DOWNTOWN REDMOND LINK EXTENSION

2018 SEPA Addendum to the East Link Project Final Environmental Impact Statement

SOUNDTRANSIT

AUGUST 2018

Downtown Redmond Link Extension
SEPA Addendum to the 2011 East Link Project Final Environmental Impact Statement

Prepared pursuant to the Washington State Environmental Policy Act Chapter 43.21C RCW and WAC 197-11-625

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ES.1 Introduction

The Downtown Redmond Link Extension was formerly known as Segment E of the East Link Project. It extends light rail from the East Link interim terminus at the Redmond Technology Center Station (formerly called the Overlake Transit Center Station) to downtown Redmond and includes two new stations.

In 2011, Sound Transit and the Federal Transit Administration (FTA) issued the East Link Light Rail Transit Project Final Environmental Impact Statement (Final EIS) (FTA et al. 2011). After completion of the Final EIS, the Sound Transit Board selected Marymoor Alternative E2 as the project to be built within Segment E. FTA and the Federal Highway Administration (FHWA) each issued a Record of Decision (ROD) (FTA 2011; FHWA 2011). State Environmental Policy Act (SEPA) Addenda and National Environmental Policy Act (NEPA) Re-evaluations to the Final EIS were issued in 2013, 2016, and 2017, respectively; these documents did not change the selected Marymoor Alternative E2 in Segment E (referred to hereafter as the 2011 Project). This SEPA Addendum describes the project background, development of project refinements, and changes in the affected environment since 2011, and also evaluates changes in potential impacts and mitigation measures with the proposed refinements.

ES.2 Proposed Design Refinements

Funding for the Downtown Redmond Link Extension is included in the Sound Transit 3 Plan, approved by voters in 2016. In June 2017, the Sound Transit Board directed Sound Transit staff to advance design and environmental analysis of proposed refinements to the 2011 Project alignment. These modifications are referred to as the Proposed Design Refinements.

The Proposed Design Refinements would extend light rail for 3.4 miles from the East Link interim terminus at NE 40th Street, just past the Redmond Technology Center Station, and terminate just east of 164th Avenue NE. This would be about 0.3 mile shorter compared to the 2011 Project. The Proposed Design Refinements include two stations: an at-grade SE Redmond Station and an elevated Downtown Redmond Station. The proposed refinements in the corridor are described in three geographic sections: Redmond Technology Center Station to Sammamish River, Sammamish River to Bear Creek, and Bear Creek to Downtown Redmond.

Redmond Technology Center Station to Sammamish River

In the section between the Redmond Technology Center Station and the Sammamish River, the light rail route runs parallel to the east side of State Route (SR) 520 north from the Redmond Technology Center at NE 40th Street to the Sammamish River. Between NE 40th Street and NE 51st Street, the Proposed Design Refinements shift the 2011 Project alignment up to 20 feet away from SR 520 to maximize available WSDOT right-of-way and limit impacts on the adjacent property. The refinements also shift the alignment up to 25 feet south of NE 60th Street and up to 30 feet near the West Lake Sammamish Parkway NE eastbound off-ramp.

Sammamish River to Bear Creek

From the Sammamish River to the SE Redmond Station, the Proposed Design Refinements alignment is similar to the 2011 Project. The alignment would be elevated over the Sammamish River and transition to retained fill as it crosses Marymoor Park to the at-grade SE Redmond Station. The SE Redmond Station location and profile is the same as the 2011 Project. From the station, the refined alignment

would then cross at-grade underneath SR 520. The SR 520 eastbound off-ramp and westbound on-ramp would be reconfigured over the guideway. The intersection of SR 202 (Redmond Way) with NE 76th Street and the westbound SR 520 on-ramp would also be raised. As with the 2011 Project, the Proposed Design Refinements would rise to cross Bear Creek on a new bridge. The Proposed Design Refinements also would accommodate an at-grade trail connection between the East Lake Sammamish Trail and Redmond Central Connector Trail with a bridge over Bear Creek, which may be constructed by Sound Transit as part of the project with funding provided by King County, or funded and constructed by King County at a later time. This trail connection is a missing segment of the East Lake Sammamish Trail, and the Proposed Design Refinements' raising of the SR 520 ramps makes this at-grade connection possible. The Bear Creek channel and its floodplain would be regraded and broadened to remove some past fill and constrictions in the floodplain from the existing bridge, which is no longer in use and would be removed. These improvements to the Bear Creek channel were not included in the 2011 Project.

Bear Creek to Downtown Redmond

Between Bear Creek and downtown Redmond, the Proposed Design Refinements change the profile and station location compared to the 2011 Project. The Proposed Design Refinements include an elevated profile and slightly shift the alignment within the former BNSF rail corridor to better accommodate the Redmond Central Connector Trail. The location of the Proposed Design Refinements terminus and tail track are several blocks eastward, shortening the alignment, and the elevated Downtown Redmond Station spans 166th Avenue NE.

ES.3 Summary of Impacts and Mitigation

Table ES-1 compares impacts for the full-length East Link Project selected by the Sound Transit Board, including the 2011 Project in Segment E, to the full-length East Link Project with the Proposed Design Refinements for key elements. The table also shows the range of impacts evaluated for the full-length East Link Project from Seattle to Redmond documented in the Final EIS and the 2013, 2016, and 2017 addenda and re-evaluations to the Final EIS. Table ES-1 illustrates that the potential impacts with the Proposed Design Refinements are within the range of impacts evaluated for alternatives in the Final EIS and subsequent addenda.

Table ES-1. Summary of Changes between the Full-Length East Link Project and the Full-Length East Link Project with the Proposed Design Refinements

Element of the Environment	Impact Category	Full-Length East Link Project[1]	Full-Length East Link Project with Proposed Design Refinements[2]	Impact Range from All Alternatives in the Final EIS and Subsequent Addenda[1]	
				Low Range	High Range
Transportation	Number of impacted intersections, PM peak period (after mitigation)	9 to 11 (0)	12 to 14 (0)[3]	9 (0)	20 (0)
	Transit operations	Beneficial impact on transit service	Increased beneficial impact on transit service. Elevated alignment in downtown Redmond would remove at-grade conflicts, improving light rail transit travel times and reliability.	All alternatives evaluated resulted in a beneficial impact on transit service.	All alternatives evaluated resulted in a beneficial impact on transit service.
Acquisitions, Displacements, and Relocations	Business displacements	61 to 90	61 to 91	54	156
	Residential displacements	62 to 64	62 to 65	2	242

Table ES-1. Summary of Changes between the Full-Length East Link Project and the Full-Length East Link Project with Proposed Design Refinements (continued)

Element of the Environment	Impact Category	Full-Length East Link Project[1]	Full-Length East Link Project with Proposed Design Refinements[2]	Impact Range from All Alternatives in the Final EIS and Subsequent Addenda[1]	
				Low Range	High Range
Visual and Aesthetics Resources	Number of instances where visual quality may be decreased	2	2	0	5
Noise and Vibration	Light rail noise impacts (after mitigation)	391 to 397 (0)	247 to 262 (0)	203 (0)	943 (0)
	Vibration impacts (after mitigation)	4 to 14 (2)	6 to 16[4] (1)	3 (0)	14 (1)
	Groundborne noise impacts (after mitigation)	27 to 28 (0)	32 to 33 (0)	25 (0)	36 (0)
Ecosystem Resources	Permanent wetland impact[5] (acre)	1.0	2.6	0.3	2.6
	Stream Crossings	6 to 8	7 to 9[6]	3	8
Historic and Archaeological Sites	Potential to affect historic properties (number)	1	1	0	3
Parklands	Permanent impact (acre)	6.3 to 6.9	6.3 to 7.0	1.3	7.0
	Temporary impact (acre)	7.9	8.25	2.0	14.1

[1] The full-length East Link Project includes the 2011 Final EIS alternatives A1, B2M, C9T, D2A, and E2. The full-length East Link Project includes changes addressed in the 2013, 2016, and 2017 addenda and re-evaluations. The 2013 East Link SEPA Addendum included a revised noise analysis to address new residential construction and the need to remove and replace existing traffic sound walls in Segment E. This is the only change to the impact analysis for Segment E since the Final EIS.

[2] East Link Project Segments A – D (alternatives A1, B2M, C9T, and D2A) with the Proposed Design Refinements in Segment E.

[3] Final mitigation for traffic impacts, including additional localized measures for degraded intersection operations remaining after mitigation, would be determined in conjunction with the City of Redmond. The City has agreed that the additional intersection impact on Redmond Way and NE 70th Street would be considered acceptable given the future additional network improvements to be implemented as part of the Marymoor Subarea Plan.

[4] Additional information about the alignment and potential impacts is now known. Compared to Marymoor Alternative E2, the Proposed Design Refinements would affect two additional residential receptors between Microsoft and Marymoor Park, which would be mitigated.

[5] 2011 Project wetland impacts are based on reconnaissance-level wetland assessment, whereas wetland impacts for Proposed Design Refinements are based on full wetland delineations.

[6] One unnamed tributary to the Sammamish River was not identified in the Final EIS but would have been crossed by all of the alternatives in Segment E.

ES.4 Conclusions

Changes in impacts from the Proposed Design Refinements are of similar magnitude to the impacts identified for the 2011 Project and other alternatives evaluated in the Final EIS. Impacts with the Proposed Design Refinements would be within the range of impacts identified for the alternatives considered in the Final EIS and subsequent addenda and re-evaluations (2013, 2016, and 2017) and can be mitigated. The Proposed Design Refinements do not substantially change the analysis of significant impacts evaluated in the Final EIS and addenda. No new significant adverse environmental impacts would arise and a supplemental EIS is not warranted.

After considering this Addendum, the Sound Transit Board is expected to decide in fall 2018 whether to revise the 2011 Project design to include some or all of the Proposed Design Refinements.

1 PROJECT BACKGROUND

The 2011 East Link Light Rail Transit Project Final Environmental Impact Statement (Final EIS) evaluated approximately 18 miles of light rail, and the study area was divided into five segments (Figure 1-1). Segment E included the Redmond portion of the study area from Redmond Technology Center Station (formerly called the Overlake Transit Center Station) to downtown Redmond. Three build alternatives, in addition to the No Build Alternative, were considered in Segment E, as well as four station locations.

The Final EIS and Record of Decision (ROD) identified the Marymoor Alternative E2 as the Preferred Alternative in Segment E (FTA et al. 2011; FTA 2011; FHWA 2011). The Sound Transit Board selected the Marymoor Alternative E2 (referred to hereafter as the 2011 Project) to be built as part of the full-length East Link Project, although at the time Segment E was not funded for construction and operation. Both the Final EIS and the ROD note that the Sound Transit 2 (ST2) Plan does not provide sufficient funding for Segment E; therefore, the Redmond Technology Center Station was selected as the interim terminus. In 2011, Sound Transit deferred further work on an extension to the downtown Redmond terminus until funding became available.

Preliminary engineering to extend light rail from the Redmond Technology Center Station to downtown Redmond resumed in 2016 and funding for constructing this extension was approved by voters in the Sound Transit 3 (ST3) Plan. As part of the ST3 Plan, the Sound Transit Board identified 2024 as the start of operation, 1 year after East Link begins operating to the interim terminus at the Redmond Technology Center Station. The Segment E portion of the East Link Project was also renamed the Downtown Redmond Link Extension.

State Environmental Policy Act (SEPA) Addenda and National Environmental Policy Act (NEPA) Re-evaluations to the Final EIS were issued in 2013, 2016, and 2017, respectively, and did not change the selected alternative in Segment E. The 2013 SEPA Addendum was the only document that included additional information in Segment E related to noise impacts along State Route (SR) 520 between NE 40th Street and West Lake Sammamish Parkway NE. Since the environmental analysis for the 2011 Project was completed for the Final EIS, project area conditions have changed and revisions to the project design have been proposed. As a result, Sound Transit is updating the environmental review for the 2011 Project to address these changes. This Addendum updates environmental information from the 2011 Project with the Proposed Design Refinements.

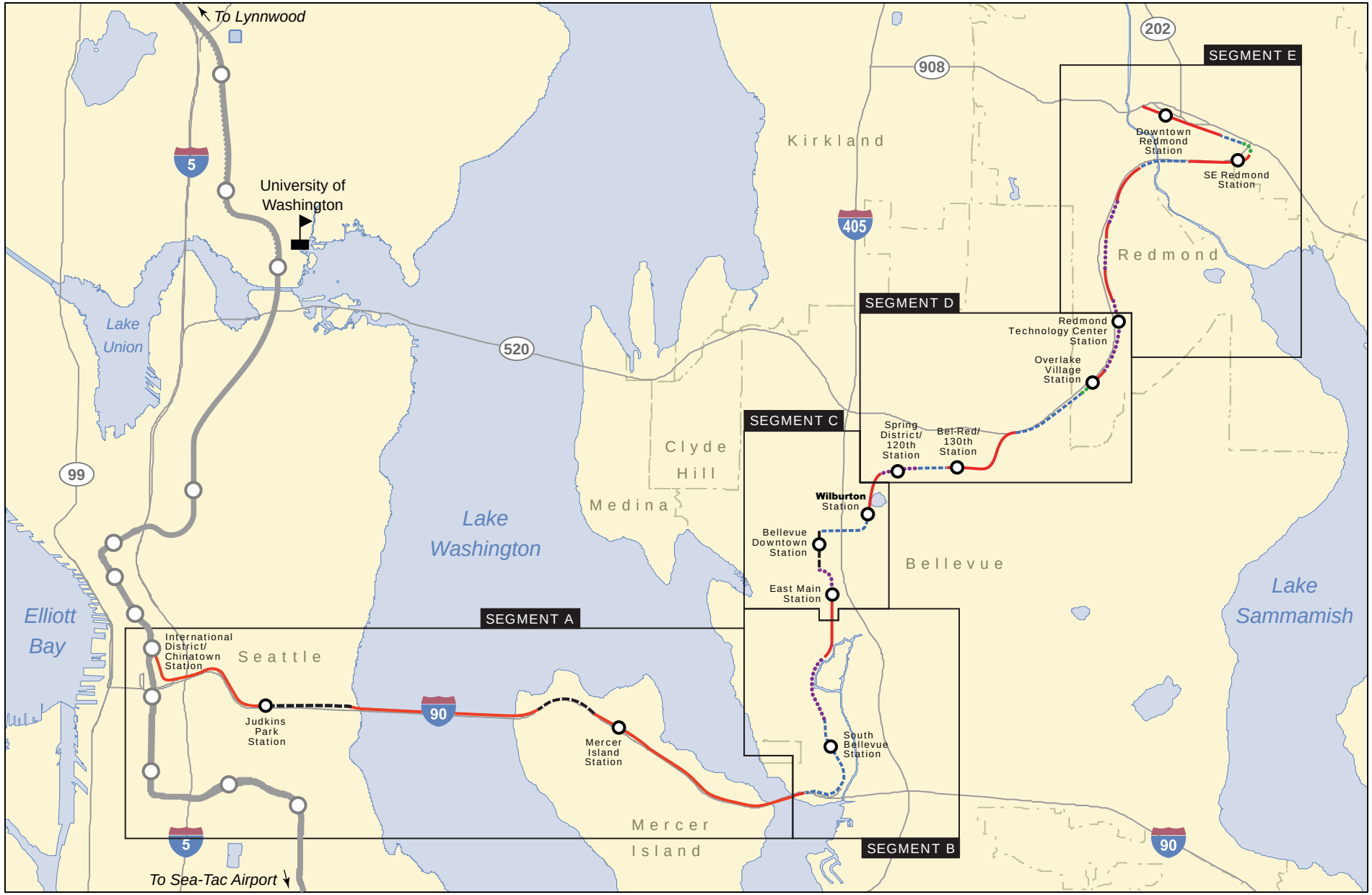


Figure 1-1
East Link Project

2 PROPOSED DESIGN REFINEMENTS AND OTHER CHANGES

The Sound Transit Board identified proposed refinements to the 2011 Project in June 2017. These modifications are referred to as the Proposed Design Refinements.

Since issuance of the Final EIS in 2011 and subsequent addenda, several conditions have changed including the passage of ST3, the adoption of King County's strategic transit plan METRO CONNECTS, amendments to the City of Redmond Comprehensive Plan and Zoning Code for the Marymoor Subarea, expansion of SR 520, construction of the Redmond Central Connector Trail, additional development in downtown Redmond, and updated population and employment forecasts for the region, including for Redmond and surrounding areas. All of these changes are evaluated, as appropriate, for the Proposed Design Refinements.

2.1 Proposed Design Refinements

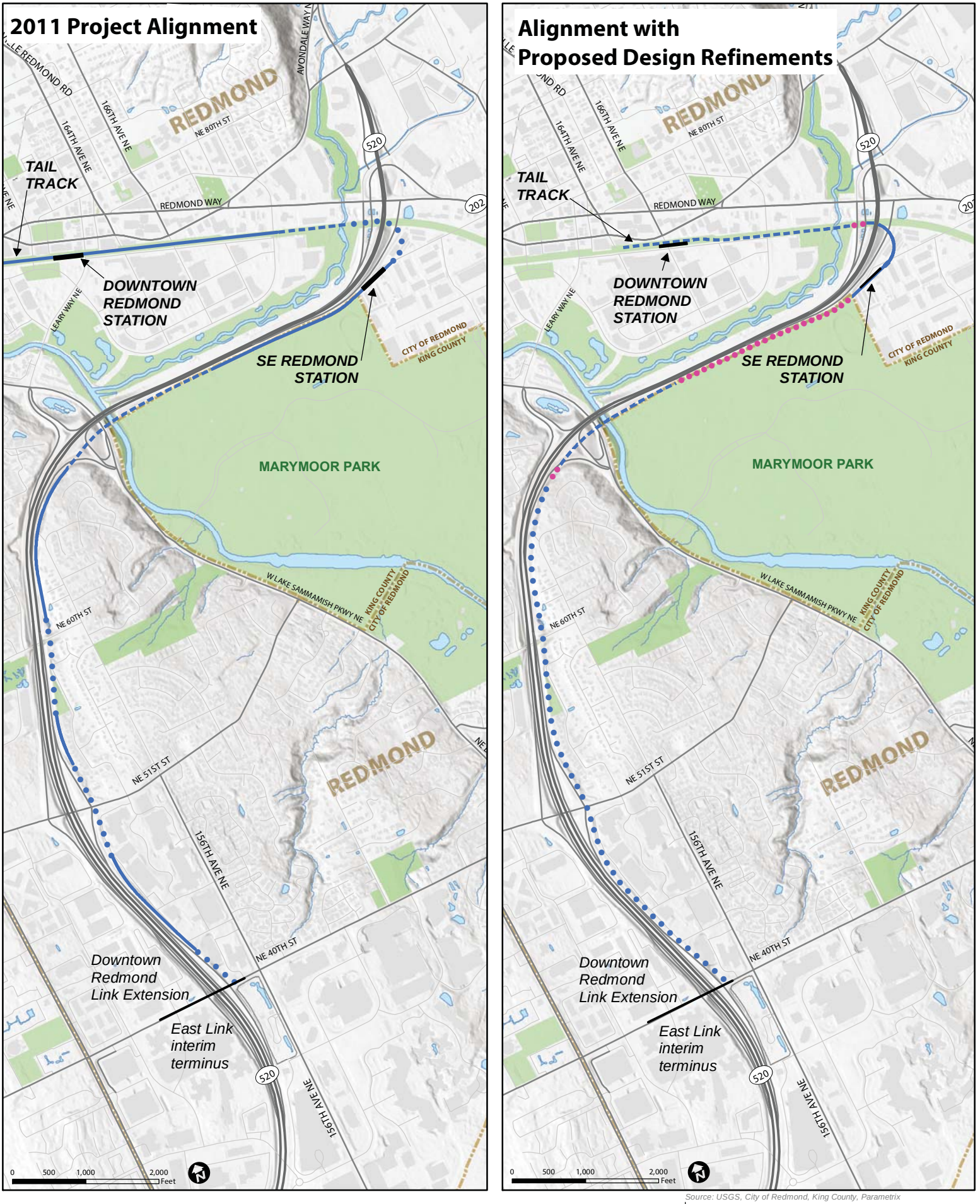
The Proposed Design Refinements start at the East Link interim terminus near NE 40th Street, just past the Redmond Technology Center Station (formerly called Overlake Transit Center Station), and terminate just east of 164th Avenue NE. The corridor is described in three geographic sections: Redmond Technology Center Station to Sammamish River, Sammamish River to Bear Creek, and Bear Creek to Downtown Redmond. The alignment is shown in Figure 2-1, and the sections are described below. Locations where the 2011 Project alignment has shifted are described in each section.

2.1.1 Redmond Technology Center Station to Sammamish River

In the section between the Redmond Technology Center Station and the Sammamish River, the light rail route runs parallel to the east side of SR 520. The alignment would generally be at-grade with SR 520 and use retained-cut sections to cut into the hillside and pass under existing overpasses at NE 40th Street, NE 51st Street, and NE 60th Street. As the alignment follows SR 520 and curves east, it transitions to an elevated structure crossing over the West Lake Sammamish Parkway NE interchange and the Sammamish River.

The alignment with the Proposed Design Refinements is similar to the 2011 Project, but it has been modified in several locations to minimize impacts on adjacent roadways and to accommodate the Washington State Department of Transportation (WSDOT) planned improvements (WSDOT 2013). Between NE 40th Street and NE 51st Street, the alignment has been shifted up to 20 feet away from SR 520 to maximize available WSDOT right-of-way and limit impacts on the adjacent property. The refined alignment has also been shifted up to 25 feet away from SR 520 south of NE 60th Street and up to 30 feet near the West Lake Sammamish Parkway NE eastbound off-ramp.

With the Proposed Design Refinements, a traction power substation (TPSS) would be located in the vicinity of SR 520 and NE 65th Street, whereas the TPSS in this area for the 2011 Project would be located under the elevated guideway near the West Lake Sammamish Parkway/SR 520 interchange.



Source: USGS, City of Redmond, King County, Parametrix

Figure 2-1
Alignment for the 2011 Project and Proposed Design Refinements
Downtown Redmond Link Extension

2.1.2 Sammamish River to Bear Creek

Between the Sammamish River and the SE Redmond Station, the Proposed Design Refinements are similar to the 2011 Project. The elevated guideway would be about 50 to 60 feet above the Sammamish River with the Proposed Design Refinements, which is approximately 15 to 20 feet lower than anticipated in the 2011 Project. The elevated guideway for the Proposed Design Refinements would match the height of the SR 520 bridge and would not have any columns within the ordinary high water mark of the river. The Proposed Design Refinements would transition from elevated to a retained-fill section as it crosses Marymoor Park, whereas the 2011 Project transitioned from elevated to at-grade across the park. In the Proposed Design Refinements, the retained-fill section would be between 5 and 14 feet higher than the current ground level and would provide grade separation from Marymoor Park facilities. Similar to the 2011 Project, the Proposed Design Refinements' alignment would transition to ground level as it enters the SE Redmond Station.

The major changes in this section are related to the City of Redmond's plans allowing the Marymoor Subarea to develop around the SE Redmond Station as a transit-oriented neighborhood with mixed-use developments, including a revised street network and new trail connections. Station facilities for both the 2011 Project and the Proposed Design Refinements include a 1,400-stall parking garage in the same location just east of the SR 520 eastbound off-ramp as well as circulation for transit, passenger pick-up and drop-off, and connections to trails in the area. The Proposed Design Refinements would rebuild NE 70th Street, currently a dead-end street, to serve the station and surrounding land uses and to connect to the southeast Redmond street system consistent with City of Redmond plans. The second TPSS would be located at the SE Redmond Station, whereas the 2011 Project placed the second TPSS in the vicinity of 166th Avenue NE in the rail corridor.

From the SE Redmond Station, the alignment is similar to the 2011 Project, turning to the northwest, but rather than descending into a cut to cross under SR 520 and its ramps, the Proposed Design Refinements would stay at-grade entering the former BNSF rail corridor. This refinement keeps the rail above flood elevation and allows a trail extension within the former BNSF rail corridor. To allow light rail to stay at-grade, the Proposed Design Refinements would reconstruct sections of the SR 520 eastbound off-ramp and westbound on-ramp, raising them to provide clearance for light rail and accommodate the extension of the East Lake Sammamish Trail. The modifications to the ramps would also require modifying the ramp intersections with SR 202 (Redmond Way) to meet WSDOT standards. A short section of NE 76th Street would also be modified to align with the reconstructed westbound on-ramp. The Proposed Design Refinements and the 2011 Project would both cross Bear Creek on a new bridge elevated about 3 to 6 feet over the channel. The trail extension from East Lake Sammamish to the Redmond Central Connector Trail would also bridge over Bear Creek, which may be constructed by Sound Transit as part of the project with funding provided by King County, or funded and constructed by King County at a later time. This trail connection is a missing segment of King County's East Lake Sammamish Trail, and the Proposed Design Refinements' raising of the SR 520 ramps makes this connection possible while avoiding at-grade crossings of the freeway ramps.

The Bear Creek channel and its floodplain would be regraded and broadened to remove some past fill and constrictions in the channel from the existing bridge, which is no longer in use and would be removed. These improvements to the Bear Creek channel would complement restoration efforts completed downstream since 2011 and allow for more flood water conveyance closer to the stream's natural configuration in this area. The improvements were not contemplated and therefore not analyzed for the 2011 Project. Figure 2-2 shows the current location of Bear Creek with the existing bridge and Figure 2-3 shows the proposed location and channel improvements for Bear Creek with the Proposed Design Refinements and trail crossing.

Existing Bear Creek bridge, facing southeast (Photographed on July 14, 2017)

To accommodate stormwater discharges, two new outfalls would be needed to convey stormwater from the guideway to the Sammamish River. One outfall would be located on each side of the river. Because of the early stage of design during preparation of the Final EIS, these outfalls were not previously anticipated; however, one or more outfalls would have been needed to discharge stormwater for the 2011 Project. In the SE Redmond Station vicinity, several new stormwater facilities would infiltrate runoff from the guideway. Some of the facilities may be open ponds, while others may be underground infiltration galleries (a type of drainage system) or other suitable methods.

