternative to improve ecological functions and manage invasive species during the design and permitting process. Adaptive management would also be needed for a freshwater reflecting pool, but not for a saltwater reflecting pool.

1.2.4 No Action Alternative

The No Action Alternative represents the most likely future expected in the absence of implementing a long-term management project. The No Action Alternative would persist if a Preferred Alternative is not identified and/or if funding is not acquired to implement the Preferred Alternative. A No Action Alternative is a required element in a SEPA EIS and provides a baseline against which the impacts of the action alternatives (Managed Lake, Estuary, Hybrid) can be evaluated and compared.

The No Action Alternative would retain the 5th Avenue Dam in its current configuration, with limited repair and maintenance activities, consistent with the scope and scale of those that have received funding and environmental approvals over the past 30 years. In the last 30 years, the repair and maintenance activities have been limited to emergency or high-priority actions, which occur sporadically as a result of need and funding appropriations.

Although Enterprise Services would not implement a long-term management project, current management activities and ongoing projects in the Capitol Lake Basin would continue. Enterprise Services would continue to implement limited nuisance and invasive species management strategies.

In the absence of a long-term management project, it is unlikely that Enterprise Services would be able to procure funding and approvals to manage sediment, improve water quality, improve ecological functions, or enhance community use. The No Action Alternative does not achieve the project goals.

1.3 CONSTRUCTION METHODS FOR THE ACTION ALTERNATIVES

This impact analysis relies on the construction method and anticipated duration for the action alternatives, which are described in detail in Chapter 2 of the EIS.

2.0 Regulatory Context

2.1 RESOURCE DESCRIPTION

This discipline report evaluates all surface transportation elements that could potentially be affected by construction or operation of the Capitol Lake – Deschutes Estuary alternatives. Transportation elements include vehicle traffic on the street system, transit, nonmotorized travel (walking, bicycling), freight movement, and parking. Marine transportation is described in the Navigation Discipline Report.

Federal, state, and local standards and guidelines that address work zone traffic control during construction and new transportation facilities are addressed below.

2.2 FEDERAL AND STATE LAWS, PLANS, AND POLICIES

Applicable federal and Washington State Department of Transportation (WSDOT) policy documents are described in Table 2.1 and Table 2.2, respectively.

Table 2.1 Federal Plans and Policies

Regulatory Program or Policies	Lead Agency	Description
Manual on Uniform Traffic Control Devices (MUTCD) (2009)	Federal Highway Administration (FHWA)	Defines standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD is a compilation of national standards for all traffic control devices, including road markings, highway signs, and traffic signals. It is updated periodically to accommodate the nation's changing transportation needs and address new safety technologies, traffic control tools, and traffic management techniques. The MUTCD includes standards for signs, flagging, and barricades in temporary construction work zones.

Table 2.2 State Plans and Policies

Regulatory Program or Policies	Lead Agency	Description
Design Manual (2019)	WSDOT	The Design Manual provides policies, procedures, and methods for developing and documenting the design of improvements to the transportation network in Washington.
Work Zone Traffic Control Guidelines for Maintenance Operations (2018)	WSDOT	WSDOT has jurisdiction over state highways and ramp intersections. Work conducted within the right-of-way of state highways must be coordinated with WSDOT. The WSDOT Work Zone Traffic Control Guidelines are a supplement to the standards set forth in the MUTCD.
State of Washington Capitol Campus Transportation and Parking Study (2014) and Parking Strategy Implementation Plan (2015)	Enterprise Services	Identifies strategies and actions to increase the efficiency of parking on the Capitol Campus and increase commuting by alternative modes in compliance with the Commute Trip Reduction (CTR) Law. These Plan elements would not directly affect or be affected by the project alternatives; however, it would be important that neither construction or long-term operation of the project adversely affect parking conditions on the Capitol Campus.

In addition to the standards and regulations described in the tables, there are regulations that apply to work near rail facilities. WSDOT oversees freight and passenger rail service throughout the state, but does not have jurisdiction over rail infrastructure. Any work near rail facilities must be coordinated directly with the owners of the railroads. There is one railroad mainline that crosses the Project Area, and one storage track adjacent to the project area along Deschutes Parkway SW. These tracks are part of the Olympia & Belmore Railroad, Inc. (OYLO), owned and operated by Genesee & Wyoming.

2.3 LOCAL LAWS, PLANS, AND POLICIES

Vehicular, transit, bicycle, and pedestrian traffic operations and safety are guided by the local jurisdiction in which the facilities are located. Most of the project area is under the jurisdiction of the City of Olympia, but there are some facilities that could potentially be affected by construction traffic detours and truck trips within the City of Tumwater. Additionally, new transportation facilities constructed by the project would need to adhere to local design standards as well as the state standards described above. Each City has developed a Comprehensive Plan that complies with the Washington State Growth Management Act (GMA) and establishes policies, services, and infrastructure needed to support expected future development growth. Applicable local policy documents are described in Table 2.3

Table 2.3 Local Plans and Policies

Regulatory Program or Policies	Lead Agency	Description
Comprehensive Plan, Transportation Element (2014, last updated 2019)	City of Olympia	Establishes standards and priorities for Olympia's multi-modal transportation system, including bicycle, pedestrian, and vehicular traffic. City policies emphasize the development of a "complete street" network that serves pedestrian, bicycle, and vehicular traffic, and strongly support measures that encourage and improve walking and biking within Olympia.
Engineering Design and Development Standards (2018)	City of Olympia	Establishes standards for street, sidewalk, bicycle, and trail facilities within Olympia.
Transportation Master Plan (2016)	City of Tumwater	Establishes standards and priorities for Tumwater's multi-modal transportation system, including bicycle, pedestrian, and vehicular traffic.

3.0 Methodology

3.1 SELECTION OF THE STUDY AREA

The project area includes the water, shorelines, open space and industrial areas immediately adjacent to Capitol Lake, extending from Tumwater Falls through West Bay within Budd Inlet.

The study area for transportation is shown on Figure 3.1. It includes all roadways, nonmotorized facilities, and transit facilities located within and adjacent to the project area, as well as streets that could carry truck trips hauling materials to and from the site during construction, and streets that could experience additional traffic generated by closure of 5th Avenue SW during construction.

Figure 3.1 Transportation Study Area

Legend

Project Area

Study Area

3.2 DATA SOURCES AND COLLECTION

Data sources used for the transportation analysis include inventories of street, sidewalk, bike, and rail facilities in geographic information system (GIS) format and transportation planning and policy documents for jurisdiction in which the facilities are located. Adherence to applicable engineering design and construction standards adopted at the federal, state, and local levels was also taken into account. Sources used in the transportation analysis are listed in Table 3.1.

Table 3.1 Data Sources Used in the Analysis

Plans, Programs, and Policies	Data Utilized
City of Olympia	
Comprehensive Plan (adopted 2014, last updated 2019)	Existing and planned transportation facilities; transportation policy
Engineering Design and Development Standards (effective January 23, 2019)	Engineering design standards for transportation facilities, and construction traffic management standards
Downtown Parking Map (updated May 26, 2020)	Downtown parking restrictions
Olympia Municipal Code Chapter 10.48	Designated truck routes
City of Olympia Transportation GIS data (2020)	Existing and planned transportation facilities; transportation policy
Synchro traffic operational models (2019)	Citywide traffic operations data for AM peak hour, midday hour, and PM peak hour
City of Tumwater	
Transportation Master Plan (2016)	Existing and planned transportation facilities; transportation policy; traffic operations information
Thurston County	
Thurston County GeoData Center GIS data (2020)	Existing railroads, trails, and parks
Intercity Transit	
System Map (2018)	Bus routes
Transit Guide (2020)	Bus routes and schedules
Thurston Regional Planning Council	
Thurston County Bicycle Map – Urban Area Map (2018)	Bicycle network and classifications

Plans, Programs, and Policies	Data Utilized
Washington State Department of Transportation	
Washington State Transportation GIS data (2020)	Street functional classification and inventory data
Design Manual (2019)	Roadway and bridge design guidelines
Standard Specifications for Road, Bridge, and Municipal Construction (2019)	Roadway and bridge design specifications
Work Zone Traffic Control Guidelines for Maintenance Operations (2018)	Guidelines for work zone traffic control during construction
Genesee & Wyoming	
Olympia & Belmore Railroad (2020)	Characteristics of the Olympia & Belmore Railroad through the project area
Transportation Research Board	
Highway Capacity Manual (2016)	Establishes methods and thresholds for traffic operational analysis
Federal Highway Administration	
Manual on Uniform Traffic Control Devices (2009)	Standards for work zone traffic control during construction
Federal Railroad Administration	
U.S. DOT Crossing Inventory Report (2018 and 2019)	Trail collision reports and train volume estimates

3.3 ANALYSIS OF IMPACTS

To determine the potential impacts of the proposed project alternatives, the characteristics of the transportation facilities within the study area were first identified and are described in Chapter 4: Affected Environment. Potential disruptions of the vehicular, transit, pedestrian, or bicycle network, either during construction (short-term and temporary) or after project completion (long-term), were determined by reviewing the overlap of each alternative footprint with the streets, pedestrian and bicycle facilities, transit routes, and rail facilities within the transportation study area. The effect of traffic and parking demand generated by each of the project alternatives was also evaluated.

3.3.1 Identification of Construction Impacts

Truck trips generated by construction activity were estimated by applying typical truck capacities to earthwork (for expected offsite hauling only), demolition, and delivery estimates, assuming averages over the anticipated duration of construction activities. Estimates of construction worker trips and parking demand were based upon the peak number of construction workers expected to be at the site.

The traffic effects (vehicular and nonmotorized) of temporary removal of the 5th Avenue Bridge during construction of the Estuary or Hybrid Alternatives were evaluated through review of traffic operational standards, policies, and available traffic data from the Cities of Olympia and Tumwater.

For this analysis, the magnitude of **construction impacts on vehicle operations** is considered less-than-significant or significant, as follows:

- **Less-than-significant**—Impacts are considered less-than-significant if construction activities would decrease roadway capacity (e.g. lane modification) or generate vehicle traffic, but the increase in average vehicle delay would not exceed locally adopted traffic operational standards.
- **Significant**—Impacts are considered significant if construction activities would decrease roadway capacity (e.g. lane or street closure) or generate vehicle traffic, resulting in increase in average vehicle delay that would exceed locally adopted traffic operational standards.

For this analysis, the magnitude of **construction impacts on vehicle parking** is considered less-than-significant or significant, as follows:

- **Less-than-significant**—Impacts are considered less-than-significant if additional parking demand and/or reduced parking supply generated by construction activities could be accommodated with available parking capacity.
- **Significant**—Impacts are considered significant if construction activities would generate additional parking demand and/or reduce parking supply to a point that demand could not be accommodated with available parking capacity.

For this analysis, the magnitude of **construction impacts on transit** is considered less-than-significant or significant, as follows:

- **Less-than-significant**—Impacts are considered less-than-significant if construction-related relocations of bus stops or bus routes would allow existing transit access and service to be maintained.
- **Significant**—Impacts are considered significant if construction activities would require removal or relocation of a transit stop that would reduce transit service or accessibility (having transit available within ¼ mile walking distance) or disrupt an existing transit route.

For this analysis, the magnitude of **construction impacts on railroad operations** is considered less-than-significant or significant, as follows:

- **Less-than-significant**—Impacts are considered less-than-significant if construction activities would not disrupt railroad activity.
- **Significant**—Impacts are considered significant if construction activities would disrupt rail activity.

For this analysis, the magnitude of **construction impacts on non-motorized travel** is considered less-than-significant or significant, as follows:

- **Less-than-significant**—Impacts are considered less-than-significant if construction activities would change connections in the non-motorized network but would not impede pedestrian or bicycle access or mobility.
- **Significant**—Impacts are considered significant if construction activities would remove a connection in the pedestrian or bicycle network that could not be detoured.

3.3.2 Identification of Operational Impacts

For each of the project alternatives, transportation facilities disrupted during construction would be fully restored, and pedestrian and bicycle facilities would be added to the non-motorized network. New facilities constructed as part of the project alternatives are expected to generate little to no new vehicle trips. Recurring maintenance dredging is required for the action alternatives, the impact of which was assessed using the Construction Impact criteria described above, given the similarity of the activities.

