



AGENDA

SHORELINE CITY COUNCIL SPECIAL MEETING

Monday, May 23, 2016
5:45 p.m.

Conference Room 303 · Shoreline City Hall
17500 Midvale Avenue North

TOPIC/GUESTS: Joint Meeting with Parks, Recreation and Cultural Services Board

SHORELINE CITY COUNCIL REGULAR MEETING

Monday, May 23, 2016
7:00 p.m.

Council Chamber · Shoreline City Hall
17500 Midvale Avenue North

	<u>Page</u>	<u>Estimated</u> <u>Time</u>
1. CALL TO ORDER		7:00
2. FLAG SALUTE/ROLL CALL		
3. REPORT OF THE CITY MANAGER		
4. PUBLIC COMMENT		
<i>Members of the public may address the City Council on agenda items or any other topic for three minutes or less, depending on the number of people wishing to speak. The total public comment period will be no more than 30 minutes. If more than 10 people are signed up to speak, each speaker will be allocated 2 minutes. Please be advised that each speaker's testimony is being recorded. Speakers are asked to sign up prior to the start of the Public Comment period. Individuals wishing to speak to agenda items will be called to speak first, generally in the order in which they have signed. If time remains, the Presiding Officer will call individuals wishing to speak to topics not listed on the agenda generally in the order in which they have signed. If time is available, the Presiding Officer may call for additional unsigned speakers.</i>		
5. APPROVAL OF THE AGENDA		
6. CONSENT CALENDAR		
(a) Minutes of Regular Meeting of April 25, 2016	<u>6a-1</u>	
(b) Approval of expenses and payroll as of May 6, 2016 in the amount of \$1,169,373.61	<u>6b-1</u>	
(c) Adoption of Resolution No. 388 Adopting the 2017-2022 Transportation Improvement Program	<u>6c-1</u>	
(d) Motion to Authorize the City Manager to Enter Into the Kiosk Services Interlocal Agreement Between the City of Shoreline and the King County Medication Education and Disposal Project	<u>6d-1</u>	
7. COMMUNITY GROUP PRESENTATION		7:20
(a) Shoreline Solar Project <i>Sponsored by Deputy Mayor Winstead and Councilmember McConnell</i>	<u>7a-1</u>	
8. STUDY ITEMS		
(a) Discussion of Hidden Lake Alternatives	<u>8a-1</u>	7:50

- (b) Discussion of Ord. No. 745 – Amending SMC 8.12.500 Allowing the Sale and/or Consumption of Beer and Wine at Kruckeberg Botanic Garden 8b-1 8:35

9. ADJOURNMENT 8:55

The Council meeting is wheelchair accessible. Any person requiring a disability accommodation should contact the City Clerk's Office at 801-2231 in advance for more information. For TTY service, call 546-0457. For up-to-date information on future agendas, call 801-2236 or see the web page at www.shorelinewa.gov. Council meetings are shown on Comcast Cable Services Channel 21 and Verizon Cable Services Channel 37 on Tuesdays at 12 noon and 8 p.m., and Wednesday through Sunday at 6 a.m., 12 noon and 8 p.m. Online Council meetings can also be viewed on the City's Web site at <http://shorelinewa.gov>.

CITY OF SHORELINE
SHORELINE CITY COUNCIL
SUMMARY MINUTES OF REGULAR MEETING

Monday, April 25, 2016
7:00 p.m.

Council Chambers - Shoreline City Hall
17500 Midvale Avenue North

PRESENT: Mayor Roberts, Deputy Mayor Winstead, Councilmembers McGlashan, Scully, Hall, McConnell, and Salomon

ABSENT: None

1. CALL TO ORDER

At 7:00 p.m., the meeting was called to order by Mayor Roberts who presided.

2. FLAG SALUTE/ROLL CALL

Mayor Roberts led the flag salute. Upon roll call by the City Clerk, all Councilmembers were present.

(a) Proclamation of Arbor Day

Mayor Roberts read a proclamation declaring April 29, 2016 as Arbor Day in the City of Shoreline. Jim Coneul and Yoshkio Saheki, Stewards of the Twin Pond Park Group, accepted the proclamation. Ms. Saheki thanked Council for the proclamation and for including them in the Arbor Day Celebration, recognizing their work in restoring the natural area of Twins Ponds Park, and awarding them an environmental mini grant. She acknowledged those that came before them, including John Dixon of Seattle, and Park Staff. She asked Council to remember the value of natural parks as the City contemplates the 145th Street Station Subarea rezone and the Parks, Recreation, and Open Space Plan. Mr. Coneul provided their website address, twinpondspark.file.wordpress.com, and shared they are carrying on the work started by John Dixon. He commented that he is pleased that the City is implementing a Vegetation Management Plan.