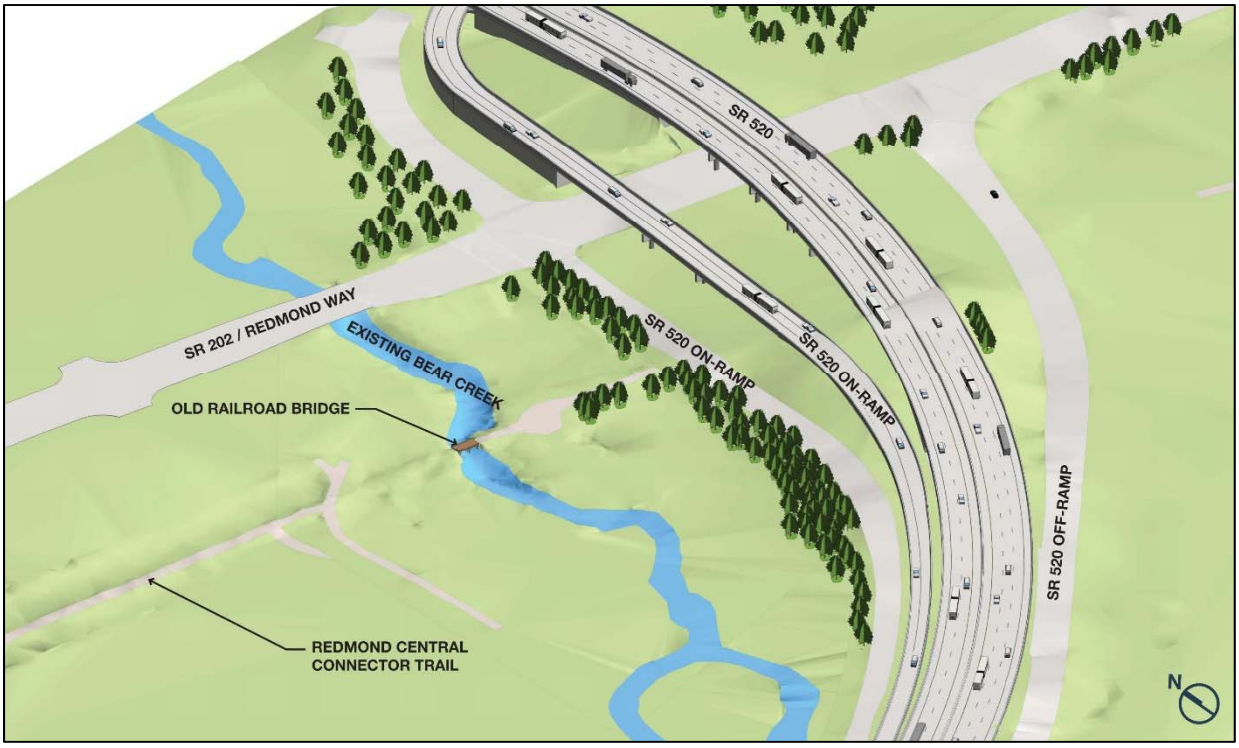


Figure 2-2. Existing Bear Creek Location and Bridge

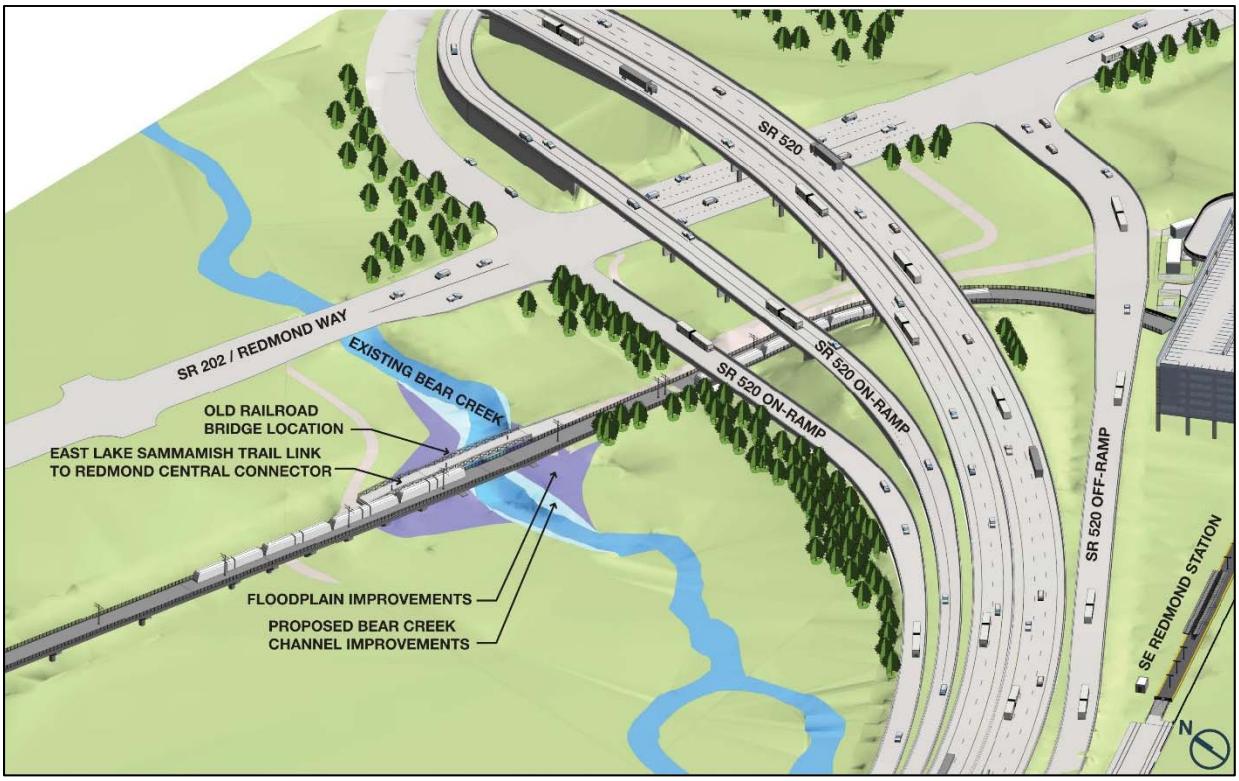


Figure 2-3. Bear Creek Location and Channel Improvements with the Proposed Design Refinements

2.1.3 Bear Creek to Downtown Redmond

In the section between Bear Creek and downtown Redmond, the Proposed Design Refinements have the same general alignment but with different features than the 2011 Project. After crossing over Bear Creek, the refined alignment would continue on an elevated structure, whereas the 2011 Project would return to grade. The refined alignment in downtown Redmond would shift slightly south of the 2011 Project alignment, and it would be shorter. The elevated Downtown Redmond Station and tail tracks would shift approximately 1,600 feet east compared to the 2011 Project. The Downtown Redmond Station would span 166th Avenue NE and remain in the existing rail corridor easement on the north side of NE 76th Street. Approximately 460 feet of tail tracks for train layover and turnback operations would continue west of the station, terminating just east of 164th Avenue NE. Crossover tracks would be located just west of 170th Avenue NE in downtown Redmond, whereas the 2011 Project previously located the crossover tracks west of the SE Redmond Station.

2.1.4 Operations and Maintenance

Since the 2011 Project was selected, system operations for Sound Transit have continued to develop. With the passage of ST3 in 2016, service levels in the design year of 2035 are now projected to improve the peak weekday train frequency to every 6 minutes, compared to every 7 minutes as described in the East Link Final EIS. In addition, train capacity is projected to improve with the use of 4-car trains compared to 3-car trains assumed in the Final EIS.

At the time the 2011 Project was selected, several locations for the Operations and Maintenance Facility (OMF) East were under consideration. Sound Transit selected the OMF East location in Bellevue in October 2015. Operating assumptions for the Proposed Design Refinements require approximately 10 additional light rail vehicles. The OMF East facility has been designed to provide the additional capacity needed for fleet and maintenance operations to support the expanded light rail service to downtown Redmond (FTA and Sound Transit 2015). Therefore, the Proposed Design Refinements do not include an operations and maintenance facility location.

2.2 Construction

The major construction activities are the same as described in Section 2.4 of the Final EIS. These include activities such as demolition, clearing and vegetation removal, fill, excavation, building retaining walls and elevated structures, and temporary road or lane closures. Construction is anticipated to occur between 2019 and 2024. As described in Final EIS Section 2.4.1, plans for construction sequence and activities will be developed during final design.

2.2.1 Staging Areas and Construction Easements

Construction easements and staging areas would be needed as described in Section 2.4.2 of the Final EIS. Construction staging would occur within the corridor throughout the length of the alignment. The primary staging areas would be along the edge of the WSDOT right-of-way between NE 40th and NE 65th Streets, the northwest corner of Marymoor Park while construction is taking place along the park boundary, the SE Redmond Station area, and along the Redmond Central Connector/NE 76th Street corridor when construction is taking place in downtown Redmond. Temporary construction easements would be needed along SR 520 in the WSDOT right-of-way, on commercial and residential properties from NE 40th Street to SR 202, along the length of Marymoor Park and the East Lake Sammamish Trail corridor from NE 70th Street to SR 520, and along the Redmond Central Connector and NE 76th Street. Portions of NE 76th Street may be closed temporarily. On the block adjacent to the Downtown Redmond Station, the NE 76th Street closure could last for an extended period but would be less than the entire construction timeframe.

3 CHANGES IN IMPACTS AND MITIGATION

In 2011, the Sound Transit Board selected the Marymoor Alternative E2 (2011 Project) to be built as part of the full-length East Link Project. Since the environmental analysis for the 2011 Project was completed for the Final EIS, project area conditions have changed and revisions to the project design have been proposed. As a result, Sound Transit is updating the environmental information for the 2011 Project with the Proposed Design Refinements. This chapter discusses the potential impacts, either adverse or beneficial, to environmental elements as a result of the Proposed Design Refinements. The discussion below of each environmental element and potential changes in impacts includes a description of changes to the affected environment and resources that have occurred since the Final EIS (as applicable), and summarizes environmental impacts and mitigation as a result of project operation and construction.

In addition, this chapter compares potential impacts of the Proposed Design Refinements to the potential impacts of the 2011 Project. Environmental elements with potential changes in impacts include transportation, acquisitions and displacements, land use and economics, visual resources, noise and vibration, ecosystems resources, water resources, utilities, historic and archaeological resources, parklands and open space, and Section 4(f) resources. The Proposed Design Refinements do not result in changes to impacts for social, energy, geology and soils, hazardous materials, electromagnetic fields, and public services; therefore, these environmental elements are not discussed further. The Puget Sound region is no longer classified as an air quality maintenance area; therefore, an air quality hotspot analysis is no longer required. The Proposed Design Refinements would not result in changes in air quality or an increase in greenhouse gas emissions, because the refinements would generate the same number of vehicle trips, and construction methods would remain the same as described in the Final EIS.

3.1 Transportation

This section summarizes changes to the transportation system since 2011, discusses potential impacts and mitigation for the Proposed Design Refinements, and compares impacts and mitigation for the Proposed Design Refinements with that of the 2011 Project. Appendix A, Transportation Technical Report Addendum, provides a more detailed discussion of the updated transportation analysis compared to the Final EIS.

The Baseline represents the transportation system and environment as they would exist without the 2011 Project. It provides a baseline condition for comparing traffic impacts of the Proposed Design Refinements. Since publication of the Final EIS, several conditions have changed that influenced development of the Baseline, including passage of the ST3 ballot measure, adoption of amendments to the City of Redmond Comprehensive Plan, adoption of METRO CONNECTS, adoption of the Redmond Transportation Master Plan, and adoption of the Marymoor Subarea Plan. The Baseline also includes roadway, intersection, and transit improvement projects under construction or planned based on approval and committed funding. Projects considered in the Baseline are detailed in Section 5.1 of Appendix A.

The Proposed Design Refinements include the same roadway, intersection, and nonmotorized transportation improvements included in the Baseline, in addition to work elements described in Chapter 2. Transit service conditions would be modified from the Baseline to provide service to and from the light rail stations between neighborhoods within the city of Redmond as well as surrounding communities. Conditions for analyzing the Proposed Design Refinements are described in Section 5.2 of Appendix A.

3.1.1 Impacts during Operation

This section discusses long-term operational impacts to arterial and local streets, freight, transit, nonmotorized facilities, parking, safety, and navigable waterways as a result of the Proposed Design Refinements.

3.1.1.1 Arterial and Local Street Operation

The Final EIS analyzed 2030 as the design year, but the design year for this report is 2035. This section analyzes the operational impacts of the Baseline and the Proposed Design Refinements within the study area on arterial and local streets for the 2035 forecast year. The Final EIS assumed the same conversion to Cleveland Street and Redmond Way from one-way operations to two-way operations, as described for the Baseline and the Proposed Design Refinements.

Study Intersections

The intersections and number of intersections analyzed for the Proposed Design Refinements in this Addendum are different from those included in the Final EIS. Based on coordination with the City of Redmond and WSDOT, this analysis includes additional intersections along SR 520, downtown Redmond intersections, and several intersections along Redmond-Fall City Road, east of downtown Redmond.

The Final EIS included analysis of some intersections not evaluated for the Proposed Design Refinements. The intersections not evaluated are located in proximity to other intersections evaluated in this report. The analysis of the nearby intersections demonstrates the impacts of the Proposed Design Refinements on the roadway network.

Intersection volumes and operations during the AM and PM peak period were evaluated for this analysis, whereas only the PM peak period was evaluated for the 2011 Project in the Final EIS.

Traffic Volumes

Two regional travel demand models were used to support assessment of future conditions, including development of transit ridership forecasts and future traffic volumes. The Sound Transit Incremental Transit Ridership Model was used to produce transit ridership forecasts, while the Puget Sound Regional Council (PSRC) Regional Travel Forecasting Model: WSDOT Project Version was used to calculate growth rates in vehicular traffic volumes to support the future traffic volume development.

For the Baseline, traffic growth rates were applied by area to develop 2035 traffic volumes, which are forecast to increase throughout the study area during the 2035 AM and PM peak hours.

For the Proposed Design Refinements, the proposed stations would generate additional traffic by all travel modes. The Sound Transit Ridership Model provided estimates of transit patrons accessing stations by mode of travel, which is based on observed transit travel patterns. Table 3.1-1 summarizes the forecast light rail ridership and mode of access at the Downtown Redmond Station and SE Redmond Station during the 2035 PM peak period.

The Proposed Design Refinements would include construction of one 1,400-stall parking garage at the SE Redmond Station. No new parking would be provided at the Downtown Redmond Station. The existing Redmond Transit Center Park-and-Ride, located near the Downtown Redmond Station, would not add any additional parking spaces and is currently 99 percent occupied.

Table 3.1-1. 3-Hour 2035 PM Peak Period Light Rail Ridership

	Ons[1]			Offs				
Station Name	Walk and Bike	Bus	Total	Walk and Bike	Bus	Auto[2]	Total	Daily Boardings[3]
Downtown Redmond	186	231	**417**	188	843	400	**1,431**	2,900
SE Redmond	119	222	**341**	71	296	1,400	**1,767**	3,000

[1] For station access, the Sound Transit Ridership Model focuses on analysis of PM peak transit trips. This model does not estimate PM auto access for originating transit trips. The incidence of auto access for these trips is typically very low and involves drop-offs near stations. These trips do not necessarily use the parking capacity or the rider pick-up queueing space. Because the incidence of these PM drop-offs is very low, there is insufficient data to support modeling it.

[2] Auto includes single-occupancy vehicles, carpools, and drop-off/pick-ups.

[3] Boardings for a 24-hour period.

Table 3.1-2 shows the forecast auto volumes at the Downtown Redmond Station and SE Redmond Station during the 2035 AM and PM peak hour under the Proposed Design Refinements.

Table 3.1-2. Forecast Auto Volumes for the Proposed Design Refinements during 2035 AM and 2035 PM Peak Hour

	AM Peak Hour		PM Peak Hour	
Station Name	Inbound	Outbound	Inbound	Outbound
Downtown Redmond	70	70	70	70
SE Redmond	800	240	240	800

As part of this analysis, traffic volumes were forecast on Marymoor Way through Marymoor Park. The analysis found that negligible additional traffic was forecast on Marymoor Way resulting from the Proposed Design Refinements.

Intersection Operations

A common method of measuring traffic operations is level of service (LOS), defined in terms of average intersection delay on a scale ranging from A to F, depending on the delay conditions at the intersection. LOS A represents the best conditions with minimal delay, and LOS F represents the worst conditions with severe congestion. Two factors determine delay: (1) the capacity of the intersection as defined by the number of lanes, lane widths, pedestrian volumes, and other features; and (2) signal timing. Capacity, delay, and LOS are calculated for each traffic movement or group of traffic movements at an intersection. The weighted average delay across all traffic movements determines the overall LOS for a signalized intersection.

Traffic impacts were determined for arterials and local streets by comparing the overall intersection LOS for the Baseline and Proposed Design Refinements using City of Redmond LOS standards for streets within the City's jurisdiction. Impacts for state highways of statewide significance (SR 520 and ramp terminal intersections) and regionally significant highways (SR 202) were evaluated using WSDOT LOS standards.

Impacts at arterial and local street intersections would occur if the Proposed Design Refinements increase traffic operations to LOS E or F when the roadway segment would operate at LOS D or better under the Baseline. Impacts for state highways of statewide significance would occur if the roadway segment in the Proposed Design Refinements would increase traffic operations to a LOS E condition when the roadway segment would operate at LOS D or better under the Baseline. Impacts may also occur with the Proposed Design Refinements if the traffic operations increase delay by more than 10 seconds at an intersection that already operates unacceptably (LOS E or F) under the Baseline.

For regionally significant highways (SR 202), impacts would occur if the roadway segment in the Proposed Design Refinements would increase traffic operations to a LOS F condition when the roadway segment would operate at LOS E or better under the Baseline. Impacts would also occur if the traffic operations increase delay by more than 10 seconds at an intersection that operates unacceptably (LOS F) under the Baseline.

Further details about traffic operations in the study area, including tables listing the agency with jurisdiction and LOS standard for each intersection, are provided in Chapter 5 of Appendix A.

Figures 3.1-1 and 3.1-2 show intersection LOS for AM and PM peak hours. Under the Baseline, intersections #32, #33, and #40 are forecast to operate below the LOS standards during the 2035 AM peak hour. Under the Proposed Design Refinements, five intersections are forecast to operate below the LOS standard during the 2035 AM peak hour. The five intersections under the Proposed Design Refinements include intersections #35 and #36, as well as the same three intersections forecast to operate below the LOS standard under the Baseline. The additional delay identified for intersections #32, #33, #35, and #36 compared to the Baseline can be attributed to passengers traveling to the SE Redmond Station via automobile, nonmotorized, and transit modes, with NE 70th Street serving as their primary access route. The difference in delay at intersection #40 is due to proximity to stations and other major transportation facilities including SR 520.

Under the Baseline, eight intersections (#2, #14, #15, #33, #35, #40, #41, and #43) are forecast to operate below the LOS standard during the 2035 PM peak hour. As shown in Figure 3.1-2, 11 of the study area intersections are forecast to operate below the LOS standard for the facility during the 2035 PM peak hour under the Proposed Design Refinements. These include intersections #32, #36, and #37 as well as the eight intersections forecast to operate below standard under the Baseline.

The increase in delay in the PM peak period at intersections #32, #33, #35, #36, and #37 as compared to the Baseline can be attributed to passengers traveling to the SE Redmond Station via automobile, nonmotorized, and transit modes. The increase in delay at intersections #2, #14, and #15 can be attributed to passengers traveling to or from the Downtown Redmond Station via automobile, nonmotorized, and transit modes. The additional delay at intersections #40, #41, and #43 is due to proximity to stations and other major transportation facilities including SR 520.

Differences between the PM peak period operational results presented in the Final EIS and the Proposed Design Refinements are described below. Similar to the Proposed Design Refinements, intersections #32, #33, #35, #40, and #41 are forecast to operate below LOS standard under the 2011 Project.

- Intersection #15 is forecast to operate below LOS standard under the Proposed Design Refinements but operates acceptably under the 2011 Project.
- Intersections #23 and #63 are forecast to operate below LOS standard under the 2011 Project but not under the Proposed Design Refinements.
- Intersections #2, #14, #15, #36, #37, and #43 are forecast to operate below LOS standard under the Proposed Design Refinements; these intersections were not analyzed in the Final EIS.

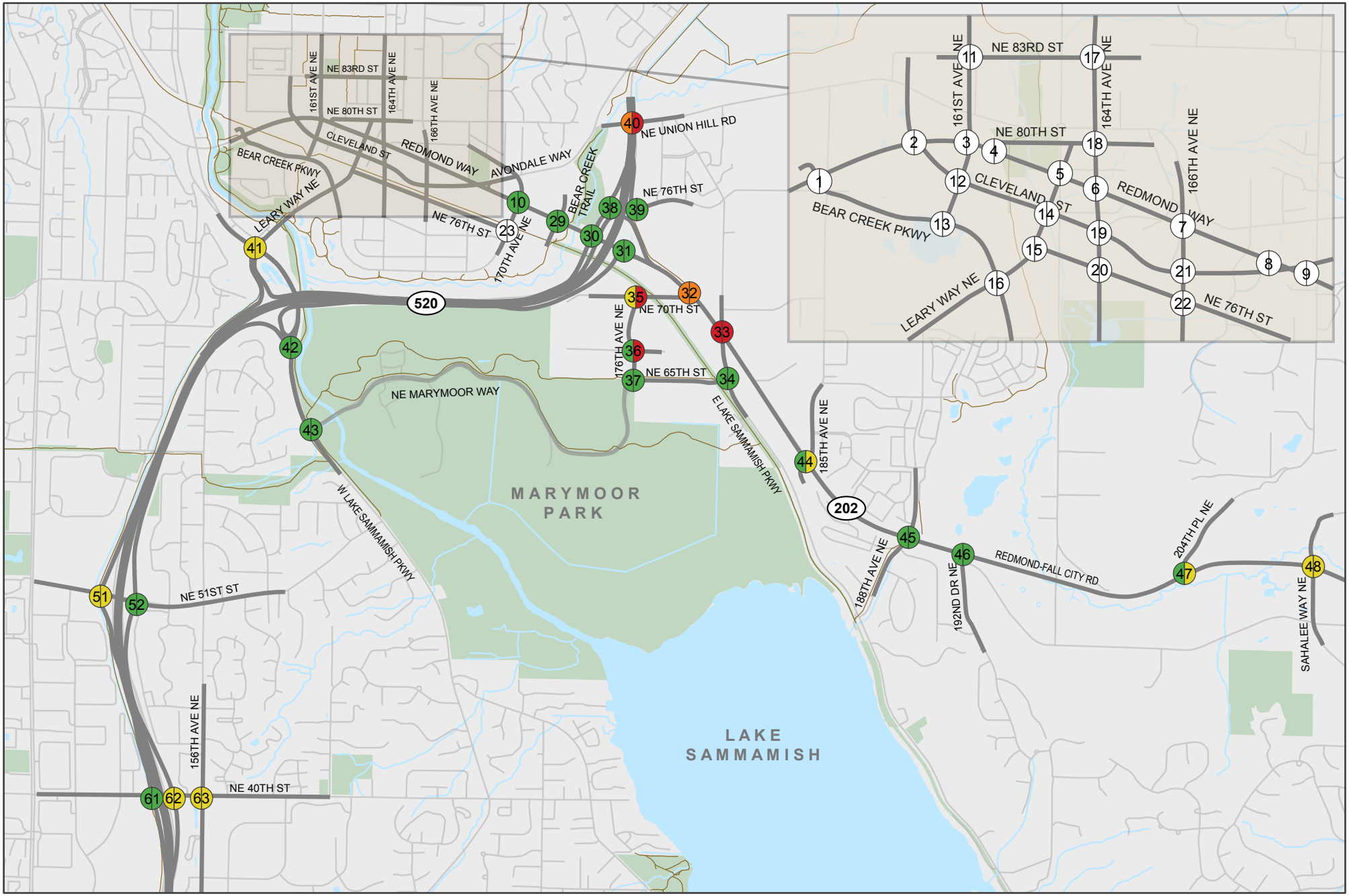
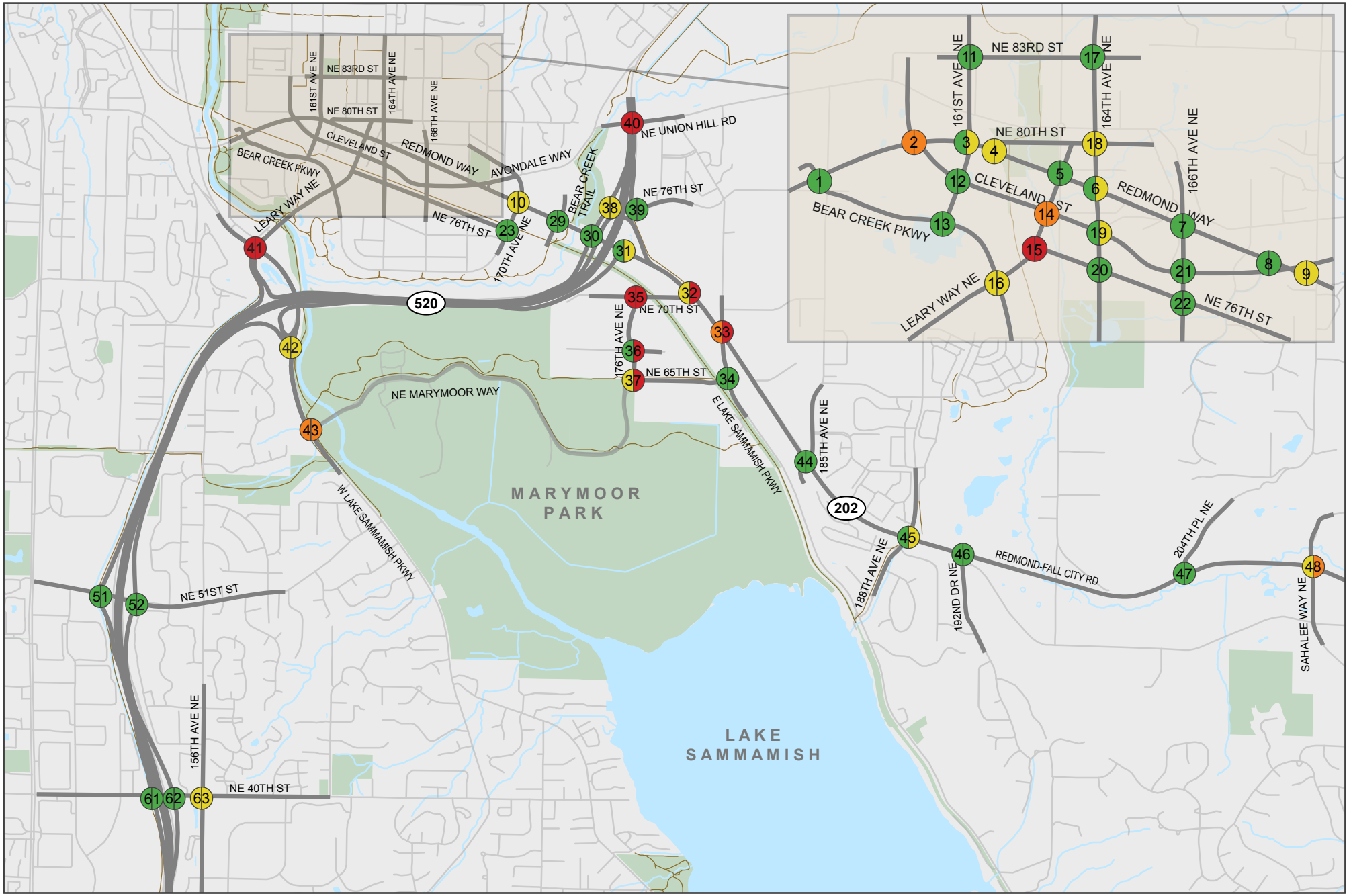


Figure 3.1-1
2035 Proposed Design Refinements
Traffic Operations During AM Peak Hour
Downtown Redmond Link Extension



0 1,000 2,000
Feet

- LOS A-C
- LOS D
- LOS E
- LOS F
- No Analysis

Baseline / Proposed Design Refinements

Figure 3.1-2
2035 Proposed Design Refinements
Traffic Operations During PM Peak Hour
Downtown Redmond Link Extension

3.1.1.2 Freight

Under the Baseline, freight traffic is expected to be affected similarly to general purpose traffic. The Proposed Design Refinements are not anticipated to negatively affect truck circulation or truck routes on the local street network in the study area, and the elimination of at-grade crossings in downtown Redmond would be a benefit of the Proposed Design Refinements compared to the 2011 Project. Unlike the Proposed Design Refinements, in downtown Redmond the 2011 Project would be at-grade. Therefore, local truck routes would cross or travel alongside of light rail at-grade profiles and many of the identified impacts reflect that feature. The Final EIS concluded that the intersection conditions with the 2011 Project would be similar to the No Build Alternative and that some intersection operations may improve through mitigation for the 2011 Project. It also identified that many of the at-grade alternatives that travel through intersections would be accommodated within the existing traffic signal operations; thus, disturbances caused by the light rail would be minimized, although slight delays could occur on the side streets when light rail travels through the intersection. The Final EIS concluded that the 2011 Project was not anticipated to negatively affect truck circulation or routes on the local street network.