4.0 Affected Environment

The transportation affected environment for the Capitol Lake – Deschutes Estuary Project includes existing facilities and services to support all vehicular and nonmotorized travel within the transportation study area, including streets, transit, rail, pedestrian and bicycle facilities.

4.1 STREET NETWORK

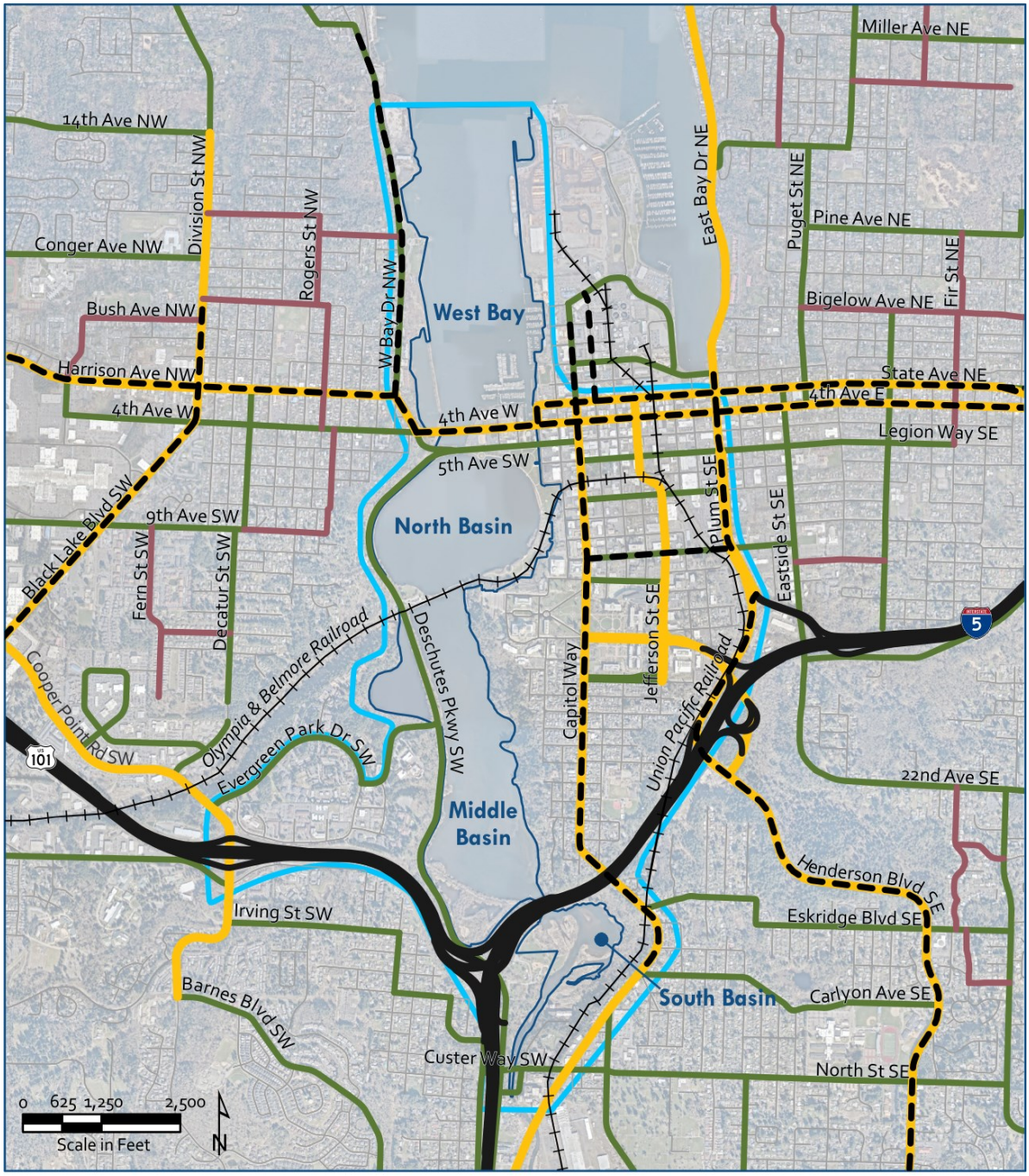
Figure 4.1 shows the street network in proximity to the project area. Characteristics of streets that could potentially be affected by the project alternatives are described in Table 4.1.

4.1.1 Street Functional Classifications

All streets have designated functional classifications, which depend on the types of trips the roadways serve and the relative levels of traffic volumes they carry. Each street has been designated with one of the following classifications (City of Olympia 2019; City of Tumwater 2016).

- **Arterial.** The largest local streets intended to move the most traffic, an arterial street provides an efficient, direct route for long-distance travel within the region and different parts of the City. Street-connecting freeway interchanges to commercial concentrations are classified as arterials. Traffic on arterials is given preference at intersections, and some access control may be considered in order to maintain capacity to carry high volumes of traffic.
- **Major Collector.** Major collectors provide connections between arterials and concentration of residential and commercial activities. The amount of through traffic on a major collector is less than an arterial, and there is more service to abutting land uses. Traffic flow is given preference to lesser streets.
- **Neighborhood Collector.** Neighborhood collectors collect and distribute traffic between a residential neighborhood and an arterial or major collector. Neighborhood collectors serve local traffic, provide access to abutting land uses, and do not carry through traffic. Their design is compatible with residential and commercial neighborhood centers.
- **Local Access Street.** Local access streets carry local traffic within a neighborhood and may provide connections to collectors or arterials, they provide access to abutting land uses.

Figure 4.1 Street Network



Legend

- Interstate/Freeway
- Arterial
- Major Collector
- Neighborhood Collector
- Local Access
- Designated Truck Route
- Project Area
- Study Area

Source: City of Olympia, 2018. City of Tumwater, 2016

Table 4.1 Street Characteristics in the Transportation Study Area

Street	Classification [1]	Average Daily Traffic (vehicles per day) [2]	Jurisdiction
4th Avenue W (across bridge)	Arterial	22,000	City of Olympia
5th Avenue SW (across bridge)	Major Collector	17,000	City of Olympia 3
Deschutes Parkway SW	Major Collector	5,000 – 7,000	City of Olympia, City of Tumwater
Capitol Way S / Capitol Boulevard SE	Arterial	7,000 – 12,000	City of Olympia, City of Tumwater
State Avenue NE	Arterial	12,000	City of Olympia
Plum Street SE / Henderson Boulevard	Arterial	16,000	City of Olympia
Custer Way SW	Arterial	15,000	City of Tumwater

1. Sources: City of Olympia, 2018. City of Tumwater, 2016.
2. Sources: City of Olympia, 2014 and 2019. Custer Way SW volume estimated by applying a K-factor of 10 to the PM peak hour volume provided by City of Tumwater, 2016.
3. The segment of 5th Avenue SW located on the dam is owned by Enterprise Services, but it is part of the Olympia street network and the City of Olympia is responsible for traffic operation.

4.1.2 Traffic Operations

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.

Levels of service for the study area intersections are determined using methodologies established in the Highway Capacity Manual (Transportation Research Board 2016). 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.

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 4-2 shows the level of service criteria for signalized and unsignalized intersections.

Table 4.2 Level of Service Thresholds

Level of Service Designation	Average Delay per Vehicle Signalized Intersection	Average Delay per Vehicle Unsignalized Intersection
A	≤ 10 seconds	≤ 10 seconds
B	> 10 – 20 seconds	> 10 – 15 seconds
C	> 20 – 35 seconds	> 15 – 25 seconds
D	> 35 – 55 seconds	> 25 – 35 seconds
E	> 55 – 80 seconds	> 35 – 50 seconds
F	> 80 seconds	> 50 seconds

Source: Transportation Research Board, 2016.

Level of service analysis is applied to the weekday PM peak hour when commute-generated traffic is typically highest, because it reflects the most congested time of day. Sometimes the weekday AM peak hour is additionally evaluated because it also reflects a period with higher levels of congestion. All other hours of the day typically operate at levels that are at or lower than the peak hour conditions.

The City of Olympia has adopted the following operational standards that are applicable to streets within the transportation study area (City of Olympia 2019a).

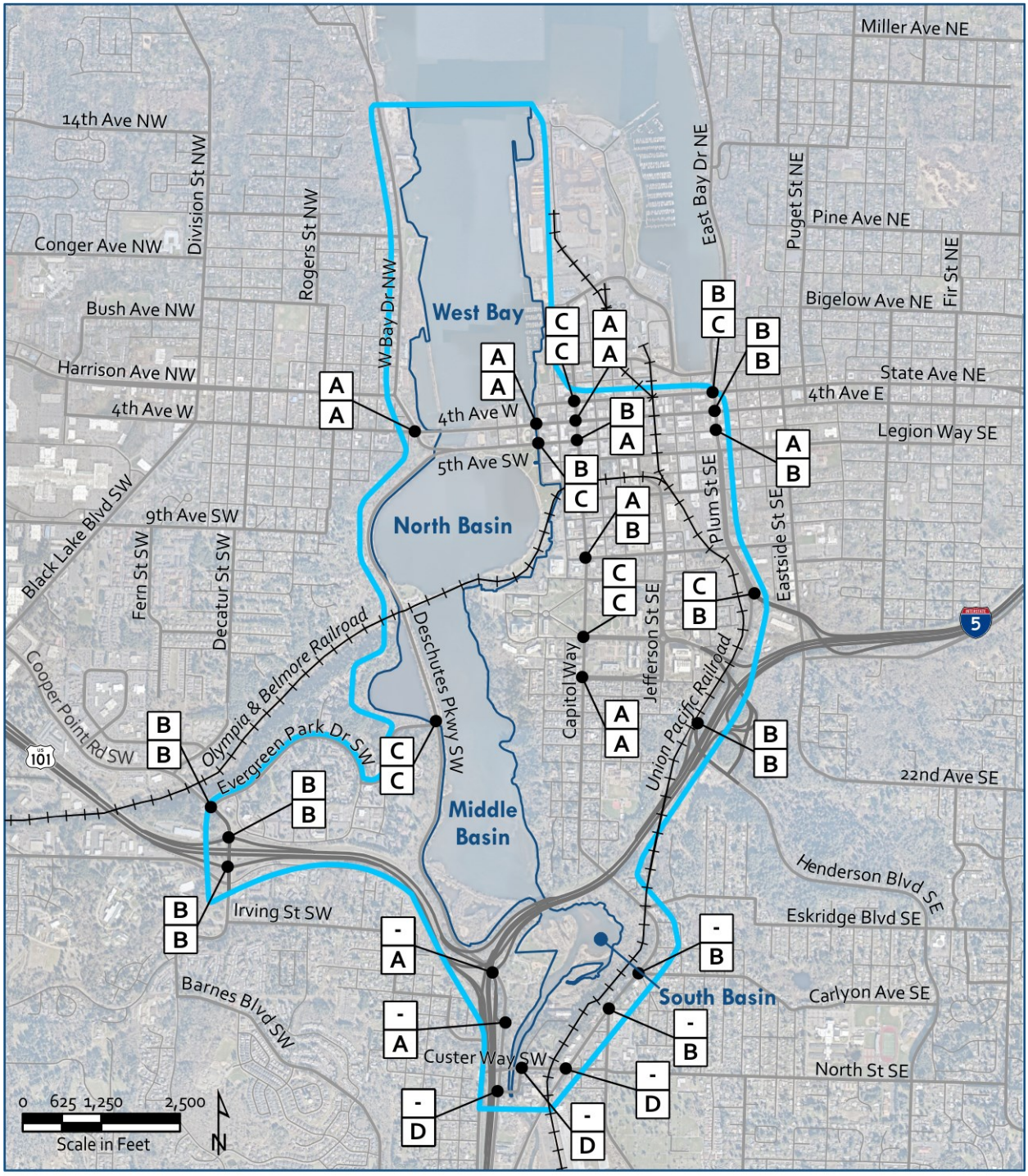
- LOS E or better is acceptable on arterials and major collectors in the City Center and along urban corridors
- LOS D is acceptable in the rest of the City and Urban Growth Area

The City of Tumwater has adopted the following operational standards that are applicable to streets within the transportation study area (City of Tumwater 2016).