3. REPORT OF CITY MANAGER

Debbie Tarry, City Manager, provided reports and updates on various City meetings, projects and events.

4. COUNCIL REPORTS

Councilmember Salomon commented that he attended part of a Best Start for Kids retreat and shared that he is a King County Youth Advisory Board nominee. He explained that the Board

would provide oversight for annually disbursing \$65 Million to help prevent youth from starting behind in pre-school and kindergarten, and to address race and income disparities.

5. PUBLIC COMMENT

Johnny Franck, Shoreline resident, said he lives directly behind the new Trader Joes, and he has been disturbed by the truck noise made during deliveries between the hours of midnight and 5 a.m. He commented that the City is not enforcing its Noise Ordinance and said he would like signs posted to regulate the trucks.

Brad Lancaster, Shoreline resident, provided an example of how Mayor Richard Berry of Albuquerque, New Mexico addressed homelessness through a homeless work program. He described how the program works and is funded. He stated that the initial budget was \$50,000 and is now \$181,000. He then provided information regarding the program’s employment and housing outcomes.

Dave Lange, Shoreline resident, stated he hopes he did not offend anyone with the comments he made over the weekend regarding safety and Sound Transit’s design for the 145th Street Light Rail Station. He commented on improvements in recent designs and pointed out the lack of appropriate transit connectivity to the Station.

Debbie Tarry, City Manager, shared that Alex Herzog, Management Analyst, has been talking to Mr. Franck and Trade Joe’s about the truck noise, and said the City is trying to facilitate a solution.

6. APPROVAL OF THE AGENDA

The agenda was approved by unanimous consent.

7. CONSENT CALENDAR

Upon motion by Councilmember Hall and seconded by Deputy Mayor Winstead and unanimously carried, 7-0, the following Consent Calendar items were approved:

(a) Minutes of Workshop Dinner Meeting of April 11, 2016

(b) Approval of expenses and payroll as of April 8, 2016 in the amount of \$1,133,387.17

***Payroll and Benefits:**

Payroll Period	Payment Date	EFT Numbers (EF)	Payroll Checks (PR)	Benefit Checks (AP)	Amount Paid
3/13/16-3/26/16	4/1/2016	65718-65897	14326-14337	63126-63131	<u>\$469,481.39</u>
					<u>\$469,481.39</u>

***Wire Transfers:**

Expense Register Dated	Wire Transfer Number	Amount Paid
3/28/2016	1106	<u>\$1,690.11</u>
		<u><u>\$1,690.11</u></u>

***Accounts Payable Claims:**

Expense Register Dated	Check Number (Begin)	Check Number (End)	Amount Paid
3/31/2016	62990	63014	\$265,369.76
3/31/2016	63015	63028	\$2,380.72
3/31/2016	63029	63043	\$31,762.59
3/31/2016	63044	63067	\$64,836.51
3/31/2016	63068	63081	\$76,776.39
4/6/2016	63082	63101	\$205,139.86
4/6/2016	63102	63109	\$8,712.45
4/6/2016	63110	63118	\$6,202.28
4/6/2016	63119	63125	\$1,035.11
			<u><u>\$662,215.67</u></u>

- (c) Adoption of Ord. No. 743 - 2015 Budget Carryover**
- (d) Adoption of Ord. No. 744 - 2016 Budget Amendment**
- (e) Approval of Res. No. 383 - Shoreview Park Boeing Creek Restoration at Hidden Lake Development Grant - Washington State Recreation and Conservation Office, Land and Water Conservations Fund**
- (f) Approval of Res. No. 384 - Twin Ponds Park Lighting Replacement Development Grant - Washington State Recreation and Conservation Office, Youth Athletic Fund**
- (g) Approval of Res. No. 385 - Twin Ponds Park Lighting Replacement Development Grant - Washington State Recreation and Conservation Office, Washington Wildlife and Recreation Program**
- (h) Authorize the City Manager to Execute a Purchase Order for the Lease of New Copiers**

8. STUDY ITEMS

- (a) Discussion of 2015 Fourth Quarter and Year End Financial Report**

Sara Lane, Administrative Services Director, summarized the City’s 2015 financial activity, reviewed Shoreline's financial position, and updated Council on progress made on Capital Projects. She noted a \$1.3 Million increase in Reserves, explained why there was a decrease in

Development Revenues, and said there is a favorable General Fund variance of \$4.5 Million. She reviewed sales tax by sector, permits by type and volume, recreation revenue by program area, Other Funds revenues and expenditures, and said real estate excise tax increased significantly.

(b) Discussion of 10 Year Financial Sustainability Plan Permitting and Inspection Cost of Service and Cost Recovery