3.1.1.3 Transit

With the 2011 Project and Proposed Design Refinements, Link light rail riders would have direct light rail connections from downtown Redmond and southeast Redmond to Bellevue, downtown Seattle, West Seattle, Ballard, University District, Northgate, Lynnwood, and Tacoma. During the AM and PM peak periods, train frequency would be every 6 minutes. Train frequency would be every 10 minutes during the midday and evening and every 15 minutes in the early morning and evening late-night periods. Transit travel times between these stations would decrease and trips would become more reliable, because light rail would operate in a dedicated right-of-way and avoid delays associated with increased traffic congestion. Metro and Sound Transit plan to provide bus service in the study area. Under the Proposed Design Refinements, 2,900 daily boardings at the Downtown Redmond Station and 3,000 daily boardings at the SE Redmond Station are forecast. The Final EIS assumed peak period train frequency every 7 minutes rather than every 6 minutes, and projected 1,500 to 2,000 future daily boardings at each light rail station.

For the Proposed Design Refinements, Metro's future bus network would be similar to what is included in METRO CONNECTS, but the bus service network would focus on integration with light rail service in Redmond at the two new stations to expand rider opportunities to access the regional high-capacity transit system. The final routes associated with bus service revisions will be subject to more detailed planning and public outreach and are subject to approval by the King County Council and Sound Transit Board for Metro and Sound Transit, respectively. Service levels will be subject to more detailed planning and refinement. Service provisions will also be subject to budget availability.

Sound Transit's Express bus service would be revised to no longer serve downtown Seattle, because light rail would now provide that connection. Route 542 would begin at the SE Redmond Station rather than the Redmond Transit Center. It would serve the Downtown Redmond Station as well as the Redmond Transit Center before continuing to the University District. Route 545 would serve South Lake Union rather than downtown Seattle.

Table 3.1-3 summarizes the active bays and layover needs for the SE Redmond Station and Downtown Redmond Station as well as the Bear Creek Park-and-Ride. At the Downtown Redmond Station, layover could be accommodated on-street or off-street. Some active bays and layover needs could be accommodated at the Redmond Transit Center. At the SE Redmond Station, the active bays and layover would be accommodated off-street in the parking structure. There would be no changes to the active bays and layover needs at the Bear Creek Park-and-Ride.

Table 3.1-3. Active Bays and Layover Needs for the Proposed Design Refinements

	Downtown Redmond Station		SE Redmond Station		Bear Creek Park-and-Ride	
	Layover	Active Bays	Layover	Active Bays	Layover	Active Bays
Metro	8	7	5	2	0	2
Sound Transit	0		3		3	
Total	**8**	**7**	**8**	**2**	**3**	**2**

The Final EIS did not consider the service network envisioned in METRO CONNECTS, because it had not been adopted by King County at that time. Similarly, the Final EIS did not consider the expanded high-capacity transit network included in ST3, because it had not been passed at the time. The network envisioned in METRO CONNECTS identifies planned bus service within the study area that is different from the current network. This network assumes a high degree of integration with the light rail system. With the passage of ST3, the Proposed Design Refinements would allow for greater transit mobility throughout the region via high-capacity transit service. The increase in transit mobility, growth in Redmond, and updating the forecast year from 2030 to 2035 contribute to the increased boardings projected for the Proposed Design Refinements.

3.1.1.4 Nonmotorized Facilities

Pedestrian and bicycle volumes are forecast to increase near the stations due to new developments, new pedestrian and bicycle facilities, and/or a mode shift to walking and bicycling. The 2011 Project and Proposed Design Refinements would increase the number of nonmotorized users around stations. The highest volumes would occur during the PM peak period.

Table 3.1-4 shows estimates of 2035 PM peak period pedestrian and bicycle trips generated by each station under the Proposed Design Refinements. Sound Transit would construct new sidewalks along the frontage of each station as well as a one-way cycle track along NE 70th Street.

Table 3.1-4. Forecasted 2035 Pedestrian and Bicycle Trips during the PM Peak Period

Station	2035 Pedestrian and Bicycle Trips During the PM Peak
Downtown Redmond	374
SE Redmond Station	190

If funding is provided by King County, the missing link to the County's East Lake Sammamish Trail would be built by Sound Transit when the light rail extension is constructed. This link would begin from the SE Redmond Station area, pass under the SR 520 interchange, cross Bear Creek on a bridge, and connect into the Bear Creek Trail and Redmond Central Connector corridors. In addition, improvements in the station area include a pedestrian and bicycle connection from the SE Redmond Station to Marymoor Park.

Portions of the alignment and all stations are at-grade in the 2011 Project, whereas the alignment between southeast Redmond and downtown Redmond would be elevated in the Proposed Design Refinements. Therefore, the refined alignment would result in fewer conflicts between rail users and nonmotorized travelers. The 2011 Project forecasted similar bicycle and pedestrian volumes at the Downtown Redmond Station; however, it forecasted lower bicycle and pedestrian volumes at the SE Redmond Station. With the Proposed Design Refinements, the change in bicycle and pedestrian volumes at the SE Redmond Station can be attributed in large part to an increase in the forecasted

ridership at the station as well as new development and growth anticipated in southeast Redmond. The 2011 Project did not include construction of King County's pedestrian/bicycle trail connection.

3.1.1.5 Parking

In downtown Redmond, the Proposed Design Refinements could result in the removal of 75 off-street and 15 on-street parking spaces between 170th Avenue NE and the Downtown Redmond Station vicinity. Off-street parking would be removed to accommodate station operations and associated amenities. The majority of this off-street parking is located within the former BNSF right-of-way or would be associated with displacements due to parcel acquisitions. On-street parking would be removed primarily to accommodate buses serving the station. The modifications to the bus network would provide alternatives for many riders to reach the light rail station as well as downtown Redmond.

The Final EIS anticipated removal of 20 off-street parking spaces and zero on-street parking spaces in downtown Redmond associated with the 2011 Project. It indicated that on-street parking may be removed on NE 76th Street if this street is reconstructed. The Final EIS did not expect removal of parking spaces near the SE Redmond Station.

Similar to the 2011 Project, 1,400 stalls at the park-and-ride facility at the SE Redmond Station would reduce the potential for hide-and-ride activities. Hide-and-ride is the term used for parking vehicles near transit stations outside of parking provided for transit users. On-street parking currently exists in the station vicinity and is not time-limited; therefore, the potential for hide-and-ride activities is present. However, the potential is low due to the relatively large supply of stalls proposed at the park-and-ride facility. On-street parking would be regulated by the City of Redmond.

The Final EIS expected a high potential for hide-and-ride activity at the Downtown Redmond Station due to the amount of available on-street parking and the absence of a new parking facility at this station. Since publication of the Final EIS, the City of Redmond has expanded the downtown time-limited parking enforcement zone boundaries to encompass a larger area near the Downtown Redmond Station, which would reduce the potential for hide-and-ride activity. Security enforcement and time-limited parking would minimize the potential for hide-and-ride parking in nearby commercial developments and private parking lots.

3.1.1.6 Safety

The Proposed Design Refinements do not include any at-grade rail crossings, which would eliminate the potential for rail-automobile conflicts that existed with the 2011 Project. As with the 2011 Project, traffic and nonmotorized volumes in the study area are forecasted to increase by 2035, which could increase collision frequencies for both motor vehicles and nonmotorized users in the study area. The roadway, intersection, and nonmotorized improvements identified under the Baseline would similarly improve safety for motor vehicles and nonmotorized users in the study area under the Proposed Design Refinements. If funding is provided by King County, the missing link to the County's East Lake Sammamish Trail would be built by Sound Transit when the light rail extension is constructed. This link would begin from the SE Redmond Station area, pass under the SR 520 interchange, cross Bear Creek on a bridge, and connect into the Bear Creek Trail and Redmond Central Connector corridors.

The 2011 Project included at-grade crossings in downtown Redmond, which differs from the Proposed Design Refinements. The Final EIS concluded that accident frequency with the 2011 Project would be minimal with no substantial change in the number of accidents, because the 2011 Project would mostly operate outside the right-of-way and would include the use of gated crossings.

3.1.1.7 Navigable Waterways

As described for the 2011 Project in Section 3.9 of the Final EIS, there would be an elevated crossing over the Sammamish River that would maintain navigability. The project will require a General Bridge permit from the U.S. Coast Guard. The elevated guideway for the Proposed Design Refinements would match the height of the SR 520 bridge and would not have any columns within the ordinary high water mark (OHWM) of the Sammamish River. Therefore, as described in the Final EIS, no impacts to navigable waterways are anticipated.

3.1.2 Impacts during Construction

Transportation mobility impacts are expected during construction, as described for the 2011 Project in the Final EIS. The Proposed Design Refinements would reconstruct portions of the SR 520 eastbound off-ramp and westbound on-ramp at SR 202, along with the ramp intersections. The Proposed Design Refinements would also include construction of a short section of NE 76th Street to align the street with the reconstructed westbound on-ramp and SR 202 intersection. The 2011 Project identified temporary construction impacts in the interchange area, including temporary short-term closures of the ramps, but the Proposed Design Refinements would extend the duration and extent of construction activity for the interchange area. Overall, the temporary mobility impacts anticipated in downtown Redmond would be similar to the 2011 Project, because the Proposed Design Refinements is 0.3 mile shorter and elevated rather than at-grade, reducing the length of alignment to be constructed and the number of roadways that would be crossed or rebuilt by the refined alignment.

As described for the 2011 Project in the Final EIS, construction of the bridge over the Sammamish River could affect navigability and restrict boating for short periods of time. For safety, navigation would be restricted when construction activities, such as placing girders, occur directly over the river. Activities that restrict navigation are anticipated to last less than a week and may only occur during a portion of the day or night.

3.1.3 Potential Mitigation Measures

3.1.3.1 Potential Mitigation Measures for Operational Impacts

This subsection discusses potential mitigation measures for operational impacts on arterial and local street operation, freight, transit, nonmotorized facilities, parking, and navigable waterways. It also describes measures that Sound Transit proposes to take but which require agreement of other agencies. In these cases, Sound Transit would coordinate with these agencies to further define and implement improvements to mitigate the impacts of the Proposed Design Refinements.

Arterial and Local Street Operation

For impacts on arterials and local streets, mitigation would be required for intersections with the Proposed Design Refinements that do not meet the LOS standard where the Baseline conditions would otherwise meet them.

To mitigate the impacts to intersection operations resulting from the Proposed Design Refinements, Sound Transit would provide the proposed improvements or other improvements as agreed to with the City of Redmond or WSDOT. Table 3.1-5 shows the operational results and description of the proposed mitigation for impacts. In lieu of constructing the improvements identified, Sound Transit could contribute proportionate funding to a City of Redmond or WSDOT project to improve intersection performance where the Baseline would already be below standard, and where the Proposed Design Refinements increase delay by more than 10 seconds at an intersection, as agreed to with the City or WSDOT. Final mitigation for all traffic impacts, including the potential for degraded operations, would be determined in conjunction with the City or WSDOT.

Table 3.1-5. Intersections with Impacts under the Proposed Design Refinements with Mitigation

ID	Intersection	Control Type	Baseline		Proposed Design Refinements		Proposed Design Refinements with Mitigation		Proposed Mitigation
			LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	
	2035 AM Peak Hour								
35	176th Avenue NE and NE 70th Street	TWSC	D	27	***F***	***>300***	B	19	Install a traffic signal; provide northbound and westbound right-turn pockets and westbound and eastbound left-turn pockets; provide a southbound approach that includes a double left-turn lane and a through-right lane; split phase northbound and southbound signal timing; and a pedestrian scramble phase. This helps address potential nonmotorized impacts to the East Lake Sammamish Trail crossing.
36	176th Avenue NE and NE 67th Street	TWSC	B	15	***F***	***94***	C	15	Convert from two-way stop control to all-way stop control.
	2035 PM Peak Hour								
15	Leary Way and NE 76th Street	TWSC	***F***	***139***	***F***	***161***	No mitigation proposed		No mitigation proposed because the intersection fails today and is forecast to continue to fail with or without the Proposed Design Refinements. In addition, the project-related trips added to this intersection during the peak hour are less than 20 vehicles per approach.
32	Redmond Way and NE 70th Street	Signal	D	47	***F***	***137***	***F***	***85***	Provide a southbound right-turn pocket and a second northbound left-turn lane[1].
33	Redmond Way and East Lake Sammamish Parkway/180th Avenue NE	Signal	***F***	***80***	***F***	***106***	No mitigation proposed		No mitigation proposed because the intersection operates below standard with or without the Proposed Design Refinements. Redmond has included planned improvements at this intersection in the City's 6-year Transportation Improvement Program.
35	176th Avenue NE and NE 70th Street	TWSC	***F***	***54***	***F***	***210***	D	38	Install a traffic signal; provide northbound and westbound right-turn pockets and westbound and eastbound left-turn pockets; provide a southbound approach that includes a double left-turn lane and a through-right lane; split phase northbound and southbound signal timing; and a pedestrian scramble phase. This helps address potential nonmotorized impacts to the East Lake Sammamish Trail crossing.

Table 3.1-5. Intersections with Impacts under the Proposed Design Refinements with Mitigation (continued)

ID	Intersection	Control Type	Baseline		Proposed Design Refinements		Proposed Design Refinements with Mitigation		Proposed Mitigation
			LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	
36	176th Avenue NE and NE 67th Street	TWSC	C	16	***F***	***97***	C	16	Convert from two-way stop control to all-way stop control.
37	176th Avenue NE and NE 65th Street	TWSC	D	28	***F***	***53***	C	19	Convert from two-way stop control to all-way stop control.

Cells highlighted in ***grey bold and italicized*** identify intersections that operate below the LOS standard for the facility.

TWSC = two-way stop controlled

1 The City of Redmond has agreed that this would result in acceptable conditions given the future additional network improvements to be implemented as part of the Marymoor Subarea Plan.

The Final EIS identified the following mitigation for the 2011 Project in Segment E:

- Intersection #23: 170th Avenue and NE 76th Street—Install a traffic signal. This traffic signal has already been installed.
- Intersection #32: Redmond Way and NE 70th Street—Provide a southbound right-turn pocket.
- Intersection #33: Redmond Way and East Lake Sammamish Parkway/180th Avenue NE—Rechannelize to provide an additional southbound through lane. Redmond has included planned improvements at this intersection in the City's 6-year Transportation Improvement Program, which differ from what was proposed in the Final EIS.
- Intersection #35: 176th Avenue NE and NE 70th Street—Install a traffic signal.

The Final EIS did not identify mitigation for intersections #15, #36, and #37.

Freight

The Proposed Design Refinements do not require freight mitigation beyond the intersection mitigation identified and summarized in Table 3.1-5. Similar to the Proposed Design Refinements, the Final EIS concluded that the 2011 Project would not negatively affect truck circulation or routes on the local street network; therefore, no mitigation was identified.

Transit

Mitigation for transit service would not be required, because the Proposed Design Refinements would improve the regional transit system. The expanded light rail network with the 2011 Project or the Proposed Design Refinements would have a beneficial impact on transit service, including reduced transit travel times and improved transit reliability to regional destinations.

Nonmotorized Facilities

The Proposed Design Refinements would not affect nonmotorized facilities. The new signal at 176th Avenue NE and NE 70th Street will include a pedestrian scramble phase to enhance nonmotorized mobility. A pedestrian scramble phase would halt all motorized movements while allowing for nonmotorized movements in all directions. Other than the intersection treatment at 176th Avenue NE and NE 70th Street, the Proposed Design Refinements are similar to the Final EIS, which did not identify any mitigation for operational impacts to nonmotorized facilities.

Parking

The loss of on-street parking near the Downtown Redmond Station is likely to result in minimal impacts; therefore, no mitigation is proposed.

Similar to the 2011 Project, mitigation for parking impacts for the Proposed Design Refinements would be specific to each station. As described in the Final EIS, Sound Transit would evaluate hide-and-ride impacts at the stations within 1 year of project operations. Prior to implementing any parking mitigation measures, Sound Transit would inventory on-street parking around each station up to 1 year before the start of light rail revenue service. These inventories would document the current on-street parking supply and utilization within a quarter-mile radius of the stations. If impacts are determined based on the inventory results, Sound Transit and the local jurisdiction would work with the affected stakeholders to identify and implement appropriate mitigation measures.

Parking control measures could consist of parking meters, restricted parking signage, passenger and truck load zones, and residential parking zone signage. Other parking mitigation strategies could include

promotion of alternative transportation services (e.g., encourage the use of buses, vanpool, or carpool services, walking, and bicycle riding).

For parking controls agreed to with the local jurisdiction and community, Sound Transit would be responsible for the cost of installing the signage or other parking controls and any expansion of the parking controls for 1 year after opening the light rail system. The City of Redmond would be responsible for monitoring the parking controls and providing all enforcement and maintenance of the parking controls. The local residents would be responsible for any residential parking-zone-related costs imposed by the local jurisdiction.

Navigable Waterways

Sound Transit is coordinating with the U.S. Coast Guard to obtain a General Bridge permit because the elevated guideway crosses over the Sammamish River, which is considered a navigable waterway. Similar to the 2011 Project, the crossing will not include columns within the OHWM and the bridge height will not be lower than the existing SR 520 bridge. Therefore, the light rail extension will not impact navigation. No mitigation is needed for the Proposed Design Refinements, and approval of the Coast Guard permit is anticipated to be granted.

3.1.3.2 Potential Mitigation Measures for Construction Impacts

Potential mitigation measures during construction of the Proposed Design Refinements would be the same as those identified for the 2011 Project in the Final EIS.

3.2 Acquisitions, Displacements, and Relocations

3.2.1 Impacts during Operation

Table 3.2-1 compares the acquisitions and displacements from the Proposed Design Refinements with those from the 2011 Project. Compared with the 2011 Project, the Proposed Design Refinements would increase property acquisitions in places as described below. These changes result in one additional residential displacement and one additional business displacement.

The changes are a result of advancing the preliminary engineering, which further defined the station areas, identified the approximate location of sound walls, and located the guideway to be compatible with WSDOT's recent and planned improvements to SR 520. Many of these changes would also have applied to the 2011 Project.

The Proposed Design Refinements also analyze the connection of the East Lake Sammamish Trail and Redmond Central Connector, which was not included in the Final EIS. As a result, the Proposed Design Refinements affect three properties that border the former BNSF rail corridor between SR 520 and 170th Avenue NE.

In addition to the potential property acquisitions described in this section, the Proposed Design Refinements require temporary construction easements and permanent maintenance easements. Temporary construction easements are needed where construction activities require the use of private property or public rights-of-way owned by WSDOT, the City of Redmond, and King County. Permanent maintenance easements are needed where noise barriers or light rail facilities may need to be periodically accessed from private property.

Table 3.2-1 summarizes the total acreage of property to be acquired, number of parcels potentially affected, and number of residential and business displacements. Appendix I includes a list identifying parcels potentially affected by the Proposed Design Refinements, including maps.

Table 3.2-1. Summary of Affected Parcels and Displacements

Scenario	Total Acreage Affected	Number of Parcels Affected	Total Displacements[1]	
			Business	Residential Units[2]
2011 Project	17.3	36	**8**	**2**
Proposed Design Refinements	20.3	56	**9**	**3**

Note: This table does not include public rights-of-way. Approximately 8.8 acres of King County, WSDOT, and City of Redmond rights-of-way would be permanently converted to light rail right-of-way.

[1] Displacement estimates reflect existing conditions at the time of analysis.

[2] All displaced residential units are single-family units.

3.2.2 Impacts during Construction

As described in the Final EIS for the 2011 Project, property impacts during construction would consist of temporary construction easements, temporary access changes, and temporary parking impacts. Staging areas would be accommodated within areas permanently needed for right-of-way; therefore, additional property acquisition for staging areas is not expected. Temporary construction easements would be needed from WSDOT, King County, City of Redmond, and private properties adjacent to the corridor.

3.2.3 Potential Mitigation Measures

As described in the Final EIS, Sound Transit would compensate affected property owners according to the provisions specified in Sound Transit's adopted Real Estate Property Acquisition and Relocation Policy, Procedures, and Guidelines (Sound Transit 2014a, 2014b), which comply with the federal Uniform Relocation Act and State of Washington's relocation and property acquisition requirements.

For temporary construction easements, in addition to just compensation as described above, the property would be restored to its previous condition, and/or another type of compensation would be employed as determined during the easement's negotiation process.

3.3 Land Use and Economics

In the City of Redmond, the alignment traverses Overlake, southeast Redmond, and downtown Redmond neighborhoods. The Redmond Comprehensive Plan designates both Overlake and downtown Redmond as urban centers. Through Overlake the alignment runs adjacent to SR 520, primarily along the edge of mid-rise office complexes and single-family residential land uses. The alignment traverses the northern edge of King County's Marymoor Park and into the southeast Redmond area (recently named Marymoor Village by the City of Redmond), which is characterized by light industrial and manufacturing land uses. Commercial retail and services, mid-rise office complexes, and multi-family residential units dominate current land uses in downtown Redmond. Considerable growth from new construction of commercial, multi-family residential, and multi-family mixed-use developments has occurred in downtown Redmond since 2011, creating greater density in the urban area. Nearly 1,300 new residential units (apartment and/or condominium) have been constructed, and about 1,500 residential units are under construction, permitted, or planned to start construction within the next year in the downtown Redmond vicinity. Approximately 21,000 square feet of commercial space has been constructed since 2011 and about 31,700 square feet of commercial space is under construction, permitted, or planned in the downtown Redmond vicinity (City of Redmond 2017a, 2017b).

Land use designations, planning policies, and zoning have remained consistent in the Overlake and downtown Redmond areas since the Final EIS; however, land use and zoning in the SE Redmond Station area have changed. The City of Redmond updated its Comprehensive Plan in June 2017 to include the

newly adopted Marymoor Subarea Plan for the southeast Redmond neighborhood. These changes emphasize mixed-use and residential developments accessed by light rail, pedestrian pathways, bike trails, and bus transit. These changes also established a Marymoor Local Center designation, which is defined as "activity nodes where employment, services and housing are accommodated in a compact manner and at sufficient densities to make efficient use of urban land and support transit and other multimodal access."

In addition, zoning in the SE Redmond Station area was changed from an industrial zone (Manufacturing Park) to Marymoor Design District (MDD) zones 1 to 5. These five districts create an expanded street grid with smaller blocks. The permitted uses in the MDD zones support the implementation of a planned land use transition strategy from light industrial uses to mixed-use, multi-family, and transit-oriented development in the southeast Redmond area consistent with the amendments to the Comprehensive Plan. Currently, there are no joint development plans in the station area. Sound Transit would evaluate the feasibility of joint development if a proposal is presented. Additional environmental review would occur, as appropriate, at a later date should Sound Transit pursue joint development.

The Transportation element of the Comprehensive Plan was amended to include a policy to "Collaborate with Sound Transit and other entities to provide opportunities where appropriate in and around Redmond's light rail station areas to create diverse, vibrant, mixed-use, mixed-income, transit-oriented development including non-motorized access that connects stations to nearby destinations." This policy supports the future land use planning in these neighborhoods (City of Redmond 2017c).

Similar to the 2011 Project, where the alignment traverses the northern edge of Marymoor Park, the Proposed Design Refinements are in unincorporated King County. As in 2011, the zoning of this area is R-1 (residential, one dwelling unit per acre). The King County Council adopted Ordinance 18671 in March 2018 to amend the King County Zoning Code to include regional transit authority facilities as a permitted use in low-density urban residential zones.

3.3.1 Impacts during Operation

Similar to the 2011 Project, the Proposed Design Refinements would remain compatible with existing and planned future land uses, and would be consistent with existing land use policies and plans, including PSRC's VISION 2040 and the Redmond Comprehensive Plan.

Similar to the 2011 Project, the land to be acquired for the Proposed Design Refinements would constitute only a small portion of the total residential, commercial, and public land in the vicinity and would not result in material changes in land use, development patterns, or economic activity.

Similar to the 2011 Project, the Proposed Design Refinements could contribute to existing market forces that can increase the potential for transit-oriented development or redevelopment, resulting in indirect impacts to land use and economics. The Final EIS determined that the SE Redmond Station had a low/moderate potential for transit-oriented development. Recent changes to land use policies to facilitate the transition of industrial land uses to mixed use in the SE Redmond Station area increase the potential for transit-oriented development in this area. The Final EIS determined that the Downtown Redmond Station had a moderate potential for transit-oriented development, which continues to occur with the construction of mixed uses in downtown Redmond in the proximity of the station location.