- LOS E or better is acceptable on streets within designated "Urban Core Areas" (note, the area that includes Capitol Boulevard SE / Custer Way SW is located within a designated Urban Core Area)
- LOS D is acceptable in the rest of the City and Urban Growth Area

Figure 4.2 shows existing peak hour levels of service at key intersections within the transportation study area, based upon the most recent available information from the Cities of Olympia and Tumwater. (Note, the City of Tumwater has evaluated only the PM peak hour, which is the most congested time of day. The City of Olympia has evaluated both the AM and PM peak hours). For most intersections within the study area, the standard of LOS E applies. All study area intersections within Olympia are operating at LOS C or better during all times of day, with most operating at LOS A or B, and the study area intersections within Tumwater are operating at LOS D or better. These operations are well below the Cities' adopted standard of LOS E for these intersections.

Figure 4.2 Existing Peak Hour Level of Service



Legend

X / X — AM Peak Hour Level of Service / PM Peak Hour Level of Service

Project Area

Study Area

Source: City of Olympia, 2019a. City of Tumwater, 2016

4.2 PARKING

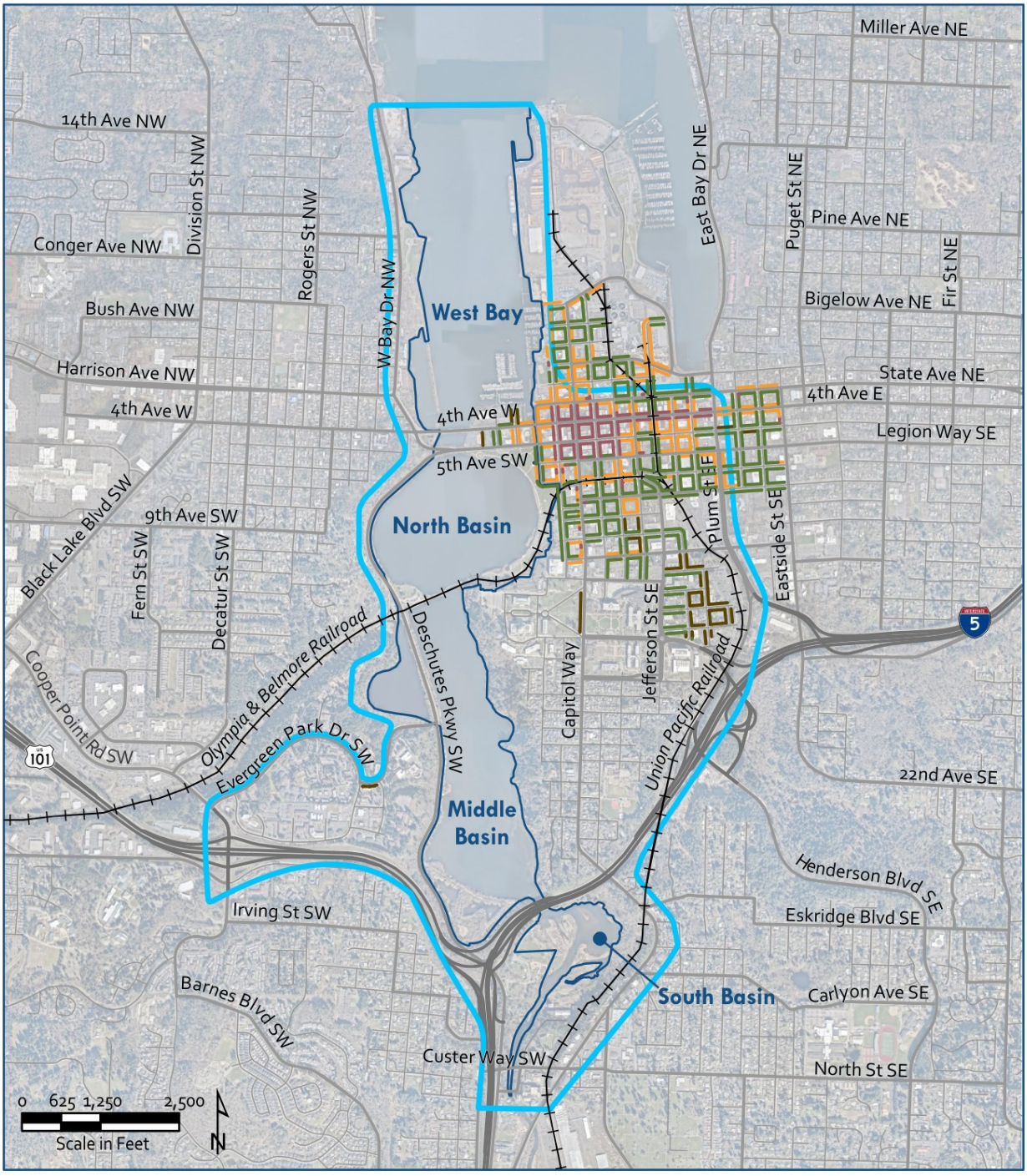
On-street parking characteristics in Olympia include the following categories:

- **Unrestricted.** Has no signed parking restrictions that would prevent all-day parking.
- **Time Restricted.** Has a time limit that is signed or metered, with a time limit of 15 minutes, 2 hours, 3 hours, or 9 hours.

On-street parking characteristics in the vicinity of the project area are shown on Figure 4.3. As shown, the majority of the streets in downtown Olympia have time-limited parking restrictions, many with parking meters. Most of the restricted parking is limited to 3 hours or less, but there is some metered parking available with 9-hour time limits outside of the core area. There is unrestricted on-street parking on Deschutes Parkway SW within the project area, and also along West Bay Drive NW and in the residential neighborhoods to the west of the project area.

Parking on the Capitol Campus includes both employee and visitor parking. Employee parking is provided in designated permit-only lots and garages. Visitor parking is either time-restricted or is priced.

Figure 4.3 On-Street Parking Restrictions



Legend

≤ 2-Hour Meter
3-Hour Meter
9-Hour Meter
1-2 Hour Time Limit (Unmetered)
Project Area
Study Area

Source: City of Olympia, 2020b

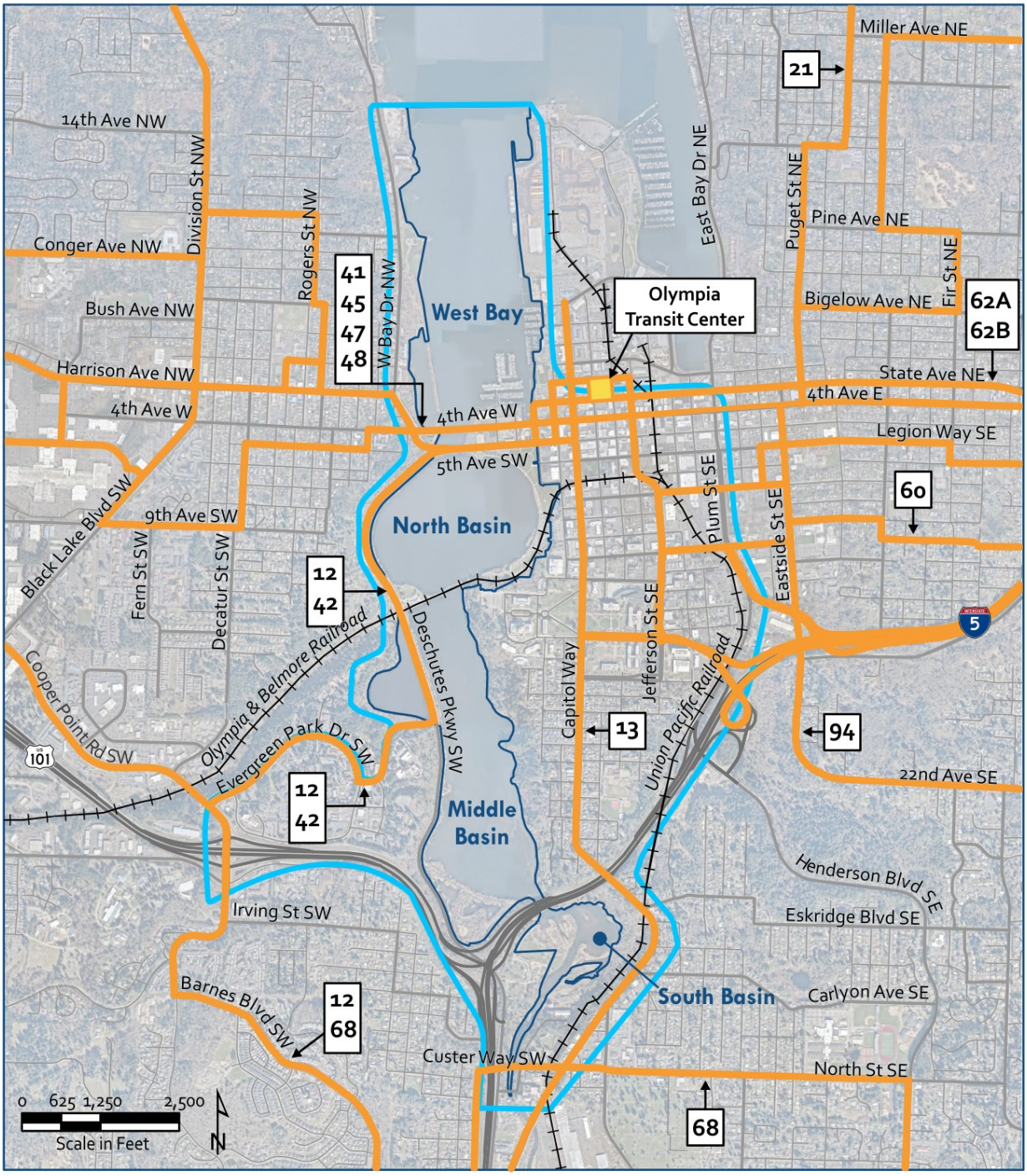
4.3 TRANSIT NETWORK

Bus service is provided in the project area by Intercity Transit, and shown on Figure 4.4. The Olympia Transit Center is located at State Avenue NE / Washington Street NE in downtown Olympia, and serves as the start/end point for all bus routes that travel through the transportation study area. Bus routes that serve the transportation study area, either via 4th Avenue W or 5th Avenue SW, are described in Table 4.3.

Table 4.3 Bus Routes in Study Area

Bus Route	Destinations Served	Service Frequency
4th Avenue Routes		
41	Olympia Transit Center – Evergreen State College	Daily, 30-minute frequency
45	Olympia Transit Center – Capitol Mall	Daily, 30-minute frequency
47	Olympia Transit Center – Capitol Mall	Weekdays, 30-minute frequency Weekends, 60-minute frequency
48	Olympia Transit Center – Evergreen State College	Daily, 30-minute frequency
5th Avenue Routes		
12	Olympia Transit Center – Tumwater Boulevard	Daily, 30-minute frequency
42	Olympia Transit Center – Thurston County Family Court	Weekday only, 30-minute frequency

Figure 4.4 Transit and Rail Network



Legend

- Bus Route
- XX Intercity Bus Route Number
- Railroad
- Project Area
- Study Area

Source: Intercity Transit, 2018, Thurston County, 2020c

4.4 FREIGHT NETWORK

Freight movement within the transportation study area includes truck and rail movement to and from the Port of Olympia, located in West Bay at the south end of Budd Inlet, and also local truck deliveries.

4.4.1 Truck Routes

The City of Olympia has designated certain streets as truck routes. Trucks are restricted to these streets for all freight movement except local deliveries. The designated Truck Routes are shown on Figure 4.1. The route between the project area and the regional highway system using designated streets would utilize 4th Avenue E, State Avenue NE, and Plum Street SE.

4.4.2 Railroad

There is one railroad mainline that crosses the project area, shown on Figure 4.3. These tracks are part of the Olympia & Belmore Railroad, Inc. (OYLO), owned and operated by Genesee & Wyoming. OYLO also provides a link between the Port of Olympia and the national rail freight network (BNSF Railway and Union Pacific Railroad lines). Inventory information provided by the Federal Railroad Administration (FRA) for the at-grade crossing at Deschutes Parkway SW indicates that this line serves about three trains per week (FRA 2020).

4.5 PEDESTRIAN AND BICYCLE NETWORK

The City's walking and bicycling infrastructure supports non-motorized travel to employment centers, commercial districts, transit stops, schools and major institutions, and recreational destinations.