Overall, operation of light rail is anticipated to have beneficial effects on the economy and properties near the station areas. In addition, the grade-separated alignment would reduce conflicts and travel time for both light rail passengers and vehicles, allowing goods and services to move through downtown Redmond more efficiently than the 2011 Project.

3.3.2 Impacts during Construction

As described in the Final EIS, construction activities would result in temporary impacts on existing land uses and economic activity. The temporary construction impacts would include potential increases in noise levels, dust, traffic congestion, visual changes, and increased difficulty accessing residential, commercial, and other uses in the corridor. These impacts would not result in changes to land use type.

3.3.3 Potential Mitigation Measures

Construction and operational impacts are not anticipated to cause changes in land use; therefore, no mitigation is proposed. The Proposed Design Refinements would incorporate the mitigation measures listed in Section 4.3.4 of the Final EIS to minimize impacts to economic activity during construction.

3.4 Visual Resources

3.4.1 Impacts during Operation

Potential operational impacts of the Proposed Design Refinements are discussed for the following areas: Overlake Neighborhood, Marymoor Park, Bear Creek Crossing, and Downtown Redmond. The visual setting and potential impacts for the Sammamish River Crossing and SE Redmond Station remain the same for the Proposed Design Refinements as discussed in the Final EIS for the 2011 Project.

3.4.1.1 Overlake Neighborhood

As described in the Final EIS, along the east side of SR 520, office buildings south of NE 51st Street and residential homes north of NE 51st Street characterize the neighborhood. Curving streets limit long views through the neighborhood, and mature trees add scale and vegetated character. SR 520 is a major existing element in the neighborhood. The highway is out of scale with the surrounding neighborhood, and contrasts with the residential character along the eastern edge of the neighborhood. As described for the 2011 Project, the operational impacts of the Proposed Design Refinements would primarily be adjacent to and at a similar grade to SR 520. The light rail guideway is similar in character and scale to the highway and would not reduce the visual quality in this area. The most noticeable impacts would be removing portions of the vegetated buffer separating the highway from the adjacent neighborhood. In most locations along the alignment, sound walls would be installed between the light rail and adjacent properties. In some cases, these would be relocated from their existing location; in other cases, the sound walls would be new. Similar to the 2011 Project, the loss of vegetated buffer would also reduce visual quality for residents of some of the homes directly adjacent to the light rail alignment, who would have more open views of sound walls located south of the light rail rather than mature forest vegetation.

With the Proposed Design Refinements, a TPSS facility is anticipated to be located adjacent to SR 520 near the intersection of 156th Avenue NE and NE 65th Street on the edge of the residential neighborhood. The 2011 Project would have located the TPSS under the elevated guideway near the West Lake Sammamish Parkway/SR 520 interchange. TPSS units are typically small metal buildings approximately 10 feet high with a footprint of about 20 feet by 60 feet, and include a driveway and protective fencing. The TPSS would be prominent in the views of adjacent residential properties.

The Proposed Design Refinements are consistent with the alignment and character of the 2011 Project, and there would be no change in the vividness, intactness, or unity in this area, resulting in no overall change to the visual quality rating.

3.4.1.2 Marymoor Park

The Proposed Design Refinements would be located between SR 520 and the park, in a similar location to the 2011 Project. At the western end of the park the guideway would be elevated on columns as it crosses the Sammamish River, similar to the 2011 Project. Near the northernmost baseball fields (fields 1 and 2), the Proposed Design Refinements would transition from being elevated to being constructed on retained fill, where the tracks would be moderately raised above existing ground level, and supported by retaining walls ranging from 5 to 14 feet. A safety barrier would extend above the wall. The 2011 Project alignment would have transitioned from elevated to retained fill to at-grade as it traversed the northern boundary of Marymoor Park.

Currently, trees and large shrubs partially screen views of SR 520 in most of the northern edge of the park. Similar to the 2011 Project, construction of the Proposed Design Refinements would require removal of large trees adjacent to the light rail alignment along the northern edge of the park, including many of the smaller trees and larger shrubs. Some effective buffers would remain along the wetlands where vegetation extends farther south, outside of the light rail corridor and safety buffer area. Overall, existing partially screened views through the buffer to the highway would change with the Proposed Design Refinements to mostly open views of a retaining wall that would extend above the viewing height of park users.

Users on the north side of the park engaged in more active park uses would be considered less sensitive to changes in visual quality than users on the south side of the park. The northern edge of the park includes baseball and softball fields, soccer fields, tennis courts, cricket pitch, an events pad, and the Jerry Baker Memorial Velodrome. In addition, planning for an indoor tennis facility in the northwest corner of the park is underway. Once light rail is constructed, the view from the northern area of the park (such as soccer fields 1 to 6) towards SR 520 would include fewer natural elements and no tall trees with either the 2011 Project or the Proposed Design Refinements. With the Proposed Design Refinements, the retaining wall would be prominent, but the light rail facility would block nearly all views of SR 520 and its associated traffic. The facility would be most visible to soccer players on the northernmost fields and to users of the velodrome.

The Proposed Design Refinements would be similar to the alignment and character of the 2011 Project; however, the refined design would result in more noticeable changes to visual quality in this area. The overall impact to visual quality in this section of the park would not be substantial. More prominent views of the light rail facility due to its construction on retained fill would be balanced by the screening effect of the retained fill, which would reduce the complexity, disorder, and constant movement associated with existing views of SR 520.

The Final EIS analysis concluded that there would be no change in the vividness, intactness, or unity of this area, resulting in no overall change to the visual quality rating. However, from the perspective of viewers in the north side of the park, the Proposed Design Refinements would be more noticeable than the 2011 Project. Users on the north side of the park would be less sensitive to changes in visual quality than users of the more passive areas of the park farther to the south and out of view of the Proposed Design Refinements.

3.4.1.3 Bear Creek Crossing

Bear Creek is a heavily vegetated stream corridor with a mature riparian zone. The creek channel meanders roughly perpendicular to where the proposed light rail crossing would be located, which limits the length of views in and near the creek.

The visual impacts for the light rail alignment with the Proposed Design Refinements would be the same as the 2011 Project, although there are changes to the alignment compared to the 2011 Project in this

area, as discussed in Section 2.1.3. The light rail facility would be elevated above the creek. The guideway would be prominent to some viewers, and would be considered as contrasting with the natural setting of the creek. The elevated guideway would allow the preservation of most riparian vegetation, which means the character of the creek itself would be similar to existing conditions. In addition, a bridge connecting the East Lake Sammamish Trail (a King County Park facility) to the Redmond Central Connector and Bear Creek Trail is being designed for nonmotorized users along the north side of the alignment. This missing trail link could be built by Sound Transit when the light rail extension is constructed, with funding provided by King County. The 2011 Project did not include this trail connection. The removal of the existing nonmotorized bridge would offset the increase in scale and mass of the transportation infrastructure. The Proposed Design Refinements' habitat improvements to the Bear Creek channel and adjacent floodplain would be a beneficial visual change compared to the 2011 Project.

Bear Creek Trail behind Creekside Crossing buildings, looking north.

There would be no change in the vividness, intactness, or unity of this area, resulting in no overall change to the visual quality rating.

3.4.1.4 Downtown Redmond

Since publication of the Final EIS, the character of the Redmond Central Connector corridor (former BNSF rail corridor) has improved. Consistent with the Redmond Central Connector Master Plan, work in the right-of-way has included the removal of existing railroad tracks and associated hardware, and development of a nonmotorized trail. East of 166th Avenue NE, improvements have been minor, including cleanup, construction of a nonmotorized trail, and installation of lawn. West of 166th Avenue NE, improvements have been more extensive, including cleanup, installation of a trail, installation of artwork (a large pyramidal sculpture fabricated from weathering steel titled *Erratic*), and development of small public areas and ornamental planting beds. The Redmond Central Connector Master Plan anticipated the

redevelopment of the area east of 166th Avenue NE for light rail; therefore, development in that section of the corridor was less intensive. The Master Plan did not anticipate redevelopment of the section of the Redmond Central Connector corridor west of 166th Avenue NE, and those improvements included a higher level of investment.

The Proposed Design Refinements would be different than the 2011 Project, which included an at-grade alignment and station, with the station located west of Leary Way. The Proposed Design Refinements would have an elevated guideway, typically about 22 to 25 feet above grade, with an elevated station spanning 166th Avenue NE. Elevated tail tracks would extend along NE 76th Street to 164th Avenue NE.

Intersection of Cleveland Street and 166th Avenue NE, looking south

Construction of the light rail facility would require removal of most existing trees in the former BNSF rail corridor adjacent to NE 76th Street, and relocation of the Redmond Central Connector. In addition, construction of the station spanning 166th Avenue NE would likely require removal or relocation of the existing art installation.

The change from the 2011 Project at-grade guideway to the Proposed Design Refinements' elevated guideway would change visual characteristics within the former BNSF rail corridor. The scale and mass of support columns, elevated guideway, and elevated station would be more prominent and visually dominant than an at-grade light rail profile. However, the elevated light rail facility would be similar in massing and character to much of the surrounding development, which includes multi-story commercial and residential buildings, many of which do not have entrances facing the corridor. Views along 170th Avenue NE, 168th Avenue NE, and 166th Avenue NE would be changed, with the elevated light rail more likely to change near and mid-range views than the at-grade rail crossings. None of these views have special designations, and urban development limits long-range views. Similarly, the elevated guideway would be more prominent in views along 76th Avenue NE compared to an at-grade alignment. The station location at 166th Avenue NE would reduce the length of the light rail line, thereby reducing its visual

impact. Moreover, the Proposed Design Refinements would provide opportunities for enhancing elements of visual quality in comparison with an at-grade alignment.

However, the Proposed Design Refinements also provide opportunities for improved aesthetic treatments at the ground level compared to the 2011 Project. The elevated guideway would improve opportunities for access, landscaping, and urban design features underneath the light rail facility that would not be possible with an at-grade alignment. An at-grade profile also would have the required prominent fencing to deter pedestrian crossings, and would have used most of the right-of-way adjacent to NE 76th Street. At crossings, the light rail tracks would have included visually prominent signals and gates that would not be necessary with the elevated alignment.

The Final EIS analysis rated the existing site conditions at that time as having medium vividness and low intactness and unity. Currently, site conditions are improved, and are rated as medium for all three aspects of visual quality (vividness, intactness, and unity). The overall rating for the area has improved from low to medium. The light rail facility would have a moderate negative impact on visual quality; however, the magnitude of the impact would not result in changes to the rating for any of the three aspects of visual quality.

3.4.2 Impacts during Construction

Construction impacts include the presence of large equipment, construction fencing, temporary traffic controls, and staging/storage areas. Construction equipment and temporary visual impacts would be similar to the 2011 Project; however, larger equipment for constructing the elevated structure in downtown Redmond would be more visible for the Proposed Design Refinements. Construction of the elevated guideway often requires falsework and other temporary structures.

3.4.3 Potential Mitigation Measures

3.4.3.1 Potential Mitigation Measures for Operational Impacts

There would be no increase in visual impacts from the Proposed Design Refinements compared to the 2011 Project. The Proposed Design Refinements would incorporate the measures listed in Section 4.5.3.2, Impacts during Operation, and Section 4.5.4.1, Mitigation for All Alternative Operational Impacts, of the Final EIS to minimize visual impacts.

Marymoor Park

In coordination with King County Parks, Sound Transit will replant appropriate native vegetation along the north boundary of Marymoor Park, consistent with clear zone and permit requirements. A 12-foot permanent vegetation easement would extend from the guideway into the park where vegetation would be limited in height and density for guideway maintenance purposes. Along the retained fill section, aesthetic design treatments for the retaining walls will be considered and coordinated with King County Parks.

Downtown Redmond

Sound Transit will restore landscaping and other treatments in the Redmond Central Connector right-of-way underneath the elevated light rail facility that were disturbed or relocated as a result of construction. Existing artwork displaced from the Redmond Central Connector would be incorporated into the station area or relocated to another public space in coordination with the City of Redmond.

3.4.3.2 Potential Mitigation Measures for Construction Impacts

The measures described in Section 4.5.4.2, Mitigation for Construction Impacts, of the Final EIS would apply.

3.5 Noise and Vibration

The types of land use in the project area have not changed; however, since 2011, construction of new, mixed-use commercial and multi-family development has added noise-sensitive receivers in downtown Redmond.

3.5.1 Impacts during Operation

3.5.1.1 Noise

Measurements of existing noise levels were used to determine noise levels along the corridor. In accordance with Federal Transit Administration (FTA) guidance, the noise analysis included all sensitive properties within 175 feet in areas with intervening buildings, out to 350 feet or more from the centerline of the light rail alignment (FTA 2006). Table 3.5-1 summarizes the potential transit noise impacts with the Proposed Design Refinements compared to the 2011 Project. Figure 3.5-1 shows the location of the potential noise impacts with the Proposed Design Refinements. Out of the 37 potential noise impacts, 20 moderate impacts and 8 severe impacts are located near the Downtown Redmond Station and the remaining 9 moderate noise impacts are located east of SR 520 between NE 60th Street E and the Sammamish River.

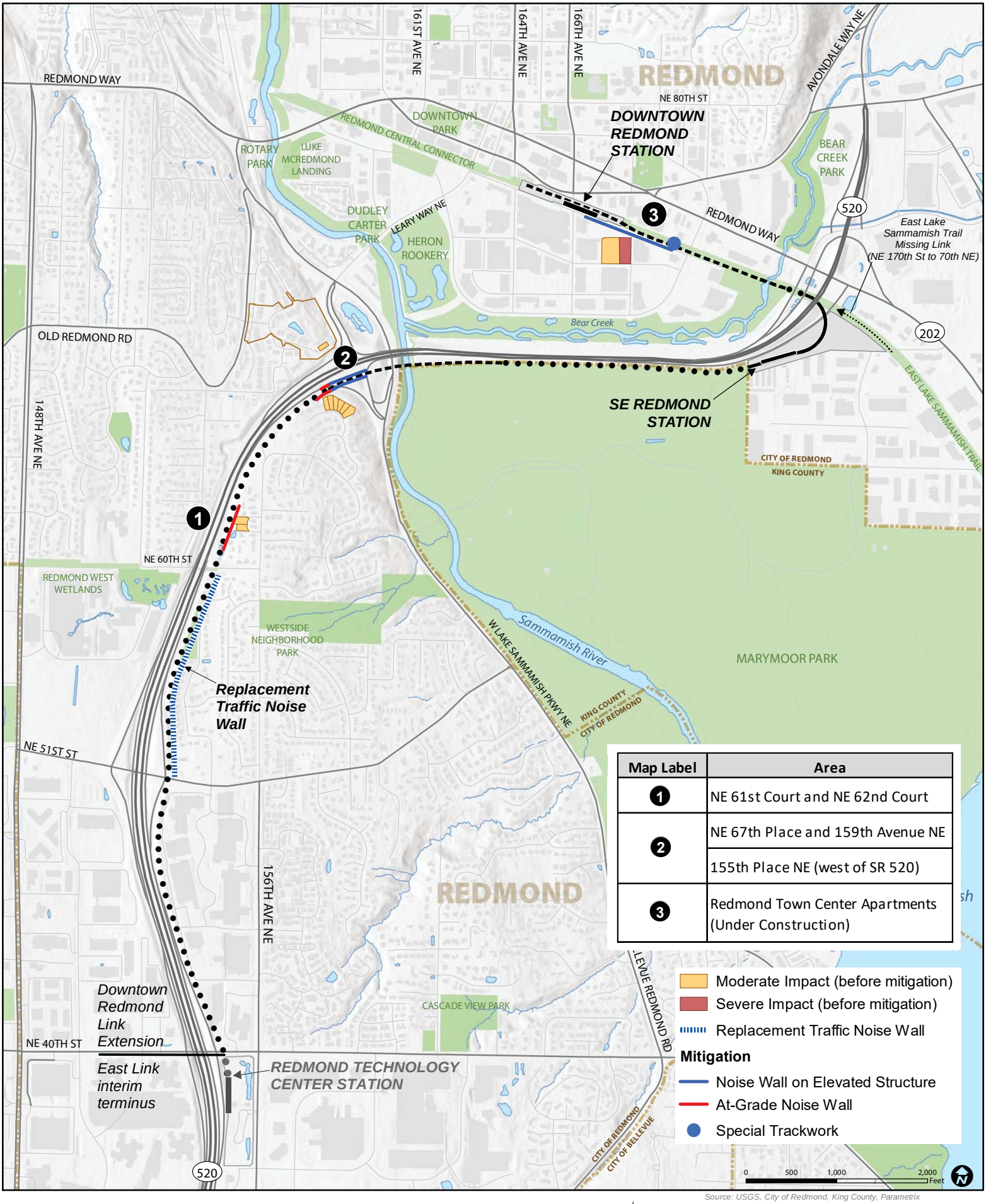
Table 3.5-1. Summary of Potential Transit Noise Impacts (After Mitigation)

	2011 Project	Proposed Design Refinements
Moderate Noise Impacts	33	29
Severe Noise Impacts	148	8
Total Noise Impacts	181 (0)	37 (0)

Source: FTA light rail operational noise modeling

The differences in impacts between the 2011 Project and the Proposed Design Refinements are attributed to the following changes:

1. The terminus of the Proposed Design Refinements is approximately 1,600 feet east of the 2011 Project terminus, which eliminates several severe noise impacts at multi-family buildings between Leary Way and Redmond Way.
2. New construction of two new mixed-use condominium/apartment buildings is predicted to increase potential noise impacts. These impacts would also have occurred under the 2011 Project.
3. The reduction in the severity and number of noise impacts along the retained-cut section from 9 moderate and 5 severe to 7 moderate noise impacts is due to updated trackway plans and the noise-reducing effect of the retaining walls.
4. The Proposed Design Refinements include 4-car trains and 6-minute headways during peak hours, compared to 3-car trains and 7-minute peak headways indicated in the Final EIS, resulting in slightly higher noise levels for the Proposed Design Refinements.



Map Label	Area
1	NE 61st Court and NE 62nd Court
2	NE 67th Place and 159th Avenue NE
	155th Place NE (west of SR 520)
3	Redmond Town Center Apartments (Under Construction)

Source: USGS, City of Redmond, King County, Parametrix

Alignment
- At-Grade
- Elevated
- Retained Cut; Retained Fill

- Station Platform
- Station Area
- City Limits
- Parks / Open Space

Note: Noise walls locations are approximate.

Figure 3.5-1
Noise Impacts and Mitigation
Downtown Redmond Link Extension

Marymoor Park has multiple uses, including noise-sensitive trails and bird-watching areas, as well as areas not considered noise sensitive under FTA criteria, such as the park offices, sports fields, event pad, and velodrome. All of the noise-sensitive areas are located over 700 feet from the light rail alignment, south of Marymoor Way. Light rail noise levels in the sensitive areas of Marymoor Park ranged from 46 to 57 dBA Leq during the peak light rail operational hours (6:00 a.m. to 8:30 a.m. and 3:00 p.m. to 6:30 p.m.), which are 3 to 14 dB below the FTA criteria. These light rail noise levels would be 2 to 4 dB lower during daytime and during off-peak hours due to reduced headways. Although sound from light rail operation may be noticeable south of Marymoor Way, it is unlikely that the light rail noise would be noticeable in the Heron Loop Trail entrance or in other areas with high levels of sensitivity to noise. Light rail noise levels in the active sports areas and offices, which are not considered noise sensitive under FTA criteria, are not predicted to increase the total noise by an amount discernible to an average person.

The park-and-ride noise impact analysis was also updated. The SE Redmond Station, which would include 1,400 parking stalls and access to connecting bus routes, would be located in an established commercial and industrial area. The only noise-sensitive property near the proposed station or station parking area is the Redmond Inn Hotel; no noise impacts were identified related to the SE Redmond Station park-and-ride. The Downtown Redmond Station would not include parking.

Additional details on the noise analysis, including measured and modeled noise levels for residential areas and Marymoor Park, are provided in Appendix B.

Traffic Noise

Following FTA methods, potential traffic noise impacts are evaluated where the Proposed Design Refinements would include new roads, substantial alterations to existing roads, or removal of shielding that would increase traffic noise exposure to sensitive receivers. The only new or modified roadways would be in southeast Redmond where the 2011 Project would rebuild NE 70th Street. In addition to improvements along NE 70th Street, the Proposed Design Refinements would relocate existing traffic sound walls along SR 520 between NE 51st Street and NE 60th Street. The Proposed Design Refinements would also replace a short part of the sound wall near NE 67th Place with a new wall along the retained fill and elevated section of the light rail. Figure 3.5-1 shows the locations of these sound walls.

The existing traffic sound wall for this area consists of two separate barriers. The proposed single replacement traffic sound wall would be located adjacent to the light rail corridor, approximately 7 to 10 feet from the eastbound tracks. The wall would be closer to the residences, located along a slight rise so that the base of the wall would be above the grade of SR 520. The replacement wall, shown in Figure 3.5-1, would be approximately 2,250 feet in length and extend from just north of NE 51st Street to NE 60th Street, with wall heights ranging from 8 feet to 16 feet. The proposed sound wall would maintain existing traffic noise levels and provide acoustical shielding from light rail operations. With the wall, there would be no traffic or light rail noise impacts in this area.

The only noise-sensitive use in southeast Redmond is the Redmond Inn Hotel, located north of NE 70th Street along Redmond Way near the rebuilt NE 70th Street. The potential for traffic noise impacts was evaluated, and the predicted traffic noise level at the closest rooms is below the residential impact criteria.

Other Related Noise Analysis

Supplemental related noise analyses were performed to analyze operational impacts due to wheel squeal along curves, ancillary facilities, and station noise. No noise impacts were predicted.

3.5.1.2 Vibration

Vibration-sensitive receivers were analyzed along the alignment using the methodology described in the FTA guidance manual. The vibration analysis predicts impacts to five receivers (Table 3.5-2) compared to three receivers identified for the 2011 Project. Four of the five receivers also have groundborne noise impacts, which are described below, and one receiver has only a vibration impact. Figure 3.5-2 shows the location of vibration impacts, which are located in the same areas as for the 2011 Project. All impacts are to single-family homes along SR 520. The impacts would be due to the proximity (<65 feet) of the homes to the alignment, the speed of the trains, and the nature of the surrounding soils.

In addition to the vibration analysis for sensitive-receptor buildings, vibration and vibration-induced settlement at the velodrome in Marymoor Park were analyzed. At the north edge of the velodrome, approximately 65 feet from the northbound light rail track centerline, the overall vibration level is predicted to be 79 vibration velocity decibels (VdB). This vibration level is almost a full order of magnitude lower than the FTA damage criteria for engineered concrete and masonry (0.3 inches per second [in/s]) as well as below the criteria for the most susceptible of structures (0.12 in/s). The 65-foot setback from the guideway, the higher density of the soil, and the predicted overall vibration level make settlement extremely unlikely at the velodrome. Therefore, no operational vibration or vibration-induced settlement impacts to the velodrome structure are expected.

Table 3.5-2. Summary of Potential Transit Vibration and Groundborne Noise Impacts (After Mitigation)

	2011 Project[1]	Proposed Design Refinements[1]
Vibration Impacts[2]	3 (1)	5 (0)
Groundborne Noise Impacts[3]	0 (0)	9 (0)
Total Receivers with Impacts[4]	3 (1)	10 (0)

[1] All of the impacts occurr between the Redmond Technology Center Station and the Sammamish River.

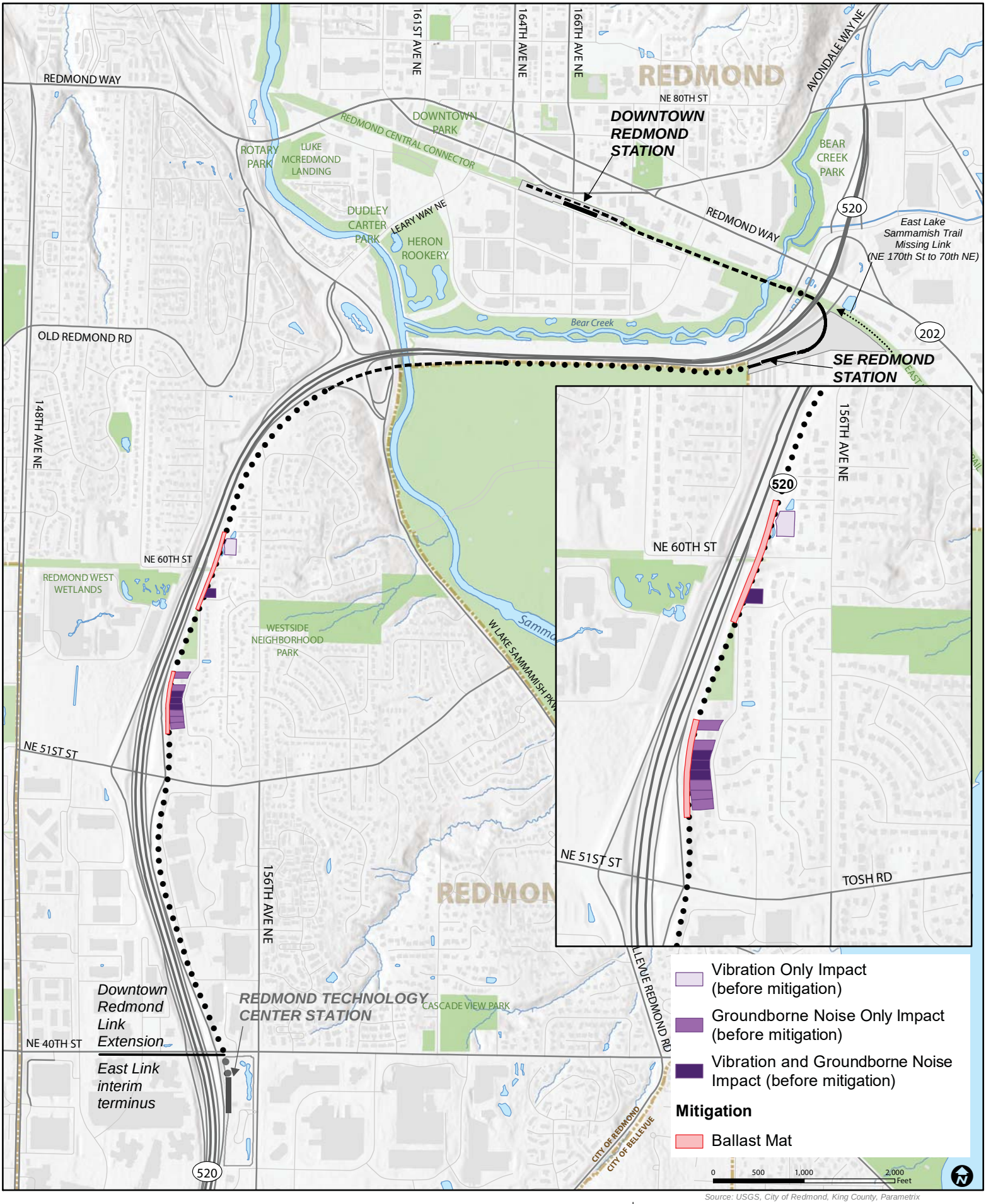
[2] Of the 5 vibration impacts, 1 receiver is a vibration only impact, and 4 receivers have both vibration and groundborne noise impacts.