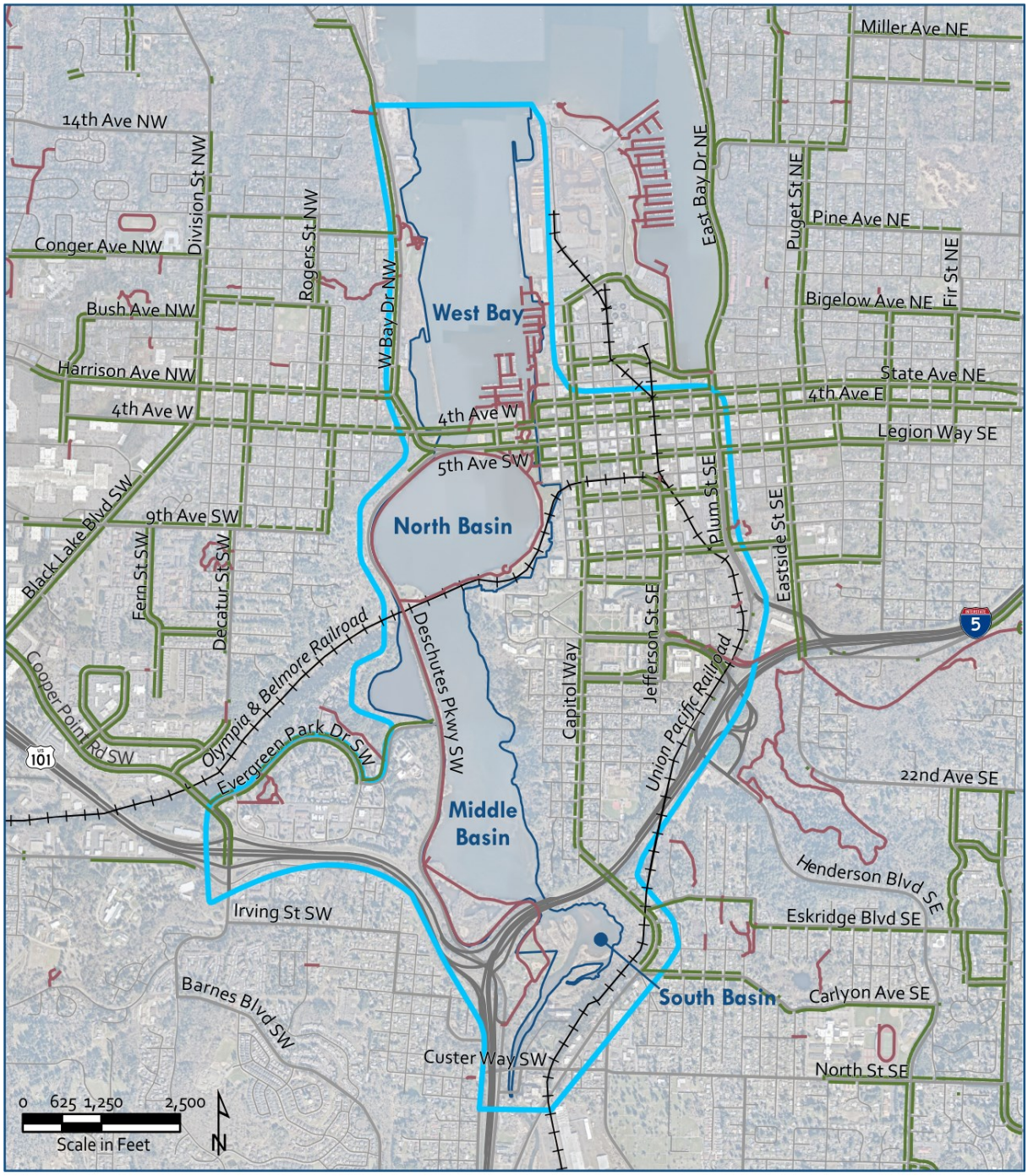
Trails and sidewalks along arterial streets are shown on Figure 4.5. The existing and planned bicycle facilities in the project area are shown on Figure 4.6. As shown, there are several trails near the project site, many traversing the parks along the water. The docks located in the waterways are also considered public trails.

- The bicycle network presented in Figure 4.6 includes facilities with the following designations (Thurston Regional Planning Council 2018).
- Multi-Use Path – facility separated from the motor vehicle roadway.
- Bike Lane – striped, signed lane adjacent to motor vehicle lane.
- Bike Street – street with generally lower vehicle volumes and speeds, which is identified with signs and pavement markings as routes friendly for bicycles. Some have enhancements at busy intersections to make it easier to cross the street.

These designations are consistent with the City of Olympia's designations of Class I Bike Path, Class II Bike Lane, and Class III Bike Route, respectively (City of Olympia 2018).

Deschutes Parkway SW, West Bay Drive NW, 4th Avenue W, and 5th Avenue SW are all part of the pedestrian and bicycle network within the study area.

Figure 4.5 Pedestrian Network

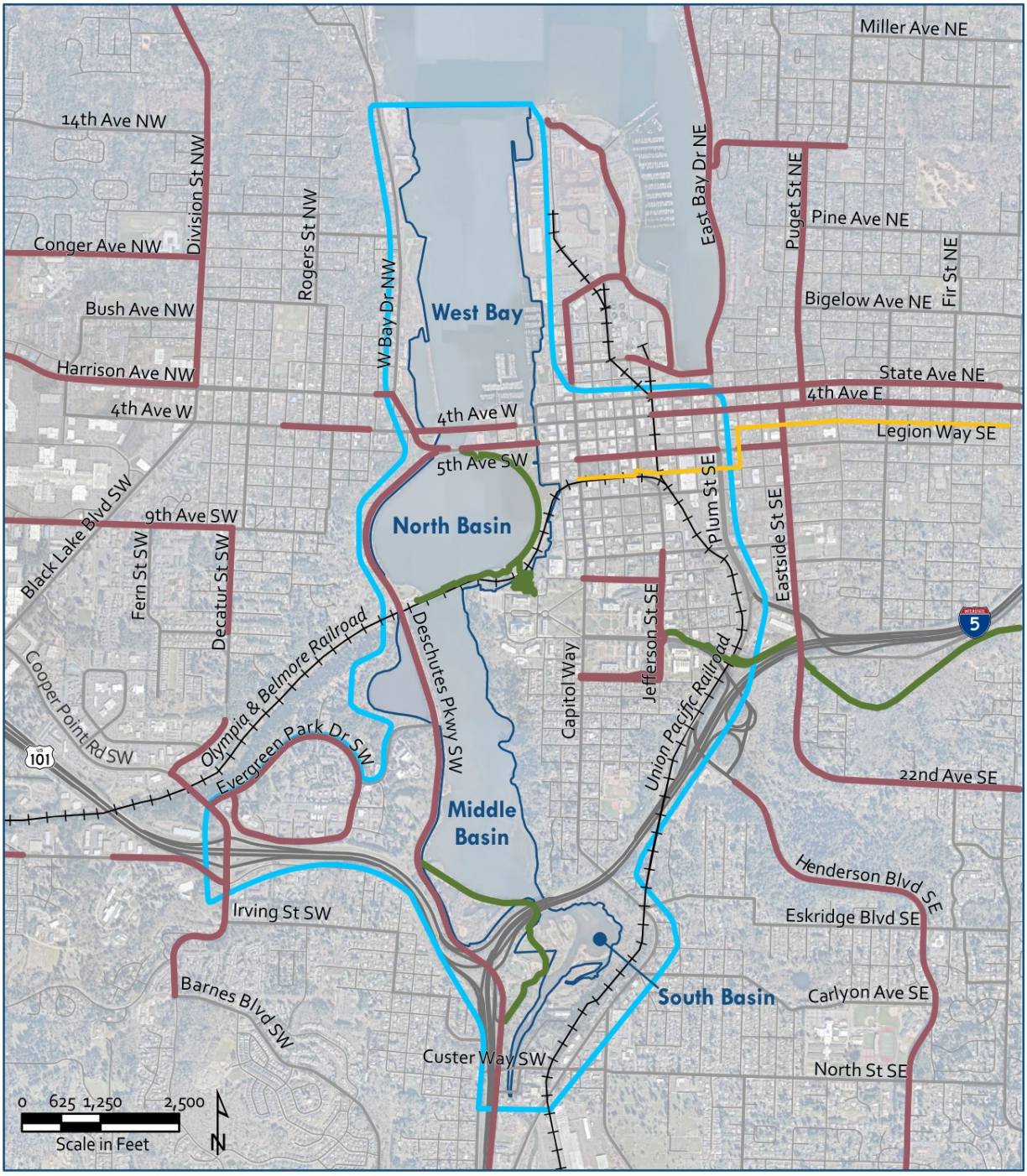


Legend

Sidewalk
Public Trail
Project Area
Study Area

Source: City of Olympia, 2019a; Thurston County, 2020d

Figure 4.6 Bike Network



Legend

Multi-Use Path
Bike Lane
Bike Street
Project Area
Study Area

Source: Thurston Regional Planning Council, 2018; City of Olympia, 2018

5.0 Impacts and Mitigation Measures

5.1 OVERVIEW

This section describes the probable transportation impacts from the No Action Alternative and the Action Alternatives (Managed Lake, Estuary, and Hybrid Alternatives). This section also identifies mitigation measures that could avoid, minimize, or reduce the identified impact below the level of significance.

5.2 NO ACTION ALTERNATIVE

The No Action Alternative would not result in construction impacts on transportation because the project would not be built.

The No Action Alternative would not construct new facilities considered to be beneficial to the transportation network, including a new 5th Avenue Pedestrian Bridge, replacement of the 5th Avenue Bridge (Vehicular), or boardwalks, but would maintain the existing network. Potential long-term operational impacts would be related to limited ongoing maintenance of the 5th Avenue Dam and ongoing sedimentation of the Capitol Lake – Deschutes Estuary, since no sediment management strategies would be implemented. These activities could infrequently generate a small number of vehicle trips (fewer than 10 per day, on days that these activities occur) that are expected to primarily occur during off-peak times of the day and would be consistent with the types of maintenance trips that currently occur. Vehicle trips associated with ongoing maintenance would have a negligible effect on traffic operations and are considered **less-than-significant.**

5.3 IMPACTS COMMON TO ALL ACTION ALTERNATIVES

All action alternatives —Managed Lake, Estuary, and Hybrid—have construction impacts associated with the following:

- Initial dredging
- Habitat area establishment

- Construction of boardwalks in the South and Middle Basins
- Construction of a dock in the Middle Basin and hand-carried boat launch in the North Basin
- Construction of a 5th Avenue Pedestrian Bridge
- Closure of the 5th Avenue Bridge during a portion of the construction period
- Construction staging and access

These activities would occur during the overall 4- to 8-year construction duration. Note there may be periods of time during the overall construction duration when construction activity would not generate the impacts described below.

5.3.1 Impacts from Construction

As a best management practice, Enterprise Services would prepare a Construction Transportation Management Plan (CTMP) for approval by agencies with jurisdiction prior to construction. The CTMP would detail temporary roadway, lane, sidewalk and bike facility closures; coning plans; traffic control plans such as the use of flaggers; truck haul routes; and contractor parking. The CTMP is discussed in more detail in Section 5.7.1.1. Impacts to specific elements of the transportation system are detailed below.