[3] Of the 9 groundborne noise impacts, 5 receivers are groundborne noise only impacts, and 4 receivers have both vibration and groundborne noise impacts.

[4] Because there are 4 receivers that have both vibration and groundborne noise impacts, the total number of receivers with impacts is 10.

Operational Groundborne Noise Impacts

Groundborne noise is the rumbling noise caused by the vibration of the walls in enclosed spaces. A total of nine receivers located between NE 51st Street and NE 60th Street would have groundborne noise above FTA criteria as shown in Table 3.5-2 and Figure 3.5-2. Four of those nine receivers also have potential vibration impacts. Therefore, the groundborne noise assessment identified five receivers with impacts in addition to the five operational vibration impacts identified above, which results in a total of ten receivers with impacts.



Source: USGS, City of Redmond, King County, Parametrix

Alignment
- At-Grade
- Elevated
- Retained Cut; Retained Fill

Station Platform
Station Area
City Limits
Parks / Open Space

Note: Ballast mat locations are approximate.

Figure 3.5-2
Potential Vibration and Groundborne Noise Impacts and Mitigation
Downtown Redmond Link Extension

3.5.2 Impacts during Construction

3.5.2.1 Noise

Construction noise would be the same as presented in Section 4.7.3.5 of the Final EIS, and the contractor would be required to adhere to local ordinances regulating noise.

3.5.2.2 Vibration

The potential for construction vibration impacts remains as discussed for the 2011 Project in Section 4.7.3.5 of the Final EIS. This analysis also considers construction impacts specific to the velodrome. During the construction activities near the velodrome, the highest levels of vibration are likely to be produced by vibratory rollers. No pile driving activities are expected in the vicinity. At 60 feet, a vibratory roller can be expected to produce a peak particle velocity (ppv) of 0.06 in/s. This is below the expected range of settlement for medium density soils, and below the most sensitive of damage criteria. Therefore, settlement is extremely unlikely. In addition, construction near the velodrome would be of limited duration.

3.5.3 Potential Mitigation Measures

Sound Transit will perform additional noise and vibration analysis during final design to verify impacts and review mitigation measures. During final design, if it is discovered that mitigation could be achieved by less costly means or if the detailed analysis shows no impact, then a mitigation measure may be eliminated or modified.

3.5.3.1 Potential Operational Noise Mitigation Measures

The proposed mitigation measures are consistent with those presented for the 2011 Project in the Final EIS and include sound walls and special trackwork that reduce noise and vibration from the gap in the tracks at crossovers. Figure 3.5-1 shows the approximate locations of proposed sound walls and special trackwork based on the current noise analysis.

For the Proposed Design Refinements, there would be one new sound wall near NE 61st Court and NE 62nd Court, and another new wall on the west side of the alignment near the elevated structure over Lake Sammamish Parkway NE. A new sound wall is also recommended for the Redmond Town Center Apartments currently under construction. These sound walls would have been needed with the 2011 Project had additional design and development information been known at the time of the Final EIS. Several sound walls proposed for the 2011 Project, west of 164th Avenue NE, are no longer required because of the revised terminus location.

With the proposed mitigation measures, summarized in Table 3.5-3, all noise impacts would be mitigated.

Table 3.5-3. Summary of Potential Light Rail Noise Mitigation Measures

Area	Mitigation Type	Length (feet)	Wall Height (feet)
NE 61st Court and NE 62nd Court	Sound wall	475	6
NE 67th Place and 159th Avenue NE	Sound wall	650	6
155th Place NE (west of SR 520)	Sound wall/Sound wall on elevated structure	500	4
Redmond Town Center Apartments	Special trackwork (crossover)	Not applicable	Not applicable
Redmond Town Center Apartments	Sound wall on elevated structure	865	8

Source: FTA noise modeling

3.5.3.2 Potential Operational Vibration and Groundborne Noise Mitigation Measures

The operational mitigation measures for vibration are consistent with those presented in the Final EIS; however, additional information about potential impacts is now known.

To mitigate the projected vibration and groundborne noise impacts, ballast mat (recommended) or other vibration control measures would be installed under both directions of track. The proposed extents of mitigation would have a total length of 3,000 track feet (route length of 1,500 feet), which are described in detail in Appendix B.

3.5.3.3 Potential Construction Mitigation Measures for Noise and Vibration

As discussed in the Final EIS, Sound Transit will comply with local construction noise regulations. Construction noise and vibration can be reduced as needed with operational methods and scheduling, equipment choice, and acoustical treatments. The contractor would have the flexibility of either prohibiting certain noise-generating activities during nighttime hours or providing additional noise-control measures to meet noise limits. The Final EIS, Section 4.7.5.2, Construction Noise Mitigation Measures, lists potential noise control measures the contractor could implement, and Section 4.7.5.4, Construction Vibration Mitigation Measures, discusses measures to minimize construction vibration impacts.

3.6 Ecosystem Resources

The affected environment is similar to what is described in the Final EIS. However, preliminary engineering has advanced, providing additional information to support this analysis, such as results of wetland delineation studies and further refinement of project work elements. The Proposed Design Refinements include some work elements below the OHWM of the Sammamish River and Bear Creek not included in the 2011 Project.

Over the Sammamish River, the Proposed Design Refinements' elevated guideway would be about 50 to 60 feet above the river and would match the height of the SR 520 bridge. No columns would be within the OHWM. Installation of two new outfalls to convey stormwater runoff from the guideway would require work below the OHWM of the Sammamish River. The outfalls would have a pipe size of 18 to 24 inches in diameter. One outfall would be on the east side of the river and the other outfall would be on the west side of the river.

The Proposed Design Refinements include several changes at the Bear Creek crossing compared to the previously analyzed 2011 Project. Several guideway support structures would likely be installed below the OHWM of Bear Creek. The exact location of the structures relative to the OHWM is not known because the future location of the OHWM (following stream channel widening; see below) is not yet known. The structures would be outside of the active stream channel and measures would be in place to complete construction in the dry.

The Proposed Design Refinements would include improvements to Bear Creek, which complement the restoration efforts downstream of the existing rail crossing corridor and continue upstream to the SR 202 crossing. Construction of the Proposed Design Refinements would remove the existing treated wood bridge from the stream at the former BNSF rail crossing and portions of the fill prism upon which the railroad was built. Removal of the bridge requires work below the OHWM and is needed to address the existing channel constriction. The Proposed Design Refinements would widen the channel and floodplain of Bear Creek where the bridge and its fill prism currently constrict the existing stream channel and floodplain. Fill would also be removed from the floodplain of Bear Creek. Additional habitat improvements include placing large woody debris (LWD) in the floodplain, enhancing stream substrates, and planting native trees and shrubs in riparian and floodplain areas. Adjacent areas within the floodplain would be excavated to create more floodplain storage and off-channel habitat and to ensure no net rise

of the flood elevation in the floodway. These improvements provide needed additional flood storage to address construction within the floodplain as well as create improved stream function for fish. Over the long term, the proposed habitat improvements in Bear Creek will benefit aquatic species by increasing the amount of available habitat, improving habitat complexity, maintaining riparian cover and water quality, and facilitating upstream migration. Figure 3.6-1 shows aquatic resources in the study area.

During the Final EIS process, Sound Transit prepared a biological assessment for consultation under the Endangered Species Act (ESA). Analyses in that document were based in part on the expectation that no construction activities or permanent structures would be required below the OHWM of Bear Creek or the Sammamish River. As noted above, however, the Proposed Design Refinements include work elements below the OHWMs of both of those streams, along with habitat improvements, riparian habitat clearing, and the installation of a pedestrian bridge with the potential to affect habitat conditions in Bear Creek. To address the resultant changes in the manner or extent of anticipated effects on ESA-listed species, FTA and Sound Transit reinitiated consultation with the National Marine Fisheries Service (NMFS). On June 15, 2018, NMFS issued a biological opinion with a determination that construction and operation of the Downtown Redmond Link Extension will not jeopardize the continued existence of ESA-listed species under that agency's jurisdiction. FTA and Sound Transit also asked the U.S. Fish and Wildlife Service (USFWS) about the need for reinitiation of consultation for species under that agency's jurisdiction. USFWS responded that reinitiation is not warranted or necessary at this time.

3.6.1 Impacts during Operation

Operational impacts with the Proposed Design Refinements for aquatic, vegetation and wildlife, and wetland resources are described below and select elements are summarized in Table 3.6-1.

The discussion of impacts for the Proposed Design Refinements assumes implementation of the best management practices (BMPs) described in the Final EIS, Appendix H3, to avoid and minimize impacts during construction. Appendix C, Ecosystems Technical Report Addendum, provides details of potential impacts and mitigation.

Table 3.6-1. Summary of Ecosystem Resources

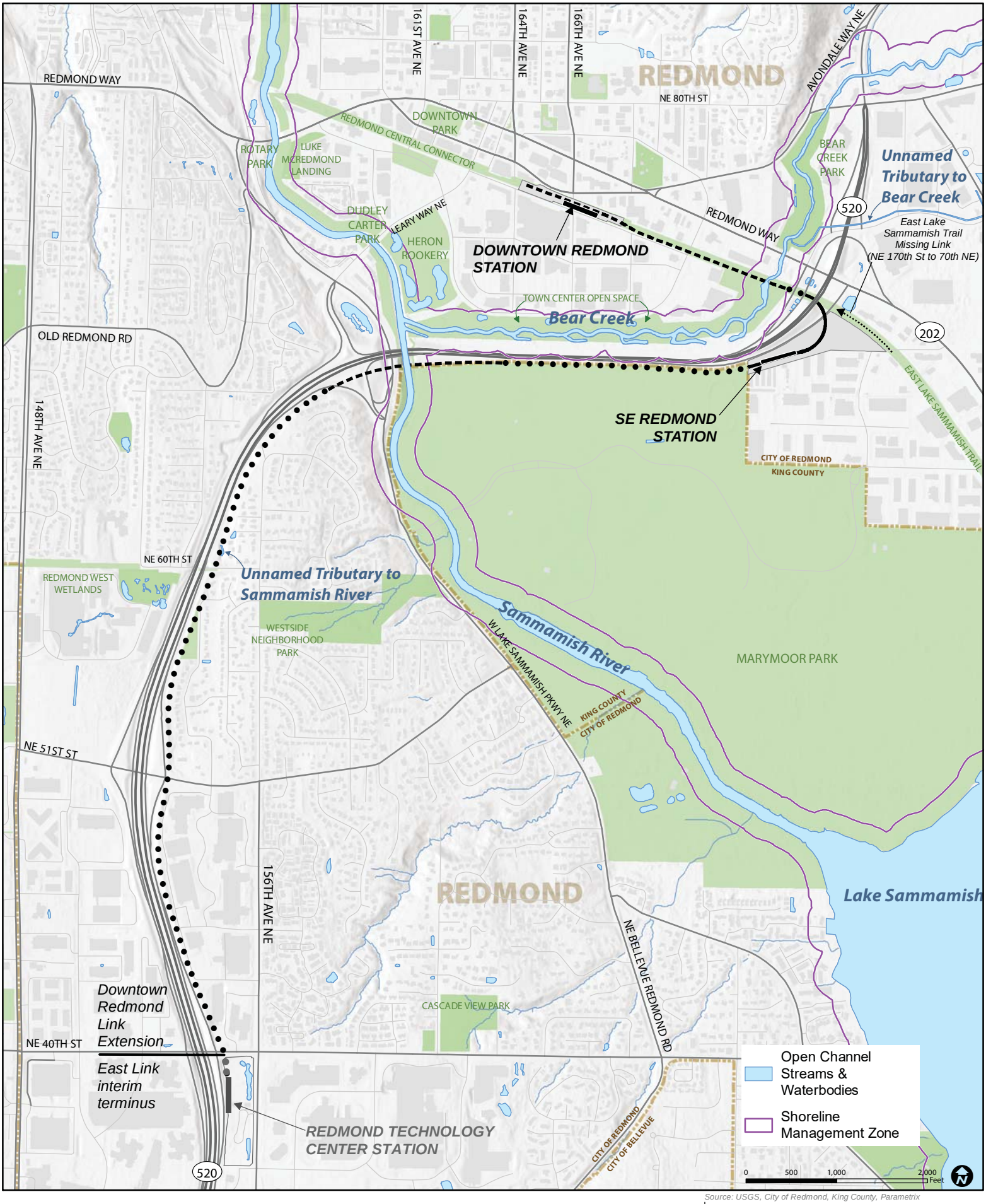
		2011 Project	Proposed Design Refinements
Stream Crossings		2[1]	3
Forested Wildlife Habitat (acres)	Permanent impact	1.1	7.0[2]
	Temporary impact	1.5	4.0[2]
Threatened and Endangered Species[3]		Not Likely to Adversely Affect	Likely to Adversely Affect
Wetlands (acres)[4]	Permanent impact	0.1	1.6
	Temporary impact	0.1	0.9

1 One unnamed tributary to the Sammamish River just north of NE 60th Street (LLID 1221262476704) was not identified in the Final EIS but would have been crossed by the 2011 Project.

2 For the Proposed Design Refinements, the permanent impacts are based on additional design information that was not available for the conceptual design used for the 2011 Project. The temporary impacts during construction are based on construction limits and access needs, as well as the additional design information. The analysis also reflects more detailed surveys and mappings of vegetated areas, which are broadly characterized in the Final EIS as forested wildlife habitat. Much of the affected habitat for the Proposed Design Refinements is characterized as narrow, linear vegetated areas located between dense urban development and SR 520. See Section 3.6.1.2 for additional information.

3 The 2011 determination of "Not Likely to Adversely Affect" in the Final EIS was based on the assumption that no work would occur within Bear Creek or the Sammamish River. With the Proposed Design Refinements, construction includes ground-disturbing work below the OHWM of both watercourses; this work could occur when juvenile Chinook salmon are in the affected area. Construction and implementation will comply with the terms and conditions of the biological opinion issued by NMFS on June 15, 2018, which determined the Downtown Redmond Link Extension will not jeopardize the continued existence of ESA-listed species.

4 Wetland impacts for the 2011 Project were based on a reconnaissance level wetland assessment. For the Proposed Design Refinements, the impacts are based on field delineation, which captured impacts along SR 520 not documented at the time of the Final EIS.



Source: USGS, City of Redmond, King County, Parametrix

Figure 3.6-1
Aquatic Resources
Downtown Redmond Link Extension

3.6.1.1 Aquatic Resources

The federally listed threatened and endangered aquatic species present in the study area are all salmonids (see Figure 3.6-1). Work elements associated with the Bear Creek crossing would have both negative and beneficial impacts. The presence of support structures below the OHWM of Bear Creek would have a minor reduction in the amount of habitat available to aquatic species. Based on the location of these structures—more than 10 feet from the defined channel—combined with the fact that the stream remains within the defined channel except during annual high flows, the potential for adverse effects would be minimal. In addition, by increasing the amount of aquatic habitat in the stream channel (through removal of the existing bridge and fill prism and construction of a wider channel), the Proposed Design Refinements would result in a net increase in the amount of aquatic habitat in the study area. Over the long term, the proposed habitat improvements in Bear Creek would benefit aquatic species by increasing the amount of available habitat, improving habitat complexity, maintaining riparian cover and water quality, and increasing the prey base. The end result would tie into the restoration completed downstream of the study area for the SR 520, I-5 to Medina Bridge Replacement and HOV project. The Bear Creek restoration work would establish a compositionally and structurally complex ecosystem with attributes important for supporting fish and wildlife. The channel reconfiguration would also reduce the floodplain stages upstream of the existing Bear Creek bridge. Potential impacts on floodplain functions, including flood storage, are discussed in Appendix E, Water Resources Supporting Materials Technical Memorandum.

Minor impacts to the channels of the Sammamish River are anticipated as a result of the Proposed Design Refinements. Two new stormwater outfalls would be installed below the OHWM, altering existing bank habitat. The new stormwater outfalls would not affect water quality in the river, because all runoff would be from non-pollution-generating surfaces. No changes in flow regime, including peak flows and base flows of the Sammamish River, are expected, because the volume of runoff from the small amount of added impervious surface would be miniscule compared to the magnitude of stream flows in the river.

Sound Transit would obtain an Aquatic Lands Lease from the Washington Department of Natural Resources for a portion of the project that crosses over the Sammamish River outside of the WSDOT right-of-way.

The Proposed Design Refinements would construct a culverted crossing at the unnamed tributary just north of NE 60th Street (LLID 1221262476704), which is not fish bearing. This approximately 3,000-foot-long tributary is primarily conveyed by underground stormwater pipes between NE 60th Street to its discharge point at the Sammamish River. No stormwater features would discharge to this stream. The culvert would have been required for the 2011 Project, but the stream had not been mapped at the time.

Operation of the Proposed Design Refinements would result in a permanent loss of approximately 0.07 acre of riparian habitat along the Sammamish River, 0.1 acre along the unnamed tributary just north of NE 60th Street, and 0.6 acre along Bear Creek. In addition, the new bridges spanning these streams would shade the channel and banks, modifying fish habitat and limiting re-establishment of vegetation in shaded areas. A direct comparison of affected areas is not possible, because the characterization of the affected areas has been modified from what was used for the 2011 Project analysis. It is anticipated that the impact of the Proposed Design Refinements would be similar to that of the 2011 Project.

3.6.1.2 Vegetation and Wildlife Resources

The nature and location of permanent (operational) impacts on vegetation and wildlife habitat would be as discussed for the 2011 Project in the Final EIS. While Table 3.6-1 shows the amount of impact area reported for the 2011 Project and the Proposed Design Refinements, the differences are mostly attributed to the level of detail that is now available about affected habitat as well as the Proposed Design Refinements. The Proposed Design Refinements were developed as part of more extensive project development program with more detailed field review and design and permitting efforts that included surveys and mappings of the areas to be occupied by the light rail project. The Proposed Design

Refinements included input from geotechnical and arborist surveys that modified the project footprint to account for slope stability, hazard trees, and similar factors related to construction and operational safety. These considerations expanded the temporary and permanent impacts along the alignment. This provides considerably more detail about local habitat conditions and boundaries. The additional design information available for the Proposed Design Refinements also yielded facility information that was not available for the 2011 Project, such as areas needed for retaining walls, permanent access, stormwater facilities, safe and adequate guideway/catenary clearance from surrounding vegetation, utilities, and construction activities.

A total of about 7.0 acres of forested wildlife habitat (upland and riparian forest cover types) would be permanently displaced by the Proposed Design Refinements. The 2011 Project reported 1.1 acre (riparian and urban mostly vegetated forest) would be impacted. These impacts would have been similar for the 2011 Project if this level of detail would have been known at that time. The areas characterized for the Proposed Design Refinements as forested wildlife habitats are typically narrow, linear vegetated areas located between urban development and SR 520 and represent degraded habitat for wildlife due to ongoing noise and pollution impacts, human and pet disturbances, and invasive species.

The area that would be permanently occupied by the light rail facilities includes about 1,320 trees that would need to be removed (about 650 additional trees would be removed for construction access, see Section 3.6.2.2). This was not quantified for the 2011 Project, but it is anticipated that the impact would be similar as most of the alignment remains in the same location as the 2011 Project. Sound Transit will need to routinely assess and remove hazard trees that could fall on the guideway.

3.6.1.3 Wetland Resources

Between the Redmond Technology Center Station and Bear Creek, the alignment for the Proposed Design Refinements is very similar to the 2011 Project. However, wetland impacts discussed in the Final EIS were based on a reconnaissance-level wetland assessment. For the Proposed Design Refinements, the ecosystems resources analysis presents information based on field delineation. As a result, the Proposed Design Refinements capture wetland impacts along SR 520 not documented at the time the Final EIS was published. These impacts would have been similar for the 2011 Project if the wetlands along SR 520 had been mapped at that time.

Between Bear Creek and the Downtown Redmond Station, the Final EIS described different potential impacts for wetlands and streams. Because of the construction of the Redmond Central Connector Trail, the baseline conditions have changed and resulted in design changes to accommodate multiple facilities in the former BNSF rail corridor. In the Final EIS, the 2011 Project was assumed to be built on the existing railroad fill prism. However, much of this prism was used to construct the Redmond Central Connector, or is planned to be used for a future extension of this trail. Therefore, the alignment for the Proposed Design Refinements was moved to the south edge of the former BNSF rail corridor to avoid the Redmond Central Connector, resulting in more wetland and stream impacts than estimated in 2011. In addition, the Proposed Design Refinements are accounting for the bridge connecting the East Lake Sammamish Trail to the Redmond Central Connector and Bear Creek Trail, and alterations to the crossing of SR 520. Habitat improvements to Bear Creek are greater than presented in the Final EIS.

The Proposed Design Refinements would permanently affect approximately 1.6 acres of wetlands. This is an additional 1.5 acres of wetland compared to the 2011 Project's estimated impact of 0.1 acre of wetland. This change is largely a result of refined wetland boundaries following delineations and revised design elements. The primary wetland impact would be along the northern boundary of Marymoor Park east of the soccer fields. Approximately half of the permanent wetland impacts will occur in this wetland. The Final EIS identified 0.1 acre of impact to this wetland; however, it had not been delineated at that time. Portions of this wetland were created or enhanced by King County as mitigation for prior projects in Marymoor Park. Sound Transit is currently consulting with King County, U.S. Army Corps of

Engineers (Corps), and Washington State Department of Ecology (Ecology) to confirm wetland replacement requirements for mitigation. Sound Transit will continue to coordinate with these agencies and will propose additional compensatory mitigation for impacts to this wetland in accordance with their requirements, as described in Section 3.6.3.

3.6.2 Impacts during Construction

3.6.2.1 Aquatic Resources

Potential temporary construction impacts on aquatic resources, consisting primarily of increased risk of sedimentation and turbidity, are described in the Final EIS. Appropriate use of BMPs described in the Final EIS would mitigate the effects of most of those impacts. Impacts associated with the Proposed Design Refinements for habitat improvement work in Bear Creek or the placement of stormwater outfalls below the OHWM of the Sammamish River are described below, followed by details about temporary impacts on riparian vegetation.

The two guideway support columns below the OHWM of Bear Creek would be installed outside of the defined stream channel during the summer months when water levels are lowest. If measures to isolate the work areas from the stream channel are deemed necessary, sheet piles or similar structures would be installed around the support column construction areas. As such, installation of the guideway support columns would not result in adverse effects on aquatic resources, such as elevated levels of turbidity or contaminants.

Short-term adverse effects that could result from improvements to Bear Creek include harassment and harm of fish during dewatering of the existing stream channel (before which fish would be excluded from the affected channel segment), as well as elevated levels of turbidity when water is introduced to the new channel.

Of the fish that are present in the stream while work is underway, many would likely move out of the affected stream segment to avoid the activity and turbidity associated with the construction, or they would not be present due to natural migration movements. Based on analyses completed for the Lower Bear Creek Restoration Project, it is unlikely that the effects of elevated turbidity levels would be lethal to adult or juvenile salmonids (NMFS 2009). Conducting fish exclusion and flow reintroduction during the period when adults and juveniles of salmonid species are least likely to be present in the project area would minimize or avoid altogether the potential to affect fish, including ESA-listed species. This period generally coincides with the summer low-flow period.

Potential short-term adverse effects associated with installation of the new stormwater outfalls in the Sammamish River would consist of elevated levels of turbidity due to disturbance of substrates below the OHWM. Conducting the work when adults and juveniles of salmonid species are least likely to be present in the project area would minimize or avoid altogether the potential for adverse effects on fish. Where ground-disturbing work below the OHWM is necessary, cofferdams would isolate work areas from the river. Based on the anticipated implementation of these impact avoidance and minimization measures, the potential for adverse effects on aquatic resources, including fish, would be minimal.

The Proposed Design Refinements would temporarily remove approximately 0.5 acre of riparian habitat along the Sammamish River, 0.6 acre along the unnamed tributary, and 1.54 acres along Bear Creek. The riparian vegetation to be removed consists of native and non-native shrubs. In addition, the Proposed Design Refinements are estimated to remove approximately 26 trees from the Sammamish River riparian area, 15 of which are significant trees (over 6 inches diameter at breast height [dbh]) according to City of Redmond Code. Construction of the Proposed Design Refinements would remove approximately 60 trees from the Bear Creek riparian area, 28 of which are significant trees according to City of Redmond Code. Removal of trees and shrubs would result in temporary reductions in riparian vegetation functions, such as

nutrient inputs, LWD recruitment, and shade provision. These functions would gradually return to pre-construction levels as vegetation regrows. In the interim, the functions would be provided by vegetation that remains in nearby riparian areas.

3.6.2.2 Vegetation and Wildlife Resources

The nature and location of temporary (construction-related) impacts on vegetation and wildlife would be consistent with what was described in the Final EIS. However, as discussed for operational impacts, there is now more detailed information available about the affected habitat areas as well as the facility itself and its construction staging areas.

Construction of the Proposed Design Refinements would require clearing and removal of approximately 11 acres of forested wildlife habitat (upland and riparian forest cover types) from within the construction limits compared to 1.5 acres estimated for the 2011 Project. This includes the approximately 7 acres that would be permanently occupied by the light rail facilities (described in 3.6.1.2), plus 4 acres would be temporarily cleared for construction. The increase in the estimate of temporary impacts is again due to a combination of more detailed information available about the vegetated areas affected by the project as well as more advanced design, including additional details about construction limits, staging, and access to structures, station areas, and the light rail corridor along SR 520. In addition to the approximately 1,320 trees that would be permanently cleared for operations, construction of the Proposed Design Refinements would clear approximately 650 trees in construction areas, including 425 significant trees (over 6 inches dbh) and 30 landmark trees (over 30 inches dbh), as defined by the King County and City of Redmond codes. Most of the tree removal would occur in upland forest areas (approximately 600 trees). Approximately 32 trees would be removed from wetlands (including 20 significant trees and 2 landmark trees), and 60 trees from wetland buffers (including 40 significant trees and 1 landmark tree).

3.6.2.3 Wetland Resources

Construction of the Proposed Design Refinements would have approximately 0.9 acres of temporary wetland impacts compared to 0.1 acre for the 2011 Project. Most of this change is due to refined wetland delineations and design changes in which temporary impacts to wetlands were larger than anticipated in Marymoor Park and along Bear Creek, which are both high quality wetlands.

3.6.3 Potential Mitigation Measures

3.6.3.1 Potential Mitigation Measures for Operational and Construction Impacts

As discussed in the Final EIS, Sound Transit would meet all regulatory requirements and provide mitigation required by permits for impacts to wetlands and riparian habitat. Sound Transit is currently consulting with King County, Corps, and Ecology to confirm wetland replacement requirements for mitigation. Compensatory mitigation for wetlands and riparian habitat, including the King County mitigation areas, would be further developed concurrent with design refinements and permit applications. Sound Transit will implement construction measures and other mitigation required by permits for the work in the active channel to minimize impacts to aquatic species. Over the long term, the proposed habitat improvements in Bear Creek would benefit aquatic species, including ESA-listed species. Advanced mitigation, mitigation banks, traditional compensatory mitigation, and in-lieu fee programs would be included in the review of mitigation opportunities. Applicable BMPs identified in Appendix H3 of the Final EIS would be implemented during construction. Additional measures for the protection of aquatic habitats in the active channel of Bear Creek and the Sammamish River are specified in the biological assessment for the Downtown Redmond Link Extension (Appendix F). Such measures include commitments to complete all work within the channels of Bear Creek or the

Sammamish River during approved in-water work windows, isolating and dewatering in-water work areas, and developing a fish exclusion plan for review and approval by NMFS.

Following construction, all temporarily disturbed areas would be restored with appropriate native vegetation, consistent with clear zone and local permit requirements. Project construction and implementation will comply with the terms and conditions of the biological opinion issued by NMFS on June 15, 2018. Sound Transit would also replace removed trees in accordance with City of Redmond, King County, and WSDOT requirements.

3.7 Water Resources

3.7.1 Impacts during Operation

Potential operational impacts on water resources from the Proposed Design Refinements are discussed in terms of impervious area changes, stormwater treatment and detention, streams, floodplains and floodways, and groundwater.

3.7.1.1 Impervious Area Changes

The Proposed Design Refinements would add approximately 8.2 acres of impervious area (a 32 percent increase within the footprint of the Proposed Design Refinements), compared to an increase of 4.3 acres (25 percent) for the 2011 Project. Most of the 3.9-acre difference in impervious area increase is attributed to updates to station, parking area, and roadway design. Appendix E, Water Resources Supporting Materials Technical Memorandum, provides details of the impervious area calculations for the Proposed Design Refinements.

The Proposed Design Refinements' pollution-generating impervious surface (PGIS) would consist of new roadways and parking areas. The proposed light rail footprint is on ballast and elevated guideway, which are non-PGIS areas. Section 4.9.3.2 of the Final EIS further describes PGIS and non-PGIS areas. If light rail is located on other impervious surfaces with other activities, such as roadways, it would not change the pollution-generating characteristics of the underlying activity. Stormwater runoff from PGIS would receive water quality treatment as discussed below.

3.7.1.2 Stormwater Treatment and Detention

Runoff from the Proposed Design Refinements would either flow to the Sammamish River or Bear Creek, or infiltrate into the ground, depending on the segment. As discussed for the 2011 Project in the Final EIS, the Proposed Design Refinements would prevent impacts to water resources by applying stormwater management based on the requirements of the Ecology 2012 Stormwater Manual for Western Washington, the WSDOT Highway Runoff Manual, and local jurisdiction stormwater management codes.

Similar to the 2011 Project, by meeting the requirements of state and local jurisdictions, the Proposed Design Refinements would provide water quality and flow control measures that would prevent impacts to surface water resources.

3.7.1.3 Floodplain and Floodway Impacts

Federal Executive Order 11988 requires federal agencies to protect public safety against flooding, protect the natural function of floodplains (floodwater storage areas) and floodways (flood-conveyance channels), and to avoid supporting development in a floodplain wherever there is another practicable project option. FEMA guidance for Executive Order 11988 provides an eight-step process that federal agencies should carry out as part of their decision-making on projects that have potential impacts to or within the floodplain.

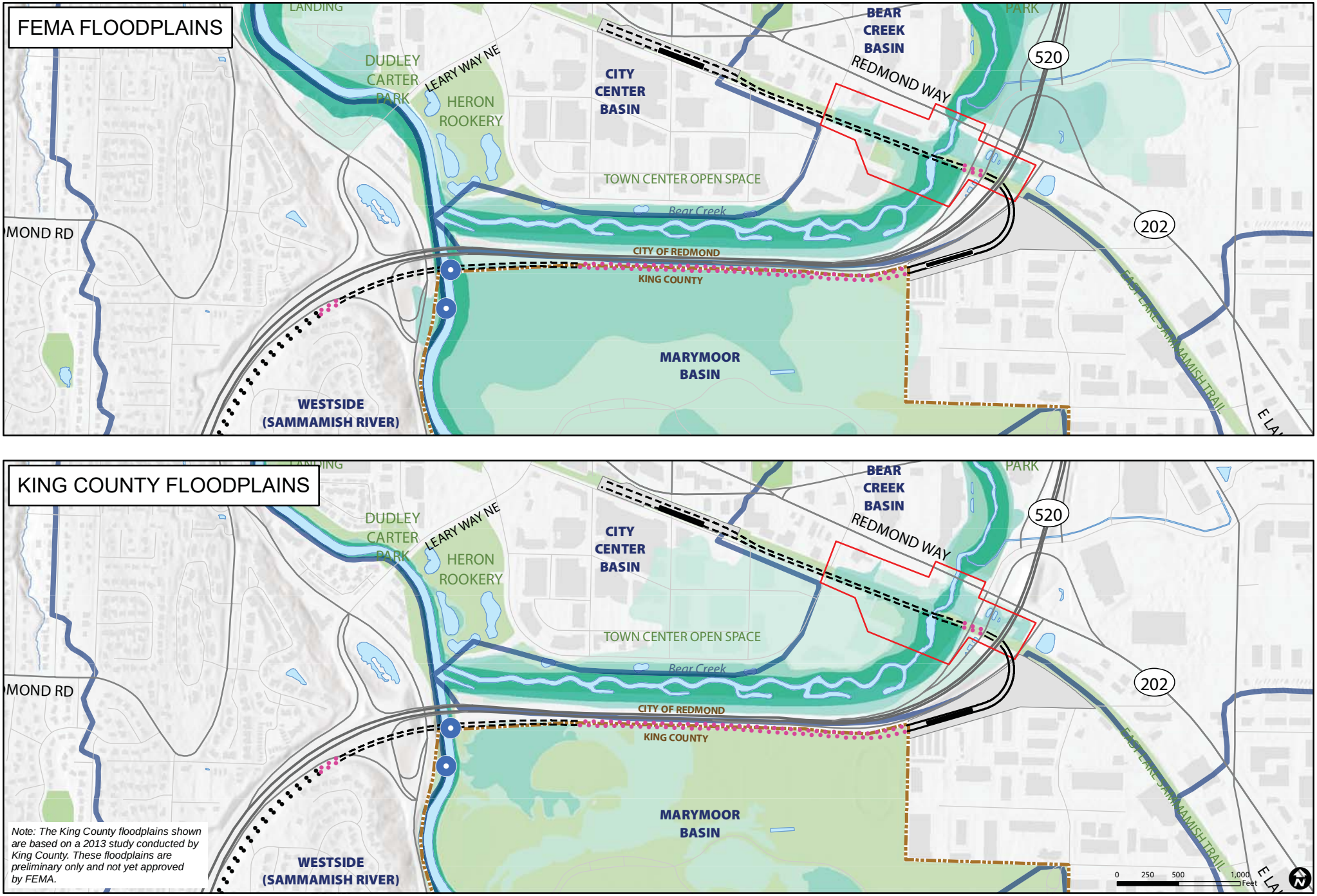
In the project area, floodplain and floodway regulations are administered and enforced by local agencies. King County administers floodplain and floodway regulations within the Marymoor Park area. In all other areas of the light rail corridor, the City of Redmond administers floodplain and floodway regulations. In addition, because of a historical Corps project, the Corps has authority by the Rivers and Harbors Act of 1899, 33 United States Code (USC) 408 (Section 408), to review and approve changes on the Sammamish River. In the Downtown Redmond Link Extension corridor, the Sammamish River is part of the federal Sammamish River Flood Control Project, which is a Civil Works project constructed by the Corps in the 1960s. Because the Proposed Design Refinements might add a new stormwater outfall to the Sammamish River, it would be considered an alteration of the Civil Works project and is subject to review and approval by the Corps.

The Federal Emergency Management Agency (FEMA) publishes floodplain maps as part of their National Flood Insurance Program (NFIP) administered through local agencies. For larger rivers and streams that have been modeled, FEMA maps might also include a delineation of the regulatory floodway (for smaller streams, the regulatory floodway must be determined through additional modeling analyses). Both King County and City of Redmond have adopted the FEMA NFIP maps as one of the mapping components they reference for their flood-protection programs. Figure 3.7-1 shows the FEMA NFIP mapping, as well as more detailed floodplain mapping developed by King County.

Where the alignment would pass through the Sammamish River floodplain in the Marymoor Park area and adjacent WSDOT right-of-way, the Proposed Design Refinements would provide compensatory storage or other mitigation measures for fill, as required by the local jurisdictions to prevent impacts to the regulated floodplain elevation.

Similar to the 2011 Project, the Proposed Design Refinements would cross Bear Creek along the former BNSF rail corridor. Both the 2011 Project and the Proposed Design Refinements would potentially shift the alignment to accommodate a Redmond utility project and regional trail connection, which in combination with the guideway could change the position of the Bear Creek crossing in the former railroad corridor. For both the 2011 Project and the Proposed Design Refinements, compensatory storage would be provided near the rail corridor for floodplain displaced by project fill.

In the Bear Creek channel near SR 202 and the former BNSF rail corridor, the Proposed Design Refinements would modify the existing floodplain and floodway elevations by removing the existing bridge and twin culverts and widening the Bear Creek channel. Like the 2011 Project, the lowest portion of the Bear Creek bridge for the Proposed Design Refinements would be approximately 3 feet or more above the 100-year flood elevation of Bear Creek. Changes to the floodplain and floodway would be evaluated through a quantitative modeling analysis conducted as part of City of Redmond permitting and approval. As a result, the Proposed Design Refinements would maintain or lower the Bear Creek floodplain and floodway elevations depending on what City-approved changes to the channel configuration are implemented. In addition, the project would prepare a Conditional Letter of Map Revision (CLOMR) documenting the proposed Bear Creek floodplain and floodway changes, which the City could submit to FEMA for incorporation into the NFIP data. After the project is constructed, the City would lead the Letter of Map Revision (LOMR) process with FEMA, which has review and approval authority, resulting in an official change to the NFIP maps. Sound Transit documented the Downtown Redmond Link Extension's consistency with the 8-step process and next steps for the CLOMR and LOMR process for review by FEMA. FEMA acknowledged the project's consistency with the decision-making process for the Executive Order.



Floodplain Source: FEMA, City of Redmond, King County, Parametrix

Figure 3.7-1
Floodplains and Floodways
Downtown Redmond Link Extension

The Proposed Design Refinements are not expected to have permanent adverse impacts to Bear Creek; instead, the refinements would have a beneficial impact on Bear Creek compared to the 2011 Project. The removal of the existing bridge and widening of the channel would allow for more flood water conveyance closer to the stream's natural configuration in this area.

In both King County and City of Redmond, floodplain management requirements will be addressed through local agency permitting. In addition, the project will require a Corps' Clean Water Act Section 404 permit, which will also evaluate consistency with Executive Order 11988. Furthermore, the Corps' Section 408 review is triggered by the application for a federal permit and will also occur as part of the Corps' Clean Water Act Section 404 permit evaluation for the Downtown Redmond Link Extension.

3.7.1.4 Groundwater

Similar to the 2011 Project, the Proposed Design Refinements would not affect groundwater in the vicinity.

3.7.2 Impacts during Construction

Potential temporary water quality impacts from construction of the Proposed Design Refinements would be similar to those expected from the 2011 Project.

3.7.3 Potential Mitigation Measures

As discussed in the Final EIS, Sound Transit would meet all regulatory requirements and provide mitigation required by permits.

3.7.3.1 Potential Mitigation for Operational Impacts

The City of Redmond would implement stormwater management for the Proposed Design Refinements based on the standards presented in their Stormwater Technical Notebook (City of Redmond 2017d), consistent with Ecology's 2012 Stormwater Management Manual for Western Washington, as amended in 2014 (Ecology 2014). Stormwater management within Marymoor Park would be implemented based on the King County Surface Water Design Manual (King County 2016). Because the Proposed Design Refinements would apply stormwater management to a larger area of roadway and parking that is currently untreated (City of Redmond 2013), the Proposed Design Refinements are expected to result in a larger benefit to water resources than the 2011 Project. Therefore, no additional stormwater runoff mitigation measures are needed.

A quantitative floodplain analysis would be conducted as part of permitting. The improvements to the Bear Creek stream channel and floodplain implemented by the Proposed Design Refinements would result in either no net impact or a benefit to the stream channel, floodplain, and floodway conveyance. The Proposed Design Refinements would not increase flooding risk and would likely result in reducing flooding, because it will return the stream similar to its natural configuration. Therefore, no additional floodplain mitigation measures are needed. Where the 2011 Project would pass through the Sammamish River floodplain in the Marymoor Park area and the adjacent WSDOT right-of-way, required compensatory storage provided by the Proposed Design Refinements for fill or other mitigation measures would prevent impacts to the floodplain elevations regulated by King County and the City of Redmond.

3.7.3.2 Potential Mitigation for Construction Impacts

Similar to the 2011 Project, the Proposed Design Refinements would prevent temporary water quality impacts from construction activities by meeting the requirements of the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit (Ecology 2016), developing a stormwater pollution-prevention plan (SWPPP), and applying construction stormwater BMPs. As a

result, construction of the project is not expected to result in adverse impacts to water resources; no additional mitigation measures are needed.

3.8 Utilities

Since the Final EIS, as the preliminary design has advanced, new utility information and potholing identified major utilities. Because of this additional information, the Proposed Design Refinements have identified more utility conflicts compared to the 2011 Project. Additional communication lines have been identified between NE 40th and NE 51st Streets, as well as several water, natural gas, underground power, and sewer lines between NE 40th Street and the Sammamish River. Given the similarities in the light rail alignment and profiles, it is likely these conflicts would also have occurred with the 2011 Project. The City of Redmond has also completed a 36- to 42-inch stormwater trunkline within the former BNSF right-of-way in downtown Redmond from where the Sammamish River crosses Redmond Way to 170th Street NE. The construction of this line was included in the cumulative effects analysis in the Final EIS and is now an existing condition. The trunkline discharges stormwater from downtown Redmond to the Sammamish River.

3.8.1 Impacts during Operation

As with the 2011 Project, no adverse impacts on utilities during light rail operation are anticipated with the Proposed Design Refinements.

3.8.2 Impacts during Construction

Construction impacts for the Proposed Design Refinements would be similar to those described for the 2011 Project in the Final EIS and include impacts to communications, sewer, and gas lines. In addition, the Proposed Design Refinements would have potential utility conflicts with underground power and stormwater utilities. As the preliminary design has advanced, additional utility information and potholing allowed major utilities to be identified. Because of this new information, the Proposed Design Refinements have identified additional utility conflicts in some locations, as well as reductions of utility conflicts in other locations, compared to the 2011 Project.

Between NE 40th Street and the Sammamish River, there are several limited conflicts with water, natural gas, underground power, and sewer lines. Near the crossing of the Sammamish River, King County Wastewater is planning to replace a regional sewer line along West Lake Sammamish Parkway in 2020. The utility design team would coordinate with King County to ensure column locations do not conflict with the sewer line. It is anticipated that there would be limited water, sewer, and power utility conflicts in the SE Redmond Station area.

The Proposed Design Refinements would shift the alignment to reduce conflicts with the sewer utility near the SR 520/SR 202 interchange described for the 2011 Project. Between 164th Avenue NE and 166th Avenue NE in downtown Redmond, an 8-inch gas line owned by Puget Sound Energy would be relocated so that it would not be below the trackway and station facilities. This impact to the gas utility would be reduced compared to the 2011 Project; the Proposed Design Refinements would relocate a shorter section of the pipe because the light rail terminus is now farther east. There would also be limited conflicts with water utilities in downtown Redmond that were not previously identified for the 2011 Project. The elevated alignment in downtown Redmond would avoid the 36- to 42-inch stormwater line, except near the station location. This utility was not considered in the Final EIS.

3.8.3 Potential Mitigation Measures

3.8.3.1 Potential Mitigation Measures for Operational Impacts

As described for the 2011 Project in the Final EIS, no adverse impacts on utilities during light rail operation are anticipated with the Proposed Design Refinements; therefore, no mitigation is proposed.

3.8.3.2 Potential Mitigation Measures for Construction Impacts

Similar to the 2011 Project, the Proposed Design Refinements include implementing design measures and coordinating with utility providers and the public to minimize impacts on utilities and potential service disruptions during light rail construction.

3.9 Historic and Archaeological Resources

This section is supported by Appendix D, Historic and Cultural Resources Technical Report Addendum. Similar to the 2011 Project, the Proposed Design Refinements would have no impacts on historic or archaeological resources.

3.9.1 Impacts during Operation

3.9.1.1 Historic Resources

This section summarizes potential impacts to historic resources within the area of potential effects (APE) as a result of the Proposed Design Refinements. This analysis considers the potential for resources not previously identified, date of previous determinations, and design changes that could alter previous effect determinations. No new resources meeting the age criteria (50 years by 2021, i.e., constructed in 1971 or before) were identified within the APE.

The Final EIS documented two historic-period resources, Justice William White House (7730 Leary Way NE) and the Bill Brown Building (7824 Leary Way NE), that were determined eligible for listing in the National Register of Historic Places (NRHP). FTA determined and the State Historic Preservation Officer (SHPO) at the Department of Archaeology and Historic Preservation (DAHP) concurred that the 2011 Project did not have an adverse effect on these resources. With the revised terminus, the Proposed Design Refinements would be over 400 feet from these resources, farther than the 2011 Project, and it would not have a direct or indirect impact on either resource, resulting in a finding of no adverse effect.

Based on the updated analysis detailed in Appendix D, Historic and Cultural Resources Technical Report Addendum, the Proposed Design Refinements have no potential adverse effects on historic resources.

3.9.1.2 Archaeological Resources

Two archaeological sites have been recorded within the APE: 45KI451 at the Bear Creek crossing and 45KI1365 in Marymoor Park near the Sammamish River. Site 45KI451 consists of a bridge and historic period artifacts believed to be associated with the use of the grade as a railroad. The site was determined not eligible for listing in applicable historic registers (Sterner 2010).

Investigations conducted at Site 45KI1365 concluded that the original artifact and additional cultural materials found at Site 45KI1365 appear to have been moved to this location, most likely by a Corps' project and flooding in the mid-1900s, and redeposited out of context with their original stratigraphic position. Additional information about the site investigation is described in Appendix D, Historic and Cultural Resources Technical Report Addendum. Because these items are in a secondary deposit, their information potential is limited. FTA and Sound Transit consulted with affected tribes to provide

information from the archaeological survey. FTA determined and DAHP concurred that this site is not eligible for the NRHP.

Additionally, in 2006, WSDOT conducted a survey on the north shoulder of SR 520 in support of the Section 106 process for the SR 520 project. That study found two pieces of stone flakes in shovel probes placed approximately 120 feet apart (300 meters) southwest of the intersection of SR 520 and SR 202 (CH2M HILL 2006). These finds were not recorded on the Washington Archaeological Site Inventory forms and therefore do not have DAHP inventory numbers. The location of the 2006 shovel probes is now under the westbound on-ramp to SR 520 and could not be further investigated by Sound Transit.

3.9.2 Impacts during Construction

3.9.2.1 Historic Resources

The proposed Downtown Redmond Station location is roughly a block northeast of the Justice William White House and a half-block east of the Bill Brown Building—a large enough distance to avoid any potential direct impacts on either building or its surrounding parcel, because no element of construction, staging, or development is likely to occur near either building. Furthermore, existing buildings would separate the new transit station from both historic buildings, limiting indirect audible and visual impacts.

3.9.2.2 Archaeological Resources

FTA determined and the SHPO concurred that Sites 45KI451 and 45KI1365 are not eligible for the NRHP. No additional cultural resources investigation is warranted in these areas.

The two stone flakes found in shovel probes during the 2006 WSDOT survey on the north side of SR 520 that are now under the westbound on-ramp to SR 520 have not been reviewed by DAHP for their potential register eligibility. As such, they must be considered potentially eligible until such time as additional study of this resource occurs. It is possible that reconstruction of the westbound on-ramp to SR 520 could expose this location, at which time additional study may be possible.

3.9.3 Potential Mitigation Measures

3.9.3.1 Historic Resources

There are no adverse effects to historic resources in the Proposed Design Refinements area of impacts that require mitigation measures. The SHPO concurred with this determination on April 25, 2018.

3.9.3.2 Archaeological Resources

Sound Transit has received DAHP's concurrence on the archaeological investigations in Marymoor Park; no further investigations or construction monitoring are required across the northern boundary of the park. Pre-construction shovel probes will be conducted at the SE Redmond Station once the land is accessible for surveying. If the survey finds any artifacts, construction monitoring may be required. If monitoring is required, Sound Transit will prepare a construction monitoring and inadvertent discovery plan to address the potential for discovery of archaeological resources during project construction. Sound Transit and FTA will submit the plan to affected tribes and DAHP for review.

3.10 Parkland and Open Space

3.10.1 Impacts during Operation and Construction

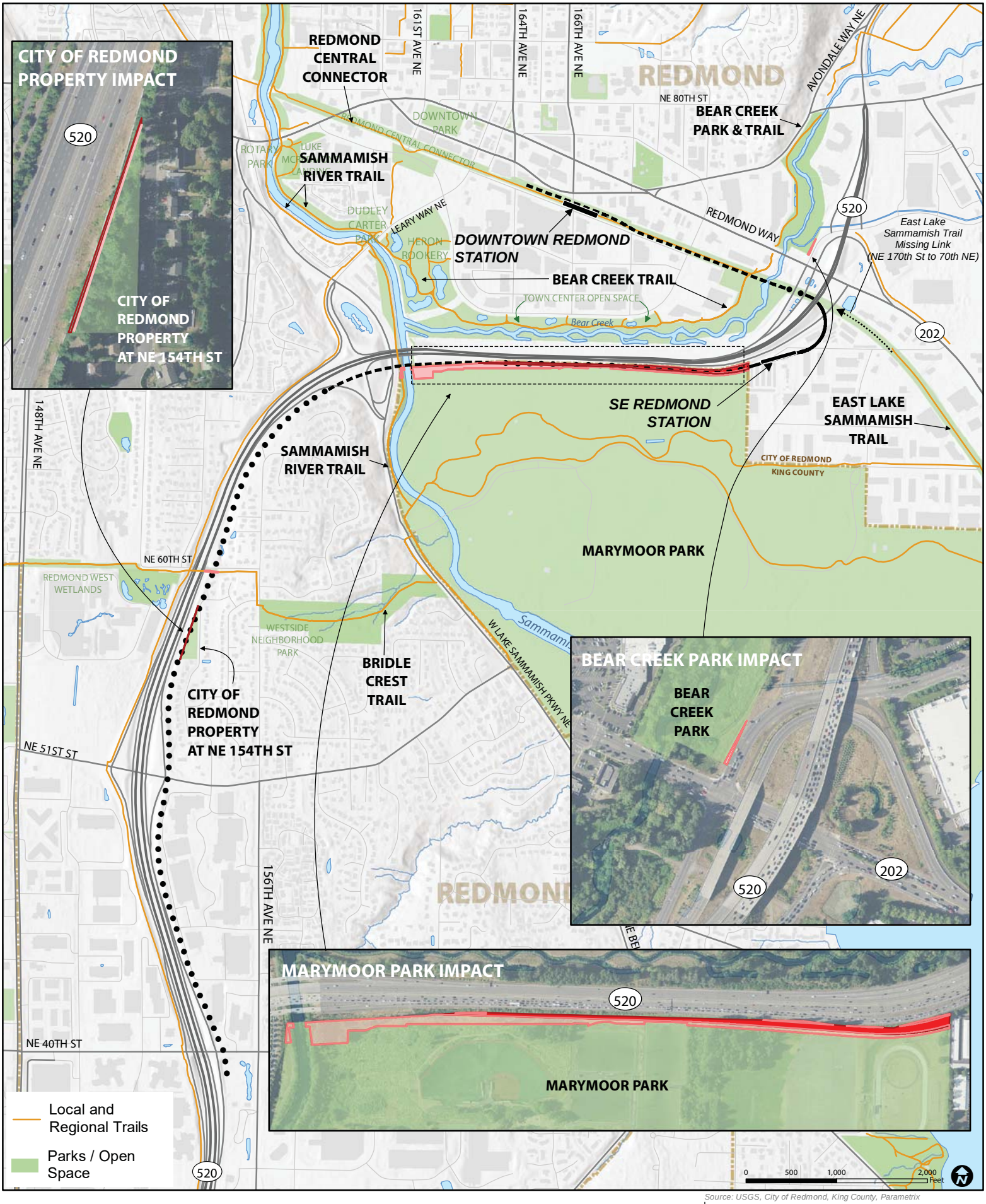
Parks and open space in the vicinity are shown in Figure 3.10-1. The Proposed Design Refinements have the same potential park impacts and mitigation for Sammamish River Trail and Bridle Crest Trail as discussed for the 2011 Project. These facilities are not discussed further in this section. For Marymoor Park, Bear Creek Trail, East Lake Sammamish Trail, and the Redmond Central Connector, the impacts are within the range of impacts discussed for the 2011 Project. The Proposed Design Refinements would impact an undeveloped park property at NE 154th Street and may have temporary construction impacts to Bear Creek Park, which were not anticipated in the 2011 Project. Table 3.10-1 provides an overview of the potential impacts for parklands and open space resources.