5.3.1.1 Street Capacity Restrictions

Construction of any of the three action alternatives could result in temporary street narrowing or closure adjacent to construction activities. This would include narrowing of Deschutes Parkway SW during construction of the 4th Avenue W connection, but also could include short-term lane or sidewalk closures in areas adjacent to a specific construction activity. As part of the CTMP, the contractor would be required to provide work zone traffic control and signage in accordance with federal and state standards (FHWA 2009; WSDOT 2018), and provide traffic direction (e.g. using flaggers and/or temporary signals) as needed to manage traffic with temporary restrictions in place. Pedestrian connections would also need to be maintained adjacent to the project area, with detours provided as needed. With a CTMP in place, temporary lane closures or narrowings would have a minimal effect on traffic operation and the impact would be **less-than-significant.**

5.3.1.2 Sidewalk or Bike Lane Restrictions

Construction of any of the three action alternatives could result in temporary narrowing or closure of sidewalks or bike lanes adjacent to construction activities (e.g. along West Bay Drive NW or Deschutes Parkway SW). As part of the CTMP, the contractor would be required to provide work zone traffic control and signage in accordance with federal and state standards (FHWA 2009; WSDOT 2018), establish detours to maintain non-motorized connections, and provide traffic direction (e.g. using flaggers and/or temporary signals) as needed to maintain pedestrian and bicycle travel while temporary restrictions are in place. Activities that require temporary lane narrowing or closure could also be restricted to off-peak times of day, if needed. With a CTMP in place, temporary narrowing or closure of sidewalks or bike lanes would have a minimal effect on traffic operation and the impact would be **less-than-significant.**

5.3.1.3 Construction Worker Trips and Parking

For all action alternatives, an average of about 20 workers are expected to be onsite during most construction activities. The number could increase to up to 40 workers during peak levels of construction activity. It is noted that these are planning-level estimates based upon conceptual design that would be refined as project design evolves; however, they reflect a conservative estimate of the overall numbers that are expected. Construction workers would generate trips to and from the project site, and those commuting by personal vehicle would also generate parking demand.

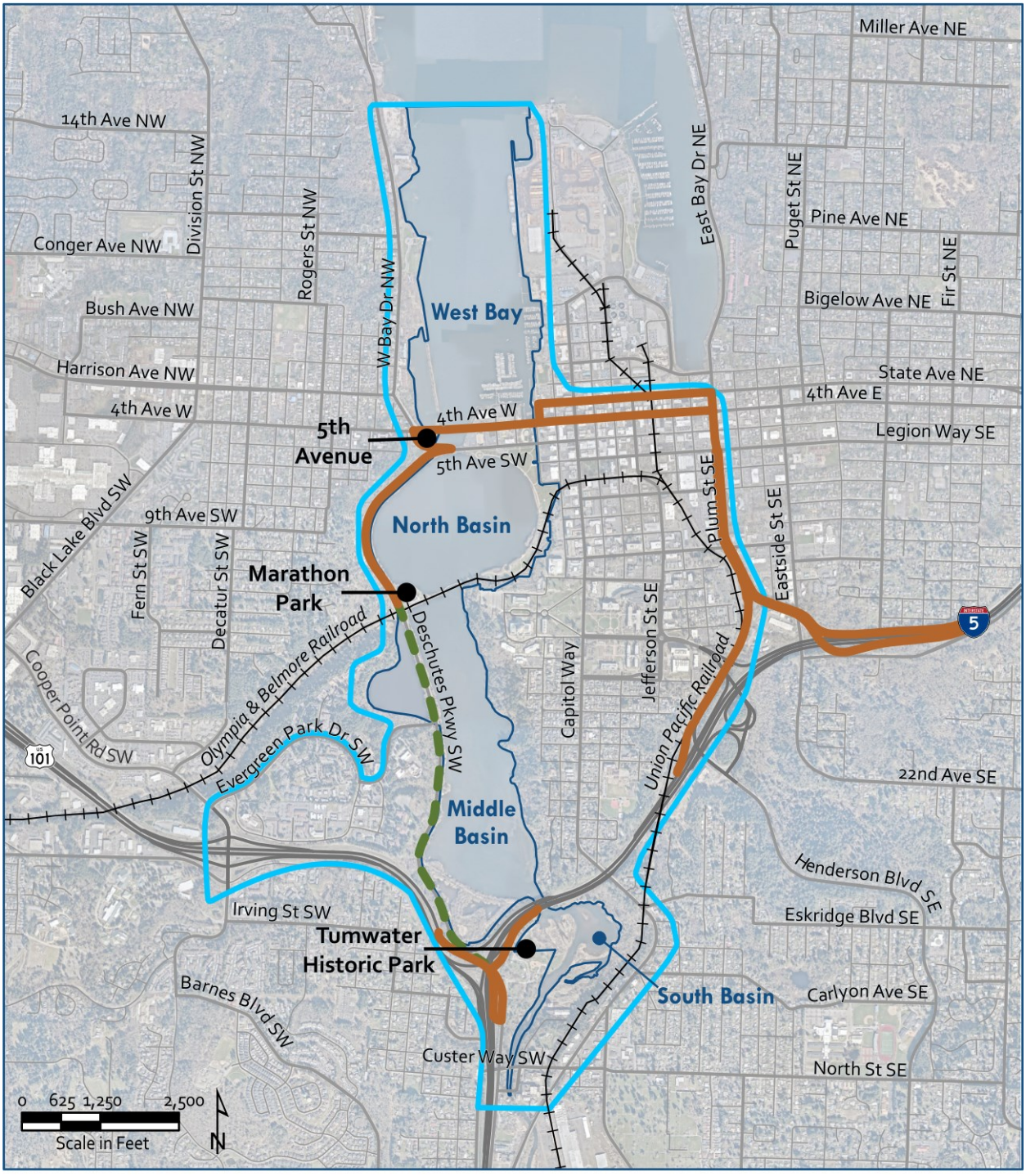
Construction worker commutes are expected to generate 15 to 40 trips per commute hour depending on the construction activity occurring on any given day (inbound in the morning prior the beginning of the workday, and outbound in the evening after the workday is completed). Based upon typical construction shifts, most construction employee commute trips are expected to occur during off-peak times of day, with morning trips occurring prior to the start of the peak morning commute period, and afternoon trips occurring prior to the beginning of the peak evening commute period. Worker commute trips would have a negligible effect on traffic operations, primarily during off-peak periods, and are therefore considered to be **less-than-significant.**

In its CTMP, the contractor would detail how it would manage parking generated by construction workers. Construction employee parking would be accommodated on the project site to the extent feasible. It is also possible that construction employee parking could occur along Deschutes Parkway within the project area, unless expressly prohibited by the City of Olympia. In order to minimize disruption to nearby residents and businesses, it is recommended that construction employee parking be prohibited in unrestricted on-street spaces in the residential areas to the west of the site, and unrestricted and 9-hour metered spaces in downtown Olympia (parking time limits already in place in the downtown area will prevent long-term parking where they are present). Although pricing should help discourage use of the visitor areas of the Capitol Campus, the CTMP should also prohibit construction employee parking in those areas. If construction employee parking cannot be accommodated in designated areas on and near the project site, the contractor may be required to secure offsite parking for construction employees, and provide shuttle service to and from the project site. With best management practices in place, parking generated by construction employees would have little to no effect on parking conditions nearby residents and businesses and the impact would be **less-than-significant.**

5.3.1.4 Truck Trips Generated by Equipment Mobilization and Deliveries

Construction truck trips would be generated by (1) mobilization of construction equipment and materials delivery to the project site, and (2) hauling dredged or demolished materials away from the site. All loading would occur within the project area, so only hauling of equipment or materials to or from the project area would result in potential transportation impacts. In its CTMP, the contractor should detail truck haul routes between the project site and regional highway system, and to the extent possible, use designated truck streets. Figure 5.1 shows potential haul routes between the expected construction staging areas and the regional highway system, reflecting the shortest routes that would use designated and/or non-designated truck streets. However, it should be noted that the actual required haul routes would be determined by the City as part of the project permitting process.

Figure 5.1 Potential Truck Haul Routes



Legend

- Construction Staging Area
- Potential Truck Haul Route (Via Designated Truck Streets)
- Potential Truck Haul Route (Via Non-Designated Truck Street)
- Project Area
- Study Area

Table 5.1 summarizes the construction equipment that would be needed for major activities common to the three action alternatives. The equipment would be hauled by truck to the site, prior to the start of the corresponding construction activities, and hauled away from the site after the activities are complete. Construction equipment mobilization would occur over several days. This activity would generate fewer than 5 trips per hour, primarily occurring during off-peak times of day. Other construction activities would also generate occasional trips (fewer than 5 trips per hour). These trips may be noticeable to nearby residents and businesses and may cause very small increases in average delay at intersections along the truck haul routes. However, as described previously in Section 4.1.2, peak hour traffic operations along the potential truck haul route is currently LOS C or better during all hours of the day, and the small amount of delay added by these truck trips would not change these overall levels of service. Therefore, impact on vehicle operations of construction equipment mobilization for activities summarized in Table 5.1 is considered **less-than-significant.**

Table 5.1 Construction Equipment and Deliveries Common to All Action Alternatives

Construction Activity	Equipment	Quantity
Dredging / Habitat Area Establishment	Sectional barge	1
	Small hydraulic high-volume dredge	1
	8-inch pump	1
	Booster pumps	up to 3
	Assist boat	1
	Survey boat	1
	Fork lift	1
	Crane with pile driving equipment	up to 2
	Dozer	up to 4
	Excavator	up to 2
	Support equipment such as generators, welders etc.	varies
Construction of 5th Avenue Pedestrian Bridge	Pile driving crane	1
	Material delivery and haul-off trucks (up to 4)	up to 4
	Miscellaneous support vehicles (up to 4)	up to 4

Each of the three action alternatives would require initial dredging during construction. Much of the dredged material would be reused onsite to establish the habitat areas, and would not generate truck trips on the street system. However, each alternative would generate some level of spoils that would be hauled away from the site by truck. The timing and quantity of dredging activity would vary between the three alternatives, and the potential transportation impact related to dredged material exported from the project site is described in the transportation construction impacts unique to each alternative.

5.3.1.5 Pavement Condition

It is possible that increased truck activity generated by construction activities could degrade the pavement condition along the truck haul routes, particularly if a street that has not been designated as a truck street (such as Deschutes Parkway SW) is regularly utilized. In this case, it is a best management practice for a project to restore pavement to pre-construction conditions, and expected to be a project commitment. With best management practices in place to restore pavement if needed, the impact of truck traffic on pavement condition would be **less-than-significant**.

5.3.1.6 Rail Operations

Impact of Construction on Rail Operations

For all action alternatives, construction activities could occur in the vicinity of the Olympia & Belmore railroad line that crosses the water between the North and Middle Basins and is estimated to carry an average of three trains per week (FRA 2019). However, the bridge would remain operational throughout the duration of project construction. Best management practices dictate that as part of the construction management plan required to support project permitting, the contractor would be required to coordinate with the railroad owner (Genesee & Wyoming) prior to any construction activities that would occur in the vicinity of the railroad. Since there is a low amount of train activity on the tracks, it is expected that construction activities near the railroad bridge could be coordinated with the owner to occur during periods in which trains are not scheduled to run. The contractor would also be required to implement best management practices to shield the tracks from construction equipment and activities. With best management practices in place, project construction would not disrupt train operation and the impact would be **less-than-significant.**

Impact of Utilizing Rail to Support Construction

Because the project site is directly served by railroad, it may be possible to use rail to haul materials to or from the project site. The feasibility of using rail would depend on a number of factors to be determined by the project contractor prior to construction. These factors include whether or not the origins of delivered materials and/or destinations of hauled materials are adequately served by rail, and also the feasibility for the railroad operator to provide the support that would be needed in conjunction with other commitments. Although use of trucks to support the construction activities is expected to have small impact on traffic operations, use of rail to support some or all of the construction activities would reduce truck trips and lower traffic operational impacts along haul routes.

For hauling of dredged material, the capacity of a 66-foot steel gondola rail car was estimated, based upon the maximum weight it could carry. The published load capacity of 214,000 pounds for a 66-foot steel mill gondola car (BNSF Railway 2020) was divided by an assumed sediment weight of 3,000 pounds per cubic yard, resulting in an estimated capacity of about 71 cubic yards per railcar. Assuming ten railcars per train, one train load of dredged material would remove 72 truck trips (36 inbound, 36 outbound) from the street system. Based upon the truck trips estimated for the various construction activities associated with the action alternatives, it is expected that an average of 1 to 5 trains per week

(0 to 1 train per day) would be needed to support all project construction activity. If rail were used to support some activities in conjunction with trucks, the train volumes would be lower. Since the train volumes associated with construction activity would be consistent with existing activity on the tracks – reported to average about 3 trains per week (FRA 2020) – the impact on traffic operations at at-grade crossings would be **less-than-significant**.

5.3.1.7 Traffic Impacts During 5th Avenue Bridge Closure

Vehicle Traffic

Construction of all action alternatives could include a period in which the 5th Avenue Bridge would be closed. For the Managed Lake Alternative, the bridge would be narrowed or closed for up to about 7 weeks while jet grouting occurs.

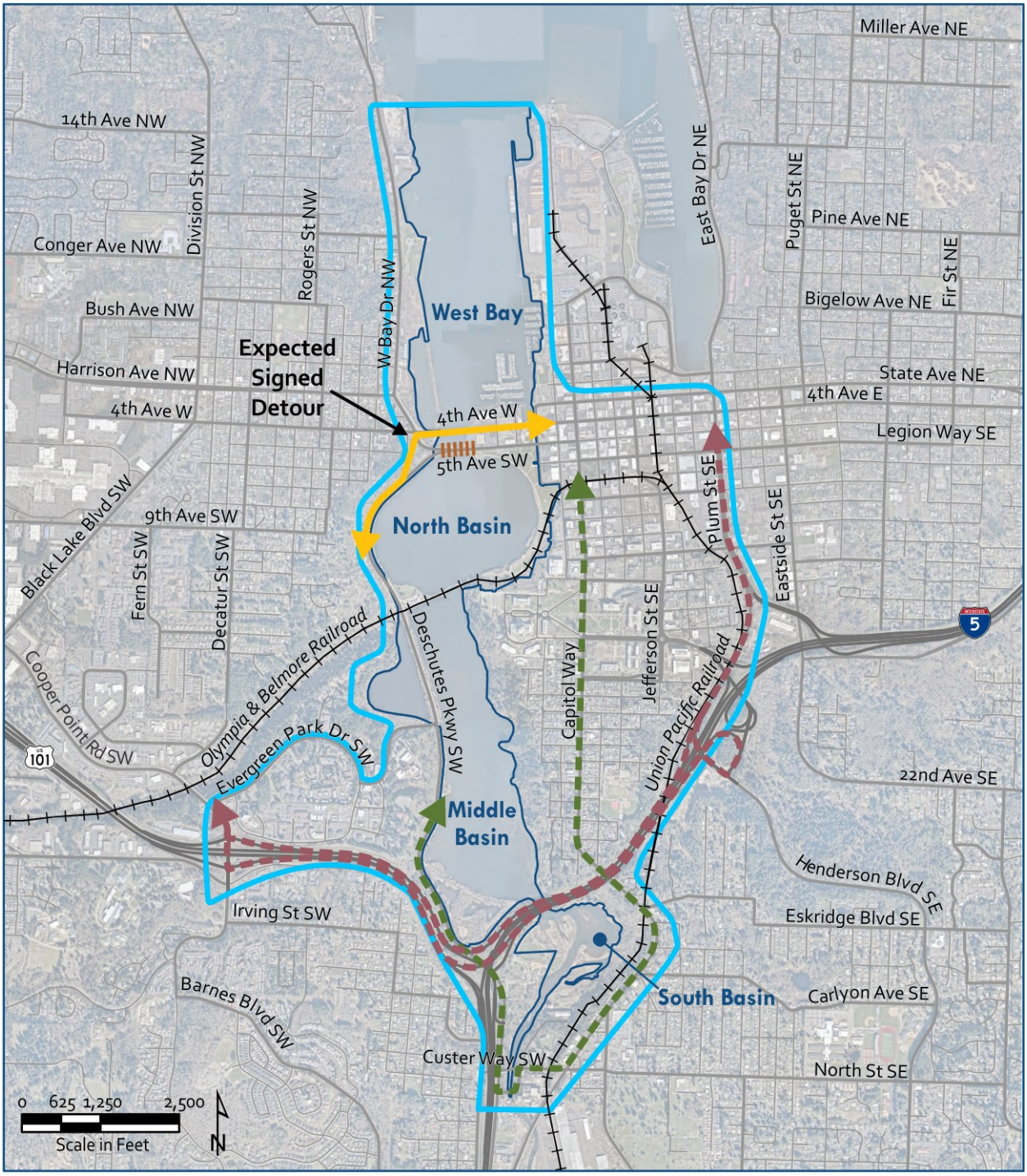
For the Estuary and Hybrid Alternatives, the bridge would be closed for up to about 5.5 years, during the period of removal and reconstruction of the 5th Avenue Bridge. Vehicle traffic that utilizes the bridge would need to be detoured. The detour route would be determined in coordination with the City of Olympia, but with connection provided between 4th Avenue W and Deschutes Parkway, it is expected that the detour would utilize the 4th Avenue Bridge, as shown on Figure 5.2.

Although 4th Avenue would be signed as the detour and provide the most direct route across the waterway, it is possible that some drivers may choose alternate routes around the south end of the waterway, particularly if they are traveling to or from the area west of the Middle Basin. Potential alternative routes that drivers could choose are also shown on Figure 5.2. It is expected that the 4th Avenue detour route would experience the highest increase in traffic volumes. However, these alternative routes around the south end of the waterway, utilizing either arterial streets or highways, could also experience some increases.

As shown previously on Figure 4.2, peak hour traffic operations at key intersections along these routes are well below the adopted LOS E standard that applies to them. Intersections in Olympia are operating at LOS C or better, with most operating at LOS A or B. The intersections in Tumwater located along one of the potential alternate routes have peak hour operation of LOS D or better. These values reflect operation during the most congested periods of the day; during off-peak periods they would be expected to operate at these levels or better.

Construction of the Capitol Lake – Deschutes Estuary project would happen in a future year, and it is expected that some level of background traffic growth would result from regional development growth within that period. Review of historical traffic count data collected by the City of Olympia in the 4th Avenue and 5th Avenue corridors between 2012 and 2019 indicate annual traffic growth rates of 1% or lower. If background growth occurred at 1% per year through 2030, average delay along the 4th Avenue corridor would increase but peak hour would remain at LOS C or better. However, if this level of background growth occurred, combined with a shift of all vehicle traffic from the 5th Avenue to the 4th Avenue corridor, analysis indicates that peak hour operation at some intersections could degrade to LOS F.

Figure 5.2 Potential Traffic Detours During 5th Avenue Bridge Closure



Legend

- Expected Signed Detour
- Potential Alternative Routes
- Bridge Closure
- Project Area
- Study Area

Traffic forecasts presented in the City of Tumwater's *Comprehensive Plan* (City of Tumwater 2016) indicate that key intersections along the potential alternative route shown on Figure 5.2 are expected to operate at LOS D or better through 2040. However, it is noted that the intersections along the alternative route through Tumwater, located in the vicinity of I-5 and US-101 ramps, are generally more congested than the key intersections within Olympia. Additionally, application of Google Maps travel-time estimation tool (google.com/maps) indicates that without traffic, routing south around the waterway would add about 10 to 15 minutes of travel time, compared to the bridge crossing. During peak hour conditions with higher traffic volumes, the increase in travel time would be larger, and could vary substantially from day to day depending on varying conditions on the area highway system. For these reasons, it is expected that most drivers would choose the more direct detour across the 4th Avenue Bridge. A smaller number of drivers, primarily traveling to and from the areas west and southwest of the Middle Basin, may choose the alternative routes because they would be more direct.

Existing and projected future conditions described above indicate that the intersections within the study area have capacity to accommodate additional traffic that would be generated by the detours, and it is expected that with mitigation in place to manage traffic, they would continue to operate within the Cities' standards during most times of the day. However, this impact is still considered potentially **significant** because analysis indicates during some peak conditions, and additionally taking future traffic growth into consideration, traffic increases could be high enough that some downtown intersections would degrade to a congested condition. Mitigation measures recommended in Section 5.7.1 include management of traffic conditions along the detour route, and communication strategies to encourage travel behavior that would reduce peak hour vehicle volumes that cross the waterway. Additionally, if the new pedestrian bridge could be constructed prior to closure of the 5th Avenue Bridge, this could help encourage more walking and biking across the waterway as an alternative to driving.

For the Managed Lake Alternative, if closure of the 5th Avenue Bridge is needed during some or all of the period jet grouting occurs, the conditions described above would apply only if it is possible to provide a temporary connection between 4th Avenue W and Deschutes Parkway SW, to serve a similar function to the connection that would be constructed with the Estuary or Hybrid Alternatives. If this connection could not be made, all vehicles traveling between the east and west sides of the waterway would be required to use the alternative routes around the south end of the waterway shown on Figure 5.2. While it is expected that a small number of drivers choosing these alternative routes would not have a large effect on traffic operations, if all traffic were diverted, operations would likely degrade to LOS F along these routes during much of the day, in turn causing further increase in travel times. Without a direct connection between 4th Avenue W and Deschutes Parkway SW, the impact of the 5th Avenue Bridge closure on traffic operation is expected to be **significant and unavoidable**.

Transit

During the period of removal and reconstruction of the 5th Avenue Bridge, buses displaced from the 5th Avenue Bridge (currently Routes 12 and 42) would need to be rerouted. It is expected that buses would be rerouted over the 4th Avenue Bridge, resuming their regular routes on Deschutes Parkway SW by utilizing the new connection that would be provided with the project. Bus stops closed on 5th Avenue

would need to direct riders to the 4th Avenue stops, about 300 to 500 feet away. Because existing transit service and accessibility could be maintained, the impact to transit is considered **less-than significant.**

For the Managed Lake Alternative, if closure of the 5th Avenue Bridge is needed during some or all of the period jet grouting occurs, the conditions described above would apply only if it is possible to provide a temporary connection between 4th Avenue W and Deschutes Parkway SW, to serve a similar function to the connection that would be constructed with the Estuary or Hybrid Alternatives. If this connection could not be made, all buses that currently utilize the 5th Avenue Bridge, providing direct service between downtown Olympia and the areas west and southwest of the Middle Basin, would be required to make a substantial detour either to the north or to the south of their current routes. This would degrade the transit travel times between destinations along the routes, and/or require service changes to be made. Therefore, this would be considered a **significant unavoidable impact.**

Pedestrian and Bicycle Traffic

During the period of removal and reconstruction of the 5th Avenue Bridge, it is expected that pedestrian and bicycle traffic would also be detoured to the 4th Avenue Bridge. With sidewalks and bike lanes in both directions, the 4th Avenue Bridge has adequate facilities to accommodate people walking and biking. However, elevation differences between 4th Avenue and Deschutes Parkway may present challenges in providing a connection that would meet Americans with Disabilities Act (ADA) standards. If an ADA-compliant detour could not be established, this would be considered a **significant** pedestrian impact.

However, this potential impact could be reduced to a less-than-significant level with construction of the proposed new pedestrian bridge prior to demolition of the existing 5th Avenue Bridge. Provision of this facility would also provide a more accessible non-motorized connection between the downtown area and Deschutes Parkway. Alternatively, construction of a temporary trail trestle could be considered in order to maintain the trail loop connecting Heritage Park and Deschutes Parkway SW during the time the 5th Avenue Bridge is closed and prior to construction of the 5th Avenue Pedestrian Bridge.

5.3.2 Impacts from Operation

With all action alternatives, the transportation system would be fully restored after construction is completed and no adverse long-term impacts to the multimodal transportation network would result.

5.3.2.1 New 5th Avenue Pedestrian Bridge and Boardwalks

All action alternatives include a new 14-foot-wide 5th Avenue Pedestrian Bridge adjacent to and south of the existing 5th Avenue Bridge, which would improve a critical link between east and west Olympia for pedestrians and bicyclists. This facility would be constructed in accordance with established design standards (City of Olympia 2018; WSDOT 2019a; WSDOT 2019b) and would improve mobility and safety for people walking and biking. Provision of this connection would support many policies established in the City of Olympia's *Comprehensive Plan* (City of Olympia 2019a) that seek to support and improve pedestrian and bicycle travel throughout the city and is considered a **substantial**

transportation benefit. Likewise, construction of boardwalks in the south and middle basins would enhance the pedestrian environment, supporting the City's policies encouraging non-motorized travel, and is considered a **moderate transportation benefit.**

5.3.2.2 Traffic Generated by New Recreational Elements

All action alternatives include provision of a dock in the Middle Basin and hand-carried boat launch in the North Basin would generate vehicular or non-motorized trips that are consistent with those generated by existing recreational activities in the project area. Parking demand would continue to be supported by the existing parking supply at Marathon Park as allowed in the current Washington Administrative Code, and on Deschutes Parkway. Any trips generated would have a negligible effect on traffic operations or parking and are considered **less-than-significant.**

5.3.2.3 Ongoing Minor Maintenance

There are ongoing maintenance activities associated with all action alternatives that could infrequently generate a small number of vehicle trips (fewer than 10 per day, on days that these activities occur). These types of trips are expected to primarily occur during off-peak times of the day and would be consistent with the types of maintenance trips that currently occur. Vehicle trips associated with ongoing maintenance would have a negligible effect on traffic operations and are considered **less-than-significant.**

Each of the three action alternatives would require recurring maintenance dredging. However, the timing and quantity of dredging activity would vary between the three alternatives. The potential transportation impacts related to future maintenance dredging is described in the transportation operational impacts unique to each alternative.