3.10.1.1 Marymoor Park

Along the northern boundary of the 640-acre park, the Proposed Design Refinements would acquire approximately 2 acres of the total park area, which is the same as identified for the 2011 Project. The Proposed Design Refinements differ slightly from the 2011 Project where the guideway transitions from an elevated structure and continues across the park on retained fill. For maintenance, Sound Transit would construct a 12-foot-wide access road along the elevated portion of the guideway east of the Sammamish River. The access road would be constructed of gravel, grasscrete, or similar surface suitable for occasional truck access. In addition, improvements in the station area include a pedestrian and bicycle connection from the SE Redmond Station to Marymoor Park.

This use of the park would not affect the use of the park facilities. In response to concerns about potential noise impacts in the park from operation of the light rail line, Sound Transit performed a noise analysis, which found that light rail operation would not affect noise-sensitive areas of the park that are south of NE Marymoor Way. Noise levels in these areas are predicted to range from 46 to 57 dBA Leq during the peak light rail operational hours, which is 3 to 14 dB below the FTA criteria for noise-sensitive park uses. Project noise would not adversely affect the active uses at the north end of the park. As described in Section 3.5, Visual Resources, the retained fill portion of the guideway and the removal of some screening vegetation would change the view from the park towards the north. While park users in this area would see train cars passing, the light rail facility would block nearly all views of SR 520 and its associated traffic.

Use of the ball fields and facilities at the northern end of the park would not be affected by these visual changes. A 12-foot permanent vegetation easement would extend from the guideway where vegetation would be limited in height to minimize risk of falling trees and debris on the guideway. Consistent with clear zone and permit requirements, replanting appropriate native vegetation along the north boundary of Marymoor Park would be coordinated with King County Parks.



Source: USGS, City of Redmond, King County, Parametrix

Figure 3.10-1
Parks and Open Space
Downtown Redmond Link Extension

Table 3.10-1. Impacts and Mitigation for Park and Open Space Resources

Facility (size)	Impacts and Mitigation for 2011 Project		Impacts and Mitigation for Proposed Design Refinements	
	Impacts	**Mitigation**	**Impacts**	**Mitigation**
Marymoor Park (640 acres)	**Permanent:** 2 acres **Temporary[1]:** 3 acres	**Permanent:** ▪ Acquire replacement recreation land equal in value and function **Temporary[1]:** ▪ Provide financial compensation for temporary use of land and restore parkland	**Permanent:** 2 acres **Temporary[1]:** 3 acres	**Permanent:** ▪ Financial compensation for permanent easement[2] **Temporary[1]:** ▪ Same as 2011 Project
Sammamish River Trail (10.9 miles long)	**Permanent:** 0 to 0.1 acre (aerial easement)[2] **Temporary[1]:** 0 to 0.1 acre[2]	**Permanent:** ▪ Acquire replacement recreation land equal in value **Temporary[1]:** ▪ Provide financial compensation for temporary use of land ▪ Restore trail after construction	**Permanent:** Approximately 400 square feet (aerial easement)[3] **Temporary[1]:** 0[2] acre	**Permanent:** ▪ Compensate for permanent easement ▪ Locate guideway columns outside trail clear zone, as practicable[2] **Temporary[1]:** ▪ Same as 2011 Project
Bear Creek Park (4.5 acres)	Not considered in Final EIS		**Permanent:** 0 acre **Temporary[1]:** Approximately 0.1 acre	**Permanent:** ▪ No mitigation required **Temporary[1]:** ▪ Restore temporarily disturbed area
Bear Creek Trail (1.4 miles long)	**Permanent:** 0.1 acre (aerial easement) **Temporary[1]:** Construction impacts[1]	**Permanent:** ▪ Reroute trail and restore disturbed area **Temporary[1]:** ▪ Provide financial compensation for the temporary use of land ▪ Restore temporarily disturbed area	**Permanent:** Approximately 350 square feet (aerial easement) **Temporary[1]:** Construction impacts[1]	**Permanent:** ▪ Same as 2011 Project **Temporary[1]:** ▪ Same as 2011 Project
Bridle Crest Trail (2 miles long)	**Permanent:** No impacts **Temporary[1]:** Potential construction impacts[1]	**Permanent:** ▪ No mitigation required **Temporary[1]:** ▪ Potential temporary closure or detour, if needed	**Permanent:** Same as 2011 Project **Temporary[1]:** Same as 2011 Project	**Permanent:** ▪ Same as 2011 Project **Temporary[1]:** ▪ Same as 2011 Project
Redmond Central Connector (2.3 miles long)	**Permanent:** Possible relocation of trail, park amenities, and vegetation **Temporary[1]:** Potential construction impacts	**Permanent:** ▪ Reroute or realign trail **Temporary[1]:** ▪ Provide financial compensation for temporary use of land ▪ Maintain access or provide detours during construction ▪ Restore temporarily disturbed area	**Permanent:** Same as 2011 Project **Temporary[1]:** Same as 2011 Project	**Permanent:** ▪ Same as 2011 Project **Temporary[1]:** ▪ Same as 2011 Project
East Lake Sammamish Trail (11 miles long)	**Permanent:** Relocation of section of trail **Temporary[1]:** Construction impacts	**Permanent:** ▪ Provide financial compensation for the light rail use of right-of-way **Temporary[1]:** ▪ Provide financial compensation for temporary use of land ▪ Reroute and restore trail after construction	**Permanent:** Same as 2011 Project. The Proposed Design Refinements would offer a beneficial impact by facilitating the connection of the East Lake Sammamish Trail to the Bear Creek Trail and Redmond Central Connector, with potential for grade separation. **Temporary[1]:** Same as 2011 Project	**Permanent:** ▪ Same as 2011 Project **Temporary[1]:** ▪ Same as 2011 Project

Table 3.10-1. Impacts and Mitigation for Park and Open Space Resources (continued)

Facility (size)	Impacts and Mitigation for 2011 Project		Impacts and Mitigation for Proposed Design Refinements	
	Impacts	Mitigation	Impacts	Mitigation
City of Redmond Property at NE 154th Street (1.2 acres)	Not considered in the Final EIS		**Permanent:** 0.1 acre **Temporary[1]:** 0.25 acre	**Permanent:** ▪ Impacted property will be replaced consistent with Forward Thrust requirements **Temporary[1]:** ▪ Restore temporarily disturbed area

[1] Temporary construction impacts might include impacts such as removed landscape, dust, noise, and/or traffic detours.

[2] Sound Transit coordinated with the Washington State Recreation and Conservation Office (RCO) and confirmed that the Proposed Design Refinements would not impact RCO-funded projects in Marymoor Park or the Sammamish River Trail.

[3] Impacts to this trail are zero because the affected acreage is counted under impacts to Marymoor Park.

Construction would require a temporary easement of about 3 acres along the northern park boundary to accommodate an access road and construction staging. This is the same as the temporary easement impact identified for the 2011 Project. Construction impacts on park users would be the same as those discussed for the 2011 Project in the Final EIS and could include construction noise, dust, and visual clutter.

3.10.1.2 Bear Creek Park

Bear Creek Park is a 4.5-acre park north of SR 202 and west of NE 76th Street that provides dedicated open space along Bear Creek. Operation of the Proposed Design Refinements would not require permanent acquisition of property from the park. During construction, roadway improvements would slightly raise the intersection of SR 202 with NE 76th Street and the westbound SR 520 on-ramp, and extend slightly north on NE 76th Street. These improvements would be required to align with the westbound SR 520 on-ramp that would be raised to accommodate the at-grade light rail profile. These construction activities may encroach approximately 15 to 20 feet into the southern boundary of the park and along NE 76th Street, requiring a temporary easement of less than 0.1 acre to accommodate construction activities. This area of the park is not in active use; therefore, no users would be affected.

3.10.1.3 Bear Creek Trail

Similar to the impacts of the 2011 Project, the light rail alignment for the Proposed Design Refinements would cross over Bear Creek Trail south of SR 202, requiring acquisition of an easement from the City of Redmond. No direct use of the trail would occur. The elevated alignment would span the trail, resulting in 350 square feet of shading—slightly less than the aerial easement identified for the 2011 Project. The trail would also be lowered by 1 to 3 feet as it crosses underneath the light rail alignment; this would reduce impacts compared to the 2011 Project, which lowered the trail by 20 feet.

Construction impacts would be similar to those described for the 2011 Project in the Final EIS and would require temporary trail detours to allow for trail continuity. During construction, park users would experience impacts from adjacent construction activities, including noise and dust.

3.10.1.4 East Lake Sammamish Trail

The Final EIS assumed the 2011 Project would require realignment of a section of future East Lake Sammamish Trail between NE 70th Street and the westbound SR 520 off-ramp. Currently, the East Lake Sammamish Trail does not cross the SR 520/SR 202 interchange. At NE 70th Street, trail users cross SR 202 to a path that swings north around the interchange and must cross SR 202 again to reach the Bear Creek Trail and Redmond Central Connector. Compared to the 2011 Project, the Proposed Design

Refinements would accommodate an at-grade trail connection along the former BNSF rail corridor between the East Lake Sammamish Trail and Redmond Central Connector with a bridge over Bear Creek. In conjunction with King County, the Proposed Design Refinements would construct the missing link to King County's East Lake Sammamish Trail if funding is available, resulting in a beneficial impact. The Proposed Design Refinements would raise the SR 520 ramps allowing this trail connection to avoid crossing surface streets and ramps, which would improve safety for trail users.

If a portion of the missing link of the trail were completed prior to construction of the Proposed Design Refinements, construction may require temporary closures or detours of the trail as discussed for the 2011 Project in the Final EIS. The Proposed Design Refinements include a pedestrian scramble phase at the signalized 176th Street NE/NE 70th Street intersection to accommodate the anticipated volume of trail users crossing NE 70th Street.

3.10.1.5 Redmond Central Connector

Since the Final EIS was published, the Redmond Central Connector has been constructed. Impacts to the Redmond Central Connector would be consistent with those anticipated for the 2011 Project, but would be slightly different due to the station location being shifted to the east and the track alignment shifted to the south. Construction impacts would be similar to those described for the 2011 Project in the Final EIS and would require temporary trail detours to allow for trail continuity. During construction, park users would experience impacts from adjacent construction activities, including noise and dust.

3.10.1.6 City of Redmond Property at NE 154th Street

The City of Redmond Parks' Arts Recreation Culture Conservation Plan indicates this property would be developed in the future as a neighborhood park. Based on consultation with City staff, the City does not have programmed funding for development of this property. Currently, the property is not developed as a park, includes no facilities or signage, and is not used for recreation. However, this property was purchased with funding from Forward Thrust, a bond measure passed by King County voters in 1968 and adopted as King County Resolution 34571. The County transferred this property to the City of Redmond in 2003. Although the park has not been developed and there are no current plans for its improvement, the deed of transfer from King County to Redmond stipulates that the property shall be used for open space, park, or recreational facility purposes and shall not be converted to a different use unless other equivalent lands and facilities are provided.

Approximately 0.1 acre of this parcel would need to be permanently acquired for the light rail alignment and maintenance easement, and about 0.25 acre would be used as a temporary construction easement. In addition, there would be a permanent underground easement for sound wall support.

3.10.2 Potential Mitigation Measures

Mitigation for impacts to Marymoor Park, Bear Creek Trail, East Lake Sammamish Trail, and Redmond Central Connector would be consistent with the 2011 Project in the Final EIS. Table 3.10-1 provides an overview of the potential mitigation for parklands and open space resources.

3.10.2.1 Marymoor Park

Mitigation for permanent impacts in Marymoor Park would include compensation for permanently acquired property. Mitigation for temporary impacts in Marymoor Park would include providing financial compensation for temporary use of land outside the light rail right-of-way for construction and restoring parkland following construction. Consistent with clear zone and permit requirements, replanting appropriate native vegetation along the north boundary of Marymoor Park would be coordinated with King County Parks.

3.10.2.2 Bear Creek Park

Construction impacts to the temporarily disturbed edge of Redmond Way and NE 76th Street would be restored following construction.

3.10.2.3 City of Redmond Parcel at NE 154th Street

Sound Transit will replace the converted property consistent with Forward Thrust requirements. Disturbed areas will be revegetated after construction in coordination with the City of Redmond and consistent with guideway clear zone requirements.

3.11 Section 4(f)/6(f) Resources

3.11.1 Park and Recreational Resources

3.11.1.1 Section 4(f) Properties Evaluated in the Final EIS

The Final EIS analyzed potential Section 4(f) uses by the 2011 Project to the following Section 4(f) resources: Marymoor Park, Sammamish River Trail, East Lake Sammamish Trail, Redmond Central Connector Trail, and Bear Creek Trail. The East Lake Sammamish Trail and the Redmond Central Connector Trail are exempt from Section 4(f), because they are located in a former BNSF rail corridor that has been railbanked (23 USC 138[f]). Uses within railbanked corridors are considered interim and, therefore, not subject to Section 4(f) (23 Code of Federal Regulations [CFR] 774.13(h)). The City of Redmond concurred that Section 4(f) does not apply to the undeveloped property at 154th Avenue NE and that construction of the Proposed Design Refinements meets temporary occupancy conditions for Bridle Crest Trail and Bear Creek Park. Section 3.10, Parkland and Open Space, discusses impacts and mitigation for these resources. As described for the 2011 Project, the Downtown Redmond Link Extension corridor does not include any Section 6(f) resources.

Based on the analysis of recreation resource impacts in the Final EIS, coordination with officials having jurisdiction, and public opportunity for comment, FTA made a determination of *de minimis* for the Section 4(f) resource impacts in the study area for Marymoor Park, Sammamish River Trail, and Bear Creek Trail. The proposed modifications of the 2011 Project after the original Section 4(f) approval would not substantially increase the amount of Section 4(f) property used, or substantially increase adverse impacts to Section 4(f) property, or substantially reduce the measures to minimize harm. Impacts would be similar to or less than those documented in the Final EIS, and mitigation would remain the same.

Therefore, pursuant to CFR 774.9(c), the *de minimis* determination from the Final EIS remains in effect for the Proposed Design Refinements for Marymoor Park, Sammamish River Trail, and Bear Creek Trail. Accordingly, these resources are not discussed further in this section. Table 3.11-1 provides an overview of the potential impacts on each Section 4(f) resource, mitigation proposed, and the Section 4(f) findings after mitigation. Figure 3.11-1 shows the locations of the 4(f) properties.

3.11.1.2 Section 4(f) Properties Not Evaluated in the Final EIS

Two additional Section 4(f) recreational resources were not included in the Final EIS Section 4(f) analysis. The Proposed Design Refinements may have construction impacts along the east edge of Bear Creek Park. In addition, Bridle Crest Trail, identified as temporarily impacted in the Final EIS, was not addressed under Section 4(f). The impacts and mitigation to the trail remain unchanged from the 2011 Project.

Bear Creek Park

Bear Creek Park is a 4.5-acre park north of SR 202 and west of NE 76th Street that provides dedicated open space along Bear Creek (see Figure 3.11-1). A paved section of the Bear Creek Trail runs north-south along the western boundary of the park, with several interpretive signs along the trail. Other than the trail, Bear Creek Park is not developed.

Project operation would not require any permanent acquisition of property from the park. During construction, roadway improvements would slightly raise the intersection of SR 202 with NE 76th Street and the westbound SR 520 on-ramp, and extend slightly north on NE 76th Street. These improvements would be needed to match the westbound SR 520 on-ramp that would be raised to accommodate the at-grade light rail profile. These construction activities may encroach approximately 15 to 20 feet into the southern boundary of the park and along NE 76th Street, requiring a temporary easement of less than 0.1 acre to accommodate construction activities. This area of the park is not in active use; therefore, no users would be affected. Potential impacts from the Proposed Design Refinements meet the criteria for temporary occupancy defined in CFR 774.13(d). The impacts would be of shorter duration than construction of the Proposed Design Refinements as a whole; ownership of the land would not change; the scope of the work would be minor; there would be no permanent adverse physical impacts; the protected activities, features, and attributes of the park would not change; and the land used would be fully restored after construction. The City of Redmond concurred that the impacts meet the temporary occupancy criteria; therefore, impacts from the Proposed Design Refinements on Bear Creek Park are not considered a Section 4(f) use.

Bridle Crest Trail

The proposed alignment would cross beneath NE 60th Street, where a nonmotorized traffic bridge just south of the roadway bridge carries Bridle Crest Trail across SR 520. While there would be no permanent impacts to the trail, construction east of SR 520 may require temporary closures and/or detours of the trail. These impacts are the same as the 2011 Project; however, a Section 4(f) determination was not made at that time. The potential impacts meet the criteria for temporary occupancy defined in CFR 774.13(d). The impacts would be of shorter duration than construction of the Proposed Design Refinements as a whole; ownership of the land would not change; the scope of the work would be minor; there would be no permanent adverse physical impacts; the protected features, attributes, and activities of the park would not change; and the land used would be fully restored after construction. The City of Redmond concurred with the determination that the impacts meet the temporary occupancy criteria; therefore, impacts on Bridle Crest Trail are considered a temporary occupancy and not a Section 4(f) use.

Table 3.11-1. Impacts and Mitigation Measures for Section 4(f) Resources

		Impacts and Mitigation for the 2011 Project (Final EIS)			Impacts and Mitigation for the Proposed Design Refinements		
Facility (size)	**Change in Impacts**	**Impacts**	**Mitigation**	**Determination (*De Minimis*, Use, or No Use)**	**Impacts**	**Mitigation**	**Determination (*De Minimis*, Use, or No Use)**
Marymoor Park (640 acres)	**Permanent:** Same as 2011 Project **Temporary:** Same as 2011 Project	**Permanent:** 2 acres **Temporary:** 3 acres [1]	**Permanent:** ▪ Acquire replacement recreation land equal in value and function to offset the light rail use within the park property ▪ Evaluate noise impacts to park uses in place at that time consistent with FTA noise analysis methods and criteria when design is advanced, as agreed to by Sound Transit and King County Parks **Temporary:** ▪ Mitigate temporarily disturbed parklands pursuant to RCO regulations ▪ Provide financial compensation for temporary use of land outside the light rail right-of-way for construction; restore parkland following construction	*De minimis*	**Permanent:** 2 acres **Temporary:** 3 acres [1]	**Permanent:** ▪ Financial compensation for permanent easement[2] ▪ Noise analysis using FTA methods and criteria shows no noise impacts on any uses within Marymoor Park; therefore, no mitigation for noise is required. **Temporary:** ▪ Provide financial compensation for temporary use of land outside the light rail right-of-way for construction; restore parkland following construction	*De minimis*[3]
Sammamish River Trail (10.9 miles long)	**Permanent:** Within range of 2011 Project impact **Temporary:** Within range of 2011 Project impact	**Permanent:** 0 to 0.1 acre (aerial easement)[4] Structure elevated over trail Shading **Temporary:** 0 to 0.1 acre disturbed[4] by construction impacts[1]	**Permanent:** ▪ Acquire replacement recreation land equal in value to offset the light rail within the trail right-of-way in compliance with RCO requirements ▪ Locate guideway columns outside trail clear zone, as practicable **Temporary:** ▪ Provide financial compensation for temporary use of land outside of the light rail right-of-way for construction ▪ Reroute and restore trail to King County standards and specifications during and after construction	*De minimis*	**Permanent:** Approximately 400 square feet (aerial easement)[2] Structure elevated over trail Shading **Temporary:** 0 acre disturbed[2] by construction impacts[1]	**Permanent:** ▪ Compensate for permanent easement[2] ▪ Locate guideway columns outside trail clear zone, as practicable **Temporary:** ▪ Same as 2011 Project	*De minimis*[3]

Table 3.11-1. Impacts and Mitigation Measures for Section 4(f) Resources (continued)

		Impacts and Mitigation for the 2011 Project (Final EIS)			Impacts and Mitigation for the Proposed Design Refinements		
Facility (size)	**Change in Impacts**	**Impacts**	**Mitigation**	**Determination (*De Minimis*, Use, or No Use)**	**Impacts**	**Mitigation**	**Determination (*De Minimis*, Use, or No Use)**
Bear Creek Park (4.5 acres)	**Permanent:** No impacts **Temporary:** Increase of 0.1 acre disturbed by construction with the Proposed Design Refinements		*No impacts*		**Permanent:** 0 acres **Temporary:** Potential construction impacts[1] at south end of park and approximately 0.1 acre disturbed by construction activities	**Permanent:** ▪ No mitigation required **Temporary:** ▪ Restore temporarily disturbed area along edge of Redmond Way and NE 76th Street	Temporary occupancy
Bear Creek Trail (1.4 miles long)	**Permanent:** Slightly less than 2011 Project impact Lowering of trail 1 to 3 feet reduces impacts compared to the 2011 Project that lowered the trail 20 feet **Temporary:** Within range of 2011 Project impact	**Permanent:** 0.1 acre (aerial easement) Trail section relocated Structure elevated over trail Shading Trail lowered 20 feet **Temporary:** Construction impacts[1]	**Permanent:** ▪ Reroute trail; restore disturbed trail area after construction; and replace trees **Temporary:** ▪ Provide financial compensation for the temporary use of land during construction, as agreed to with the City of Redmond ▪ Maintain access or provide detours for trail during construction ▪ Restore temporarily disturbed area to existing conditions	*De minimis*	**Permanent:** Approximately 350 square feet (aerial easement) Structure elevated over trail Shading Trail lowered approximately 1 to 3 feet **Temporary:** Construction impacts[1]	**Permanent:** ▪ Similar to 2011 Project Reconnect trail under guideway to the East Lake Sammamish Trail and Redmond Central Connector **Temporary:** ▪ Same as 2011 Project	*De minimis*[3]

Table 3.11-1. Impacts and Mitigation Measures for Section 4(f) Resources (continued)

		Impacts and Mitigation for the 2011 Project (Final EIS)			Impacts and Mitigation for the Proposed Design Refinements		
Facility (size)	**Change in Impacts**	**Impacts**	**Mitigation**	**Determination (*De Minimis*, Use, or No Use)**	**Impacts**	**Mitigation**	**Determination (*De Minimis*, Use, or No Use)**
Bridle Crest Trail (2 miles long)	**Permanent:** Same as 2011 Project **Temporary:** Within range of 2011 Project impact	**Permanent:** No impacts **Temporary:** Potential construction impacts[1]	**Permanent:** ▪ No mitigation required **Temporary:** ▪ Potential temporary closure or detour if needed to accommodate construction activities under NE 60th Street bridge across SR 520	No determination	**Permanent:** Same as 2011 Project **Temporary:** Same as 2011 Project	**Permanent:** ▪ Same as 2011 Project **Temporary:** ▪ Same as 2011 Project	Temporary occupancy

[1] Temporary construction impacts might include impacts such as removed landscape, dust, noise, and/or traffic detours.

[2] Sound Transit coordinated with RCO and confirmed that the Proposed Design Refinements would not impact RCO-funded projects in Marymoor Park or the Sammamish River Trail.

[3] Because there is no change in impacts, the *de minimis* determination is the same as the determination made in 2011.

[4] Impacts to this trail are zero because the affected acreage is counted under impacts to Marymoor Park.

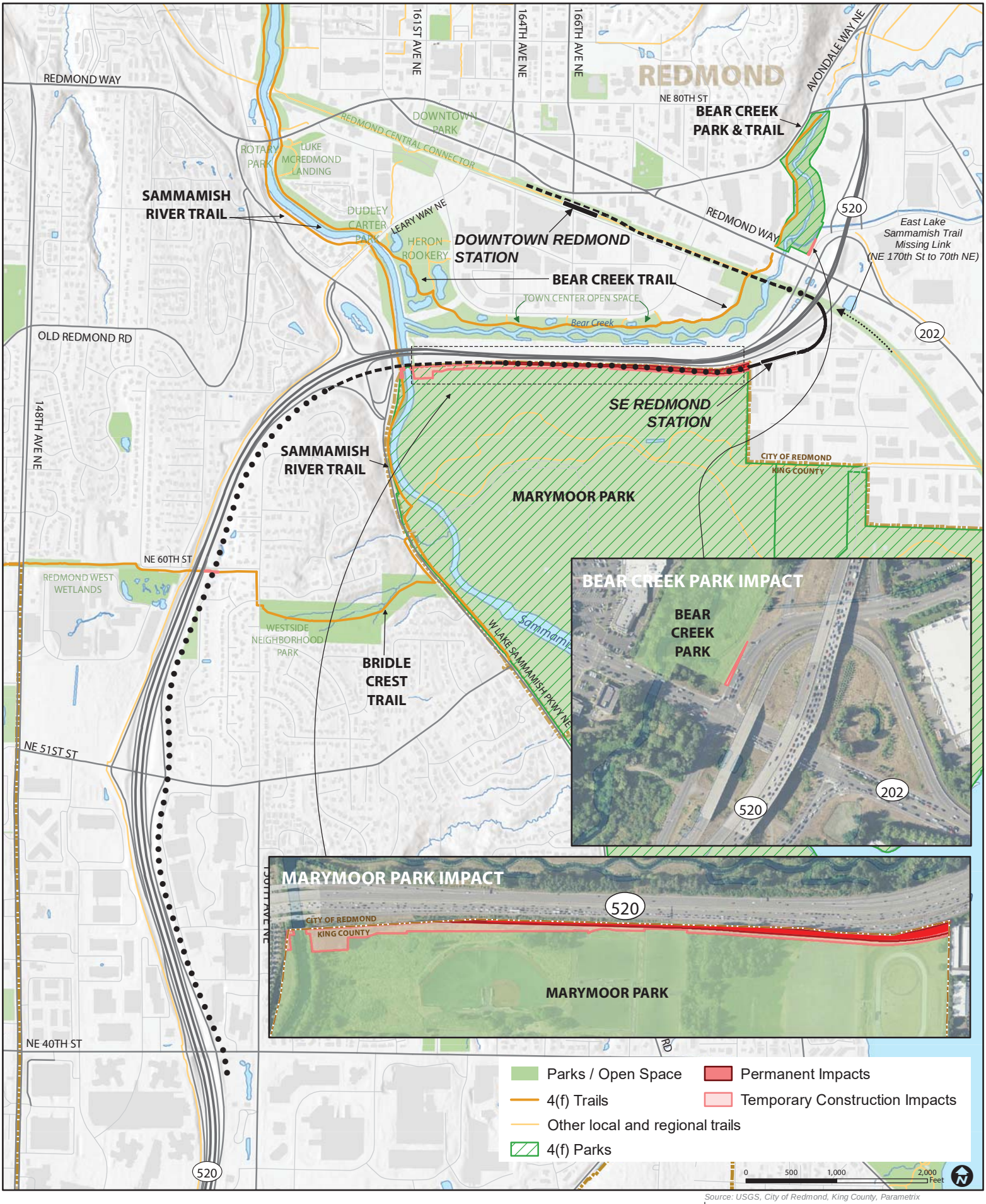


Figure 3.11-1
Section 4(f) Resources
Downtown Redmond Link Extension

3.11.1.3 Section 4(f) Findings for Park and Recreational Resources

As shown in Table 3.11-1, impacts to Marymoor Park, the Sammamish River Trail, Bear Creek Trail, and Bridle Crest Trail would be the same as, and in some cases slightly less than, those described in the Final EIS for the 2011 Project. The 2011 Project did not have impacts to Bear Creek Park; however, with the Proposed Design Refinements there would be a potential temporary occupancy along the southeastern edge of the property near the Redmond Way/NE 76th Street intersection.