5.4 MANAGED LAKE ALTERNATIVE

5.4.1 Impacts from Construction

With the Managed Lake Alternative, there would be no offsite hauling of dredged material during construction; all dredged material would be transferred and used onsite. No additional transportation impacts are expected during construction beyond those identified as common to all alternatives.

5.4.2 Impacts from Operation

Long-term (operation) impacts on Transportation would primarily be vehicle operational impacts associated with maintenance dredging activities.

5.4.2.1 Truck Trips Generated by Maintenance Dredging Activity

For the Managed Lake Alternative, maintenance dredging would be required about every 20 years. Table 5.2 summarizes the estimated trips that would be generated if all dredged material were to be hauled from the site by truck. As shown, the truck volumes would be substantial, estimated to average

about 20 trips per hour for each hour of the workday over an 18-month period. If all dredged spoils were hauled by truck, it is likely that some intersections along the haul routes could degrade to LOS F during some times of the day. In this case, the impact on traffic operations is expected to be significant.

Table 5.2 Truck Trips Generated by Maintenance Dredging for the Managed Lake Alternative

	Maintenance Dredging Every 20 Years
Export Volume	472,000 cubic yards
Estimated Total Truck Loads [1]	29,500 truck loads
Estimated Duration of Activity	18 months
Estimated Average Truck Trips [2]	
per week	800 trips
per day	160 trips
per hour	20 trips
Feasibility of Hauling by Rail	Feasible
Feasibility of Hauling by Barge	Not Feasible

1. Assumes 25% expansion factor and an average truck capacity of 20 cubic yards.
2. Includes inbound (empty) trucks and outbound (full) trucks

For the Managed Lake Alternative, the presence of the Olympia & Belmore railroad offers opportunity for the dredged material to be hauled away from the site by rail, either instead of or in combination with hauling by truck. As described previously in Section 5.3.1.6, one train load of dredged material is estimated to remove 72 truck trips from the street system. However, to haul dredged material entirely by rail would require an average 4 to 5 train trips per weekday over the entire 18-month period, which may be more than could be supported with the available rail infrastructure. Additionally, this level of train volume would also degrade vehicle traffic operations at the at-grade rail crossings. Therefore, it is expected that the effect of maintenance dredging on traffic operations would still be significant with use of rail, or a combination of truck and rail. Since the 5th Avenue Dam would remain in place with the Managed Lake Alternative, hauling of dredged material by barge is not considered feasible. Therefore, the traffic impacts that would result from recurring maintenance dredging for the Managed Lake Alternative, utilizing trucks, rail, or a combination of both, are considered to be **significant**.

5.5 ESTUARY ALTERNATIVE

5.5.1 Impacts from Construction

In addition to impacts common to all action alternatives, construction impacts of the Estuary Alternative on Transportation would primarily be associated with construction deliveries and transport of dredged material. These elements are detailed below.

5.5.1.1 Truck Trips Generated by Equipment Mobilization and Deliveries

Table 5.3 summarizes the equipment that would be needed to construct the additional major elements of the Estuary Alternative.

Table 5.3 Construction Equipment and Deliveries for Estuary and Hybrid Alternative Elements

Construction Activity	Equipment	Quantity
Deschutes Parkway Realignment and New 5th Avenue Bridge	Material delivery trucks	up to 40
	Dozer	1
	Grader	up to 2
	Excavator	1
	Land based crane	1
	Concrete trucks	up to 2
	Paver	1
	Miscellaneous support vehicles	up to 4
	Concrete saw	1
	Jackhammer	1
	Excavator	1
5th Avenue Dam Removal	Pile driving crane	1
	Material delivery and haul-off trucks	up to 4
	Miscellaneous support vehicles	up to 4
	Concrete saw	up to 2
	Excavator mounted jackhammer	up to 2
	Blasting equipment	varies
	Excavator	up to 2

Similar to mobilization of equipment described for elements common to all alternatives, this additional equipment would be hauled by truck to and from the site over several days. It is expected to generate fewer than 5 trips per hour, primarily occurring during off-peak times of day, and the small amount of delay added by these truck trips would not change the overall levels of service. Therefore, the impact on vehicle operations related to construction equipment mobilization for activities summarized in Table 5.3 is considered **less-than-significant.**

5.5.1.2 Truck Trips Generated by Initial Export of Dredged Material

Table 5.4 summarizes the estimated export quantities and associated truck trips that would be generated by initial dredging with the Estuary Alternative. This activity is expected to generate an average of 1 truck trip per hour, during the period in which dredging occurs. These trips may be noticeable to nearby residents and businesses, but are expected to add a negligible amount of average delay at intersections along the truck haul routes, and would not change overall level of service. Therefore, the impact on vehicle operations related to truck trips generated by the initial export of dredged material is considered **less-than-significant.**

Table 5.4 Truck Trips Generated by Spoils Export for the Estuary Alternative Initial Dredging

	Dredging Activity
Export Volume [1]	13,000 cubic yards
Estimated Total Truck Loads [2]	813 truck loads
Estimated Duration of Activity	65 weeks
Estimated Average Truck Trips [3]	
per week	25 trips
per day	6 trips
per hour	1 trip

1. The Estuary Alternative would have a lower volume of dredged material hauled offsite than the Hybrid Alternative, because more habitat would be built without addition of the reflecting pool.
2. Assumes 25% expansion factor and an average truck capacity of 20 cubic yards.
3. Includes inbound (empty) trucks and outbound (full) trucks

5.5.1.3 Truck Trips Generated by 5th Avenue Bridge/Dam Demolition

Demolition of the 5th Avenue Bridge/ Dam is expected to generate 30 truckloads of material that would be hauled from the site, over one day. This activity is expected to generate an average of 7 to 8 truck trips per hour (including inbound empty trucks and outbound full trucks). These trips may be noticeable to nearby residents and businesses, and may cause very small increases in average delay at intersections along the truck haul routes. However, as described previously, peak hour traffic operations along the potential truck haul routes is expected to be LOS C or better even with future background traffic growth, and the small amount of delay added by these truck trips would not change these overall levels of service. Therefore, the impact on vehicle operations related to trucks generated during the 5th Avenue Dam demolition is considered **less-than-significant.**

5.5.2 Impacts from Operation

The additional operational impacts of the Estuary Alternative on Transportation would be those associated with provision of a new 5th Avenue Bridge, and vehicle operational impacts associated with maintenance dredging activities.

5.5.2.1 New 5th Avenue Bridge

The new 5th Avenue Bridge would have the same configuration as the existing bridge, and would be constructed in accordance with state and city design standards (WSDOT 2019a and 2019b; City of Olympia 2018). It therefore would have no effect on vehicular traffic operations as compared to the No Action and Managed Lake Alternatives that would retain the existing bridge. However, replacement of the bridge is considered to provide a **substantial transportation benefit** because it would extend the design life of a major element of Olympia's transportation network and reduce overall maintenance needs related to the bridge.

5.5.2.2 Truck Trips Generated by Maintenance Dredging

For the Estuary Alternative, maintenance dredging would be required about every 6 years. Table 5.5 summarizes the estimated quantities per maintenance year, through Year 30 after project completion. As shown, the dredged volume would alternate between higher and lower volumes each time that maintenance dredging would be needed. For the higher volume years (Year 12 and 24), dredging would occur in multiple areas. The ranges of activity duration and trip estimates for these years reflect the differences depending on whether the various areas would be dredged concurrently or consecutively, which is not yet known.

The table summarizes the estimated trips that would be generated with the Estuary Alternative if all dredged material were to be hauled from the site by truck. Although dredged quantities in any given year would be lower than those for the Managed Lake Alternative, the duration of dredging activity would also be lower. The resulting truck trips could be higher or lower than Managed Lake, depending on the total volume dredged that year and whether different areas are dredged concurrently or consecutively, but truck volumes would be expected to degrade traffic operations during at least some portion of the activity period. To haul dredged material entirely by rail would require 3 to 19 train trips per day, depending on the level of activity, which may be more than could be supported with the available rail infrastructure and would degrade vehicle traffic operations at the at-grade rail crossings. Therefore, similar to the Managed Lake Alternative, if all dredged material were hauled by truck, rail, or a combination of both, it is likely that traffic operations at some intersections would degrade to LOS F during some times of the day. In this case, the impact on traffic operations is expected to be **significant.**

With the Estuary Alternative, removal of the 5th Avenue Dam would offer opportunity for the dredged material to be hauled away from the site by barge for offloading for upland disposal, either instead of or in combination with hauling by truck and/or rail. Barge traffic for hauling dredged material was estimated based on the maximum weight that a 54-foot by 250-foot deck barge could carry. The published load capacity of 2,985 tons (Heartland Barge 2020) was divided by an assumed sediment weight of

3,000 pounds per cubic yard, resulting in an estimated capacity of about 1,990 cubic yards per barge. To haul dredged material entirely by barges of this size would require 1 to 3 barges per day, depending on the level of activity. Impacts to surface transportation could be eliminated or reduced to **less-than-significant** levels if some or all of dredged material is hauled by barge.

Table 5.5 Truck Trips Generated by Maintenance Dredging for the Estuary Alternative

	Maintenance Dredging Year Year 6, 18, 30	Maintenance Dredging Year Year 12	Maintenance Dredging Year Year 24
Export Volume	21,600 cubic yards	285,000 cubic yards	350,400 cubic yards
Estimated Duration of Activity [1]	2 months	9 to 12 months	9 to 14 months
Estimated Total Truck Loads [2]	1,350 truck loads	17,820 truck loads	21,910 truck loads
Estimated Average Truck Trips [3,4]			
per week	550 trips	550 to 2,000 trips	550 to 3,350 trips
per day	110 trips	110 to 400 trips	110 to 670 trips
per hour	14 trips	14 to 50 trips	14 to 84 trips
Feasibility of Hauling by Rail		Feasible	
Feasibility of Hauling by Barge		Feasible	

1. Range reflects the difference of whether different areas would be dredged concurrently (reflecting minimum duration) or consecutively (reflecting maximum duration).
2. Assumes 25% expansion factor and an average truck capacity of 20 cubic yards.
3. Includes inbound (empty) trucks and outbound (full) trucks.
4. Range reflects the difference of whether different areas would be dredged concurrently (reflecting the maximum number of truck trips) or consecutively (reflecting the minimum number of truck trips).

5.6 HYBRID ALTERNATIVE

5.6.1 Impacts from Construction

In addition to impacts identified for the Estuary Alternative, construction impacts of the Hybrid Alternative on Transportation would primarily be associated with truck trips generated by construction of additional elements associated with this alternative (Reflecting Pool Barrier Wall), and truck trips generated by initial export of dredged material.

5.6.1.1 Truck Trips Generated by Equipment Mobilization and Deliveries

Table 5.6 summarizes the equipment that would be needed to construct the additional major elements of the Hybrid Alternative. Similar to mobilization of equipment described for the Managed Lake and Estuary Alternative, this additional equipment would be hauled by truck to and from the site over several days. It is expected to generate fewer than 5 trips per hour, primarily occurring during off-peak times of day, and the small amount of delay added by these truck trips would not change the overall

levels of service. Therefore, the impact on vehicle operations related to construction equipment mobilization is considered **less-than-significant**.

Table 5.6 Construction Equipment and Deliveries for Hybrid Alternative Only

Construction Activity	Equipment	Quantity
Reflecting Pool Barrier	Barge	up to 4
	Vibratory hammer	1
	Impact hammer	1
	Crane barge rig (up to 2)	up to 2
	Small work boats	up to 4

5.6.1.2 Truck Trips Generated by Initial Export of Dredged Material

Table 5.7 summarizes the estimated export quantities and associated truck trips that would be generated by initial dredging with the Hybrid Alternative. The export volume for the Hybrid Alternative would be higher than the volume for the Estuary Alternative because with the addition of the reflecting pool, less habitat would be built. This activity is expected to generate an average of 5 truck trips per hour, during the period in which dredging occurs. These trips may be noticeable to nearby residents and businesses, but are expected to add a very small amount of average delay at intersections along the truck haul routes, and would not change overall levels of service. Therefore, the impact on vehicle operations related to truck trips generated by the initial export of dredged material is considered **less-than-significant**.

Table 5.7 Truck Trips Generated by Initial Export of Dredged Material for the Hybrid Alternative

	Dredging Activity
Export Volume [1]	98,000 cubic yards
Estimated Total Truck Loads [2]	6,125 truck loads
Estimated Duration of Activity	65 weeks
Estimated Average Truck Trips [3]	
per week	190
per day	40
per hour	5

1. The Hybrid Alternative would have a higher volume of dredged material hauled offsite than the Estuary Alternative, because with addition of the reflecting pool, less habitat would be built.
2. Assumes 25% expansion factor and an average truck capacity of 20 cubic yards.
3. Includes inbound (empty) trucks and outbound (full) trucks

5.6.2 Impacts from Operation

The operational impacts of the Hybrid Alternative on Transportation would be similar to those of the Estuary Alternative, associated with provision of a new 5th Avenue Bridge, and vehicle operational impacts associated with maintenance dredging activities.

5.6.2.1 New 5th Avenue Bridge

The new 5th Avenue Bridge with the Hybrid Alternative would be the same as that described for the Estuary Alternative, and is considered to provide a **substantial transportation benefit**.

5.6.2.2 Truck Trips Generated by Maintenance Dredging

For the Hybrid Alternative, maintenance dredging in West Bay would be required about every 5 years. Table 5.8 summarizes the estimated quantities per maintenance year, through Year 30 after the project would be completed. Although maintenance dredging is expected to occur on an approximate 5-year cycle instead of the approximate 6-year cycle identified for the Estuary Alternative, the alternating dredged volumes would be similar. The resulting truck or train trips would also be similar. Similar to the other alternatives, if all dredged material were hauled by truck, rail, or a combination of both, it is likely that traffic operations at some intersections would degrade to LOS F during some times of the day and the impact on traffic operations is expected to be **significant.**

Table 5.8 Truck Trips Generated by Maintenance Dredging for the Hybrid Alternative

	Maintenance Dredging Year Year 5, 15, 25	Maintenance Dredging Year Year 10, 30	Maintenance Dredging Year Year 20
Export Volume	21,600 cubic yards	285,000 cubic yards	350,400 cubic yards
Estimated Duration of Activity [1]	2 months	9 to 12 months	9 to 14 months
Estimated Total Truck Loads [2]	1,350 truck loads	17,820 truck loads	21,910 truck loads
Estimated Average Truck Trips [3,4]			
per week	550 trips	550 to 2,000 trips	550 to 3,350 trips
per day	110 trips	110 to 400 trips	110 to 670 trips
per hour	14 trips	14 to 50 trips	14 to 84 trips
Feasibility of Hauling by Rail		Feasible	
Feasibility of Hauling by Barge		Feasible	

1. Range reflects the difference of whether different areas would be dredged concurrently (reflecting minimum duration) or consecutively (reflecting maximum duration).
2. Assumes 25% expansion factor and an average truck capacity of 20 cubic yards.
3. Includes inbound (empty) trucks and outbound (full) trucks.
4. Range reflects the difference of whether different areas would be dredged concurrently (reflecting the maximum number of truck trips) or consecutively (reflecting the minimum number of truck trips).

The Hybrid Alternative is similar to the Estuary Alternative in that removal of the 5th Avenue Dam would offer opportunity for the dredged material to be hauled away from the site by barge for offloading for upland disposal, either instead of or in combination with hauling by truck and/or rail. To haul dredged material entirely by barge would require 1 to 3 barges per day, depending on the level of activity. Impacts to surface transportation could be eliminated or reduced to **less-than-significant** levels if some or all of dredged material is hauled by barge.

5.7 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

5.7.1 Measures Common to All Action Alternatives

A number of project design features that would provide transportation benefits have been incorporated into the project, including provision of a new pedestrian bridge and new boardwalks with all alternatives, and replacement of the 5th Avenue Bridge with the Estuary or Hybrid Alternatives. Additional measures to address adverse impacts are presented in the following sections.

5.7.1.1 Construction

All action alternatives include the following commitments to manage vehicular and non-motorized transportation during project construction.

- **Construction Transportation Management Plan (CTMP) and Traffic Control Plan.** Develop a CTMP that includes a Traffic Control Plan in accordance with City requirements. Section 3.130 of the *Engineering Design and Development Standards* (City of Olympia 2018) specifies that the contractor will be responsible for interim traffic control during construction on or along traveled roadways. The CTMP would also establish the vehicular and non-motorized detours during the period that the 5th Avenue Bridge would be closed, and determine traffic control measures to be implemented along the detour route, and potentially along other alternative routes that could experience traffic increases. Traffic control would follow the guidelines of the WSDOT Standard Specifications (WSDOT 2019b). All barricades, signs, coning, and flagging should conform to the requirements of the *Manual on Uniform Traffic Control Devices* (FHWA 2009). In addition to the standard requirements, the CTMP would detail truck haul routes and the parking plan for construction workers. Haul routes would utilize streets designated as truck routes to the greatest extent possible and would be established in coordination with the Cities of Olympia and Tumwater. The CTMP and Traffic Control Plan would be submitted to and approved by the City (or Cities) with jurisdiction prior to the start of construction.
- **Pavement Restoration.** After completion of construction activities, any pavement damaged or degraded by construction-generated trucks would be restored to pre-construction condition or better.

The following additional mitigation measures have been identified for all action alternatives.

- **Construction Trip Restrictions.** Avoid creating additional delay at intersections by restricting construction trips during the commuter peak periods when traffic volumes on the street system would be highest. The CTMP measures could vary based on seasonal fluctuations in traffic and parking patterns as appropriate.
- **Construction Vehicle Parking.** Provide adequate off-street parking areas at designated staging areas for construction-related vehicles. Prohibit construction employee parking in nearby residential neighborhoods, the Capitol Campus, and on downtown streets with either unrestricted or metered parking.
- **Use of Rail for Hauling Materials to or from Project Site.** If rail is utilized to haul materials to or from the project site, truck trips would be reduced. Depending on the train volumes that would be generated, measures may need to be included in the CTMP to manage traffic at at-grade railroad crossings (e.g. use of flaggers or temporary signals).

The following measures are identified to address the transportation impact of closure of the 5th Avenue Bridge during construction:

- **Traffic Detour**. In coordination with the City of Olympia, identify detours for vehicular, transit, bicycle, and pedestrian traffic during the period that the 5th Avenue Bridge would be removed and reconstructed. It is expected that the signed detour for all transportation modes during this period would utilize the 4th Avenue Bridge and new connection to Deschutes Parkway SW, as it includes sidewalk, bike lanes, and vehicle travel lanes in both directions. Signage and traffic control would be established according to federal and local standards in the CTMP as described previously. For the Managed Lake Alternative, this would require construction of a temporary connection between 4th Avenue W and Deschutes Parkway SW to be used during the period that the 5th Avenue Bridge would be closed.
- **Bus Route Detours.** Coordinate with Intercity Transit to reroute the buses that would be displaced from the 5th Avenue Bridge during construction (currently Routes 12 and 42). It is expected that buses would be rerouted over the 4th Avenue Bridge, resuming their regular routes on Deschutes Parking by utilizing the new connection that would be provided with the project. Bus stops closed on 5th Avenue should direct riders to the 4th Avenue stops, about 300 to 500 feet away. For the Managed Lake Alternative, this would require construction of a temporary connection between 4th Avenue W and Deschutes Parkway SW to be used during the period that the 5th Avenue Bridge would be closed.
- **Public Communication Strategy.** Develop and implement a public communication strategy that would give ample advance notice to residents and employees of the impending bridge closure; provision of adequate notice is expected to result in some level of reduction of overall traffic volumes across the waterway (e.g. some people would change work commute and/or travel habits to avoid using the bridge during peak hours during the period the detour is in place).

- **Prioritize Construction of New 5th Avenue Pedestrian Bridge.** Construct the new pedestrian bridge prior to closure of the existing 5th Avenue Bridge. While the 4th Avenue Bridge has adequate facilities to accommodate people walking and biking, elevation differences between 4th Avenue and Deschutes Parkway may present challenges in providing a connection that would meet Americans with Disabilities Act (ADA) standards. In addition to improving pedestrian access and mobility overall, construction of the new pedestrian bridge could also provide a more accessible non-motorized crossing of the waterway. Alternatively, construction of a temporary trail trestle could be considered in order to maintain the trail loop connecting Heritage Park and Deschutes Parkway during the time the 5th Avenue Bridge is closed and prior to construction of the new pedestrian bridge. In addition to maintaining non-motorized connections, completion of the pedestrian bridge could help encourage walking and biking as an alternative to driving across the waterway, helping to reduce vehicle volumes while the detour is in place.

5.7.1.2 Operation

No long-term transportation mitigation measures would be needed for any of the alternatives, except to address traffic impacts resulting from maintenance dredging. The following measure would reduce traffic impacts during maintenance dredging, if dredged material would be transported by truck or rail.

- **CTMP for Maintenance Dredging.** Prior to maintenance dredging, develop a CTMP that describes the mode of transport selected to move dredged material. If dredged material is to be transported entirely or in part by truck, provide detail related to truck haul routes, truck volumes, time of day restrictions, and traffic control plans for truck loading areas. If dredged material is to be transported by rail, provide detail related to rail volumes and times of day when at-grade rail crossings may be affected, and measures to manage at-grade rail crossings if needed.

5.7.2 Measures Specific to Each Action Alternative

5.7.2.1 Managed Lake Alternative

Construction

No additional transportation mitigation would be needed during construction of the Managed Lake Alternative.

Operation

No additional mitigation would be needed to address long-term transportation impacts of the Managed Lake Alternative.

5.7.2.2 Estuary Alternative

Construction

No additional transportation mitigation would be needed during construction of the Estuary Alternative.

Operation

The following additional mitigation is identified to address long-term transportation impacts of the Estuary Alternative.

- **Use of Barge for to Support Maintenance Dredging.** Use of barge to haul some or all of the dredged material away from the site would reduce or eliminate truck or rail trips and their associated traffic impacts.

5.7.2.3 Hybrid

Construction

No additional transportation mitigation would be needed during construction of the Hybrid Alternative.

Operation

Additional mitigation measure needed to address long-term transportation impacts of the Hybrid Alternative would be the same as that described for the Estuary Alternative.

5.7.3 Significant Unavoidable Adverse Impacts

Although mitigation measures described in this report would avoid or minimize all adverse traffic impacts identified for construction and long-term operation of the three action alternatives, the following impacts would still be considered **significant and unavoidable.**

- During periods when the 5th Avenue Bridge would be closed and a 4th Avenue detour in place, traffic increases along the detour route could still result in congested operations during some periods of peak traffic demand, resulting in a significant unavoidable impact during the times that it occurred.
- For the Managed Lake Alternative, if closure of the 5th Avenue Bridge is needed during some or all of the period jet grouting occurs, and a temporary connection between 4th Avenue W and Deschutes Parkway is not constructed, all detoured vehicles and buses would be required to use the routes around the south end of the Middle Basin. This would substantially increase travel time between the east and west sides of the waterway during all times of day and likely degrade operations along the detour routes to LOS F during peak times of day, resulting in significant unavoidable impacts to traffic operations and transit service.
- During the periods of future maintenance dredging for the three action alternatives, hauling of dredged material by truck, rail, or a combination of truck and rail could result in congested operations during some periods of peak traffic demand, resulting in a significant traffic impact. Since barge would not be an option for the Managed Lake Alternative, this would be a significant unavoidable impact. For the Estuary or Hybrid Alternative, this impact could be avoided through use of barges to haul dredged material, so this impact

would only be significant unavoidable if use of barge is found to be infeasible at the time that the dredging is needed.

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