FTA and Sound Transit have determined that two Section 4(f) resources—Bear Creek Park and Bridle Crest Trail—would experience a temporary occupancy under Section 4(f). Under 23 CFR 774.13(d), this temporary occupancy would not constitute a use of Section 4(f) resources.

The City of Redmond concurred that Section 4(f) does not apply to the undeveloped property at 154th Avenue NE and that construction of the Proposed Design Refinements meets temporary occupancy conditions for Bridle Crest Trail and Bear Creek Park.

3.11.2 Historic and Cultural Resources

The APE includes two historic-period resources, Justice William White House (7730 Leary Way NE) and the Bill Brown Building (7824 Leary Way NE). The potential for adverse effects were revisited for the Proposed Design Refinements, and the FTA determined and the SHPO concurred on April 25, 2018 that the Proposed Design Refinements would not have an adverse effect on either of these historic resources.

As described in Section 3.9, Historic and Archaeological Resources, Sound Transit conducted archaeological investigations as part of the National Historic Preservation Act (NHPA) Section 106 compliance process for the Proposed Design Refinements. FTA determined and the SHPO concurred that Sites 45KI451 and 45KI1365 are not eligible for the NRHP and, therefore, Section 4(f) does not apply to this site.

While more information about cultural resources in the vicinity of the study area is now known, the potential impacts would be the same; no further investigations or construction monitoring are required across the northern boundary of the park. The Proposed Design Refinements are not anticipated to have an adverse effect on cultural resources eligible for the NRHP. Pre-construction shovel probes will be conducted at the SE Redmond Station once the land is accessible for surveying. If the survey finds any artifacts, construction monitoring may be required. If monitoring is required, Sound Transit will prepare a construction monitoring and inadvertent discovery plan to address the potential for discovery of archaeological resources during project construction. Sound Transit and FTA will submit the plan to affected tribes and DAHP for review.

3.11.3 Grant-Funded Recreational Resources and Impacts

As described in the Final EIS, portions of Marymoor Park and projects in the Sammamish River Trail corridor have been developed with Washington State Recreation and Conservation Office (RCO) funding. Sound Transit coordinated with RCO to confirm that the Proposed Design Refinements would not impact RCO-funded projects where the alignment crosses Marymoor Park and the Sammamish River Trail. As with the 2011 Project, the Proposed Design Refinements would not impair RCO-protected park activities, features, or attributes.

3.11.4 Record of Coordination

Table 3.11-2 updates coordination efforts regarding Section 4(f) and grant-funded properties since 2011. Appendix D, Section 4(f)/6(f) Evaluation, of the Final EIS provides the record of coordination through 2011. Recent Section 4(f) correspondence is included in Appendix K of this SEPA Addendum.

Table 3.11-2. Section 4(f) and Grant-Funded Properties Correspondence

Date	Form	Participants	General Topics
April 7, 2017	Letter	FTA and King County Parks	Temporary occupancy of Marymoor Park
April 16, 2018	Letter	FTA and City of Redmond	Temporary occupancy of Bear Creek Park and Bridle Crest Trail, and significance of property at NE 154th Street
April 25, 2018	Letter	FTA and DAHP	Concurrence determination on historic properties and Marymoor Park Cultural Resource Site
June 6, 2018	Email	Sound Transit and RCO	Confirmation of no impacts to RCO-funded Marymoor Park projects
June 27, 2018	Email	Sound Transit and RCO	Confirmation of no impacts to RCO-funded Sammamish River Trail projects

4 INDIRECT AND CUMULATIVE IMPACTS

Since completion of the Final EIS, planning and zoning has been updated, additional projects have been constructed that were not known at the time of the original analysis, and additional projects are anticipated to be constructed that could contribute to cumulative impacts. Notably, these projects include:

- City of Redmond Comprehensive Plan and Zoning update for the Marymoor Subarea
- Private development in downtown Redmond, including construction of 22 mixed-use and residential developments, with approximately 2,800 residential units and 52,700 square feet of commercial development that have been completed, are in construction, or in the development review process (City of Redmond 2017a, 2017b)

Recent, current, and foreseeable future actions in the project area, which are considered as part of the cumulative impacts assessment for the Proposed Design Refinements, are shown in Figure 4-1 and listed in Appendix J.

The following subsections discuss potential cumulative impacts from operation and construction of the Proposed Design Refinements by resource. The changes to impacts from the Proposed Design Refinements that could contribute to future cumulative impacts are discussed in Chapter 3.

No anticipated changes in cumulative effects are included for the following resources: acquisitions and displacements, water, utilities, historic and archaeological resources, parklands and open space, Section 4(f) resources, social and community services, air quality and greenhouse gases, energy, geology and soils, hazardous materials, electromagnetic fields, and public services.

Indirect impacts associated with the Proposed Design Refinements are consistent with the 2011 Project.

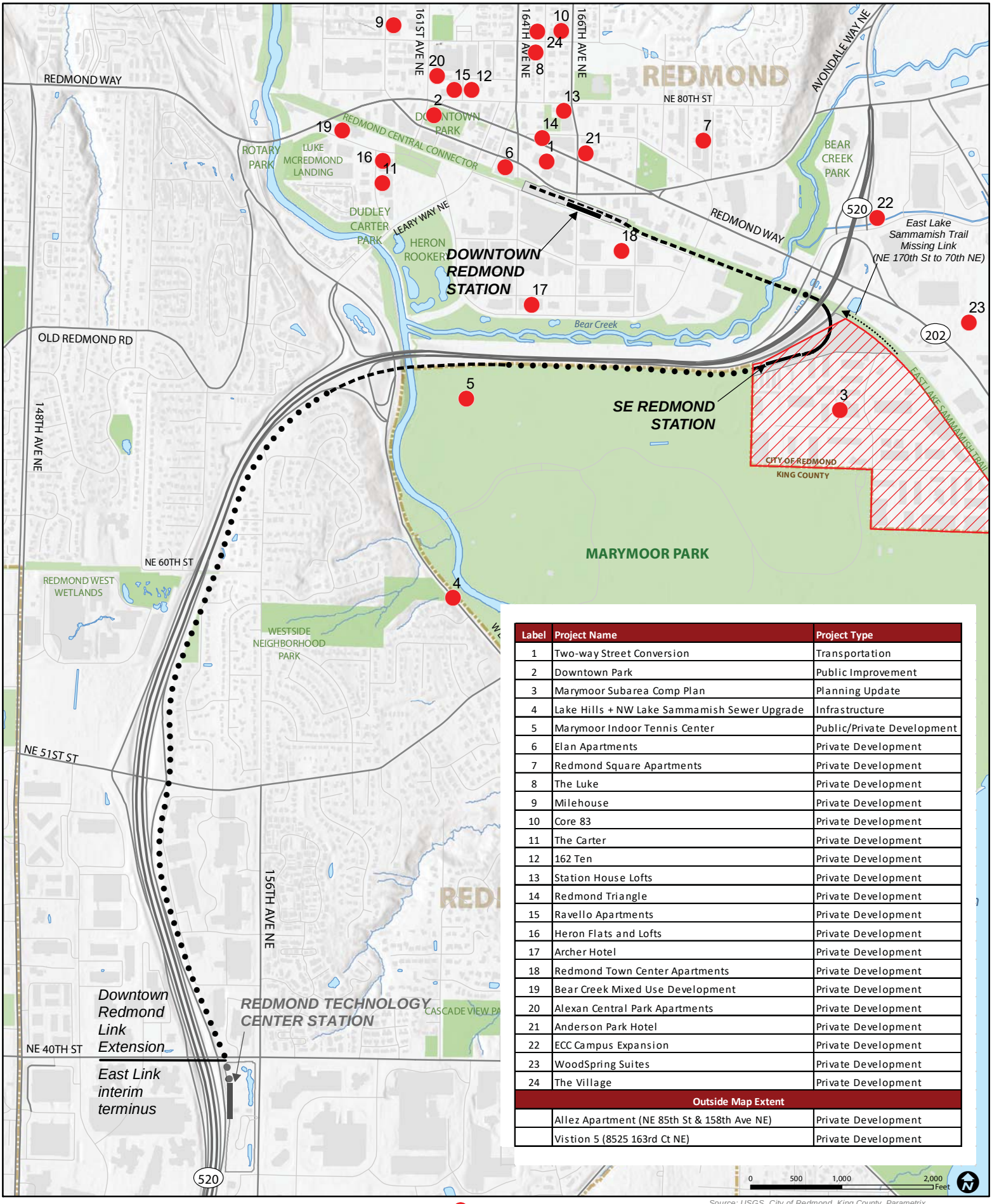
4.1.1 Transportation

The future traffic and transit impacts from the Proposed Design Refinements analyzed in Section 3.1 are considered a cumulative analysis based on the results of traffic modeling and ridership modeling that incorporate past, funded, and approved future actions, as well as projected growth that would result from development in the region. For a detailed sensitivity analysis of the Proposed Design Refinements and planned growth associated with the Marymoor Subarea Plan, refer to Attachment B in Appendix A, Transportation Technical Report Addendum.

Cumulative impacts as a result of operation and construction of the Proposed Design Refinements would be similar to that described for the 2011 Project in the Final EIS. The Proposed Design Refinements, in addition to the passage of ST3, adoption of METRO CONNECTS, and the Marymoor Subarea Plan, would result in greater mobility and accessibility throughout the region than anticipated compared to the 2011 Project. Given recent and continued development in Redmond and the surrounding region, there would be an increase in beneficial cumulative effects on the regional transportation system compared to the 2011 Project.

4.1.2 Land Use and Economics

The City of Redmond's recently adopted Marymoor Subarea Plan and zoning for the southeast Redmond neighborhood results in beneficial cumulative effects regarding consistency with local plans. Although no specific development projects are listed for southeast Redmond in Appendix J, it is anticipated that recent land use changes, combined with planned transportation improvements, would support redevelopment in



Label	Project Name	Project Type
1	Two-way Street Conversion	Transportation
2	Downtown Park	Public Improvement
3	Marymoor Subarea Comp Plan	Planning Update
4	Lake Hills + NW Lake Sammamish Sewer Upgrade	Infrastructure
5	Marymoor Indoor Tennis Center	Public/Private Development
6	Elan Apartments	Private Development
7	Redmond Square Apartments	Private Development
8	The Luke	Private Development
9	Milehouse	Private Development
10	Core 83	Private Development
11	The Carter	Private Development
12	162 Ten	Private Development
13	Station House Lofts	Private Development
14	Redmond Triangle	Private Development
15	Ravello Apartments	Private Development
16	Heron Flats and Lofts	Private Development
17	Archer Hotel	Private Development
18	Redmond Town Center Apartments	Private Development
19	Bear Creek Mixed Use Development	Private Development
20	Alexan Central Park Apartments	Private Development
21	Anderson Park Hotel	Private Development
22	ECC Campus Expansion	Private Development
23	WoodSpring Suites	Private Development
24	The Village	Private Development
Outside Map Extent		
	Allez Apartment (NE 85th St & 158th Ave NE)	Private Development
	Vistion 5 (8525 163rd Ct NE)	Private Development

Alignment
- At-Grade
- Elevated
- Retained Cut; Retained Fill

- Station Platform
- Station Area
- City Limits
- Parks / Open Space

- Future Project
- Marymoor Subarea Plan

Source: USGS, City of Redmond, King County, Parametrix

Figure 4-1
Recent, Current, and Forseeable Future Development Projects
Downtown Redmond Link Extension

the southeast Redmond area. The City of Redmond is planning for the neighborhood to transition from industrial to transit-oriented and mixed-use land uses. The Proposed Design Refinements would help achieve this goal by supporting mixed-use and transit-oriented redevelopment, which would be a beneficial cumulative impact compared to the analysis for the 2011 Project in the Final EIS.

Since publication of the Final EIS in 2011, an approximately 1,300 residential units and 21,000 square feet of commercial space have been constructed in downtown Redmond. In addition, an estimated 1,500 residential units and 31,700 square feet of commercial space are either under construction or in planning review in downtown Redmond (City of Redmond 2017a, 2017b). These projects and the Proposed Design Refinements are mutually supportive of land use plans and policies that encourage higher-density transit-oriented development in downtown Redmond.

This redevelopment, in addition to the new development that has occurred or is reasonably foreseeable in downtown Redmond, is anticipated to have a beneficial cumulative economic impact as new commercial and residential mixed-use buildings and station users combine to bring new resources into southeast and downtown Redmond. As new development occurs, some existing businesses may choose to relocate elsewhere. However, the overall redevelopment around station areas, particularly in southeast Redmond, would result in an increase in beneficial cumulative effects on economics compared to the 2011 Project.

4.1.3 Visual

For Marymoor Park, overall visual quality would not be notably reduced. No additional cumulative visual impacts are anticipated for the Proposed Design Refinements and reasonably foreseeable future development such as the Marymoor Park Tennis Center.

In downtown Redmond, the visual impact of the elevated guideway and station would not change the overall visual quality. The Proposed Design Refinements, in addition to recent, past, and reasonably foreseeable future private development in downtown Redmond, could increase cumulative change to visual and aesthetic resources in downtown Redmond. The difference in cumulative effects would be in context with the surrounding uses and would not be adverse.

Similar to the 2011 Project, the Proposed Design Refinements could contribute to cumulative impacts on the visual environment due to proximity to other planned construction activities being conducted at the same time. Construction-related activities would increase the overall impacts on the surrounding visual environment, but these impacts would be temporary.

4.1.4 Noise and Vibration

Since publication of the Final EIS, the development of new apartments and hotels in downtown Redmond near the alignment has resulted in sensitive receivers at the Redmond Town Center Apartments (under construction), Residence Inn, and Elan Redmond Apartments. In June 2017, the City of Redmond adopted land use changes to the Marymoor Subarea of the southeast Redmond neighborhood that promote transit-oriented and mixed-use development. Currently planned and projected development in southeast and downtown Redmond would likely contribute to additional traffic and associated traffic noise. The cumulative impact of the Proposed Design Refinements attracting more development around rail stations, including the projects listed in Appendix J, would likely result in more intense urban activities in southeast and downtown Redmond that could have additional cumulative noise impacts on the surroundings.

Although potential vibration impacts are anticipated with the Proposed Design Refinements, no other reasonably foreseeable future actions are expected to cause vibration impacts during operation; therefore, cumulative vibration impacts are not anticipated.

Similar to the 2011 Project, construction of the Proposed Design Refinements would contribute noise and vibration impacts along with other nearby transportation and private development projects; as a result, additional cumulative impacts are anticipated. However, these impacts would be temporary, and mitigation described in the Final EIS would minimize study area disturbances.

4.1.5 Ecosystems

As discussed in the Final EIS, the study area and surrounding vicinity have greatly changed over time due to past actions and development. There are only a few high-value fish and wildlife habitats remaining, including Marymoor Park, Sammamish River, and Bear Creek. These areas provide habitat for fish and wildlife, including federally listed threatened and endangered fish species. Reasonably foreseeable future actions that would affect these habitats incrementally contribute to the loss and/or degradation of these high-value habitats and adverse impacts on associated wildlife.

Cumulative impacts from the Proposed Design Refinements are within the range of impacts of the 2011 Project. As with the 2011 Project, adverse impacts would include removing large trees, filling or altering wetland habitat, and increasing impervious surfaces in the project vicinity. These changes, along with additional urban development, as described in Appendix J, continue to reduce remaining available high-quality nesting and foraging areas for present wildlife species. These projects also have the potential to contribute to cumulative impacts on aquatic resources. However, similar to the Final EIS, the Proposed Design Refinements and other reasonably foreseeable future actions would be required to mitigate impacts. The improvements at the Bear Creek crossing were not included in the 2011 Project, and would result in the Proposed Design Refinements having increased beneficial cumulative impacts on ecosystem resources compared to the 2011 Project.

Similar to the 2011 Project, construction associated with the Proposed Design Refinements and other foreseeable future transportation and development projects would temporarily contribute to habitat loss resulting from vegetation removal. Also, stream water quality could be affected by erosion and sedimentation. Each project would be required to comply with water quality protection regulations during construction. After construction, cleared areas would be revegetated where possible.

4.1.6 Conclusion

Based on the analysis of potential impacts, benefits, and mitigation described above, cumulative impacts, including impacts from the Proposed Design Refinements, would be similar to that described for the 2011 Project in the Final EIS, and would not result in an increase in adverse cumulative impacts.

5 AGENCY AND COMMUNITY OUTREACH

This chapter summarizes outreach efforts conducted during the Downtown Redmond Link Extension Project. It includes outreach performed by the City of Redmond during the Transit Integration (TRAIN) study, additional outreach conducted by Sound Transit during the refinement of options process, and outreach conducted during development and environmental analysis of the Proposed Design Refinements.

5.1 City of Redmond Outreach

The City of Redmond completed the TRAIN study in April 2017 (City of Redmond 2017e). The purpose of the study was to determine how to best integrate light rail transit into downtown Redmond that is safe, convenient, accessible, and accommodates vehicle access for pick-up and drop-off.

City staff engaged the community by holding a public meeting, providing an online questionnaire, and meeting with affected property owners. A public meeting was held on January 26, 2017 and consisted of a presentation and open house. Sixty-five members of the public attended. For those unable to attend the public meeting, the City provided meeting materials online with an online questionnaire that generated about 350 responses. Finally, City staff met with property owners or managers near the two potential station locations to share information about the concepts and the evaluation results, answer questions, and obtain input.

5.2 Agency Coordination

Sound Transit coordinated closely with WSDOT, King County, and the City of Redmond through the process of developing and refining options for the project alignment and station location, and continues to coordinate throughout the preliminary design and environmental process. These agencies are key stakeholders in the project, because portions of the alignment would be located within each of their jurisdictions. In addition, the City of Sammamish participates as a stakeholder, because its residents are anticipated to access light rail in the southeast Redmond area. During the refinement process, five interagency meetings and four work sessions were held. Agencies provided input with an emphasis on improving transit user access, enhancing integration of bus and rail transit, and addressing other mobility issues that would benefit all populations, including minority and low-income populations. Sound Transit and the interagency group evaluated the potential strengths and weaknesses of options, in conjunction with information from ST3 and the TRAIN study, to develop the Proposed Design Refinements. Summaries of meeting, materials, and notes from the interagency meetings are included in the Refinement of Options Memorandum (Sound Transit 2017).

5.3 Tribal Coordination

Formal consultation for Section 106 of the NHPA Act was conducted with agencies and tribes for the East Link Project's environmental review from 2006 to 2011. NHPA consultation specific to the environmental review of the Downtown Redmond Link Extension began in 2017 with formal re-initiation of Section 106 consultation. FTA and Sound Transit consulted with affected tribes to review the archaeological survey plan and provided information from the archaeological survey conducted for the Downtown Redmond Link Extension. FTA and Sound Transit have coordinated with the following federally recognized tribes: Confederated Tribes and Bands of the Yakama Nation, Muckleshoot Indian Tribe, Puyallup Tribe of the Puyallup Reservation, Snoqualmie Indian Tribe, Stillaguamish Tribe of Indians of Washington, Suquamish Indian Tribe of the Port Madison Reservation, and Tulalip Tribes of Washington. In addition, FTA and Sound Transit have coordinated with the Duwamish Tribe and Snohomish Tribe of Indians. These consultation efforts are summarized in Appendix D.

5.4 Public Outreach

Sound Transit, in coordination with the City of Redmond, King County, and WSDOT, has engaged the public throughout the refinement process. Sound Transit hosted open house meetings to gain public input on the Downtown Redmond Link Extension in May and November 2017. To engage with minority and non-English-speaking populations, advertisements for open house meetings were placed in La Raza, Seattle Chinese News, Seattle Chinese Times, and SeattleIndian.com.

In addition, staff have attended and given presentations at the Friends of Marymoor Park meetings. Sound Transit will continue to involve the public as the Downtown Redmond Link Extension moves forward into design and construction.

5.4.1 Open Houses

May 2017

On May 17, 2017, Sound Transit hosted an open house to introduce the Downtown Redmond Link Extension to southeast and downtown Redmond community members. The open house was publicized through the following channels:

- More than 7,600 postcards mailed to residents and businesses within a half mile of the project alignment
- Postcards hand-delivered to 50 residents immediately adjacent to the project alignment and distributed electronically to social service organizations
- Advertisements in local newspapers and online publications including La Raza, Seattle Chinese News, Seattle Chinese Times, SeattleIndian.com, Seattle Times, Seattle Transit Blog, and Redmond Reporter
- Email notification to approximately 3,000 Eastside subscribers of the East Link Extension listserv
- Announcement on the Sound Transit Downtown Redmond Link Extension web page
- Press release to local media outlets

The purpose of the open house was to educate the community on the project history, provide an overview of the current project status, and share and gather comments on design concepts for the SE Redmond Station, Downtown Redmond Station, and light rail track from NE 40th Street to downtown Redmond. Project staff were available to answer questions and explain the decision-making process. Sound Transit accepted public comments in person at the open house and via email.

November 2017

Sound Transit hosted a neighborhood sidewalk ‘pop-up’ meeting on November 15, 2017. A Sound Transit representative set up a table with project information materials on 154th Avenue NE to provide neighbors unable to attend the open house with an opportunity to ask questions. Approximately 50 homes were notified by door-to-door contact. About six residents dropped by the pop-up meeting. The residents’ primary questions focused on potential noise and vibration coming from the project.

On November 16, 2017, Sound Transit hosted an open house for the Downtown Redmond Link Extension. Community members were invited to provide input on station ‘look and feel,’ view updated

plan designs, and learn about the updated environmental review, project timeline, and next steps. The open house was publicized through the following channels:

- More than 11,400 postcards mailed to residents and businesses within a half mile of the project alignment
- Postcards hand-delivered to 50 residents immediately adjacent to the project alignment and distributed electronically to social service organizations
- Advertisements in local newspapers and online publications including La Raza, Seattle Chinese News, Seattle Chinese Times, SeattleIndian.com, Seattle Times, Seattle Transit Blog, and Redmond Reporter
- Email notification to approximately 1,900 subscribers of the Downtown Redmond Link Extension email list
- Announcement on the Sound Transit Downtown Redmond Link Extension web page
- Press release to local media outlets

The purpose of the open house was to provide the community with an overview of the current project status, and share and gather comments on the design concepts for the two Redmond stations. Project staff were available to answer questions, explain design concepts, and provide updates on the process and timeline. Sound Transit accepted public comments on the design concepts and other concerns in person at the open house and via an online survey.

5.4.2 Friends of Marymoor Park

In coordination with King County Parks, Sound Transit has engaged the Marymoor Park community through the Friends of Marymoor Park organization. Sound Transit staff shared project updates and information about the Proposed Design Refinements with Friends of Marymoor Park at their March and October 2017 meetings.

6 ENVIRONMENTAL JUSTICE

As with the 2011 Project, the Proposed Design Refinements are not anticipated to result in disproportionately high and adverse effects on minority and low-income populations under Executive Order 12898 and the 2012 U.S. Department of Transportation Order. Since 2011, the study area has experienced rapid growth in population and increased economic investment in downtown Redmond. There has been an increase in ethnic diversity, with increases in Asian American and Hispanic populations and a decrease in proportion of white population.

In general, adverse impacts resulting from the Proposed Design Refinements would affect all populations to the same degree. Most impacts associated with the Proposed Design Refinements would be effectively mitigated, and the remaining impacts would be limited in scope and/or duration. In addition, the Proposed Design Refinements would have several beneficial effects, particularly for minority and low-income populations, including improved access to transit, transit travel time savings, and improved accessibility to employment. These transit benefits further support the same conclusion that was reached for the 2011 Project, that the Proposed Design Refinements would not result in disproportionately high and adverse effects on minority and/or low-income populations.

The Downtown Redmond Link Extension Project has engaged the public through two open houses and a 'pop-up' neighborhood meeting. The open houses were publicized to residents and businesses, and advertisements were placed in publications that serve minority communities. Public outreach efforts and methods of publicizing the events are described in Chapter 5.

The environmental justice analysis for the Proposed Design Refinements is provided in Appendix G.

7 CONCLUSIONS

Changes in impacts resulting from the Proposed Design Refinements have been identified and compared with the impacts identified for the 2011 Project as evaluated in the Final EIS.

With the exception of the work elements below the OHWM of the Sammamish River and Bear Creek, impacts with the Proposed Design Refinements would be within the range of impacts analyzed in the Final EIS and subsequent addenda. All impacts, including those associated with work elements within the Sammamish River and Bear Creek, can be mitigated. Impacts related to land use and economics would have an increase in beneficial impacts compared to the 2011 Project and, therefore, would require no additional mitigation. Construction impacts to economic activity and corresponding mitigation would be the same for both the 2011 Project and the Proposed Design Refinements. Transportation would also have greater beneficial impacts as a result of the elevated alignment in downtown Redmond that would eliminate at-grade conflicts, increasing transit reliability and safety compared to the 2011 Project. Bear Creek channel improvements in the area of the light rail crossing would have long-term beneficial habitat effects. Short-term adverse effects associated with in-water work would be avoided or minimized through the implementation of measures to protect aquatic species and habitat, as detailed in the biological assessment (Appendix F). Based on the analyses presented in that document, NMFS has determined that construction and operation of the Downtown Redmond Link Extension will not jeopardize the continued existence of ESA-listed species under that agency's jurisdiction. In addition, work elements in Bear Creek result in overall beneficial habitat and floodplain effects. Finally, cumulative impacts, including impacts from the Proposed Design Refinements, would be similar to those described for the 2011 Project in the Final EIS, and would not result in an increase in adverse cumulative impacts.

Changes in impacts from the Proposed Design Refinements are of similar magnitude to the impacts identified for the 2011 Project and other alternatives evaluated in the Final EIS and subsequent addenda, and these changes would not result in different conclusions regarding the significance of the impacts. The Proposed Design Refinements do not substantially change the analysis of significant impacts evaluated in the Final EIS and addenda. No new probable significant adverse environmental impacts would arise and a supplemental EIS is not warranted.

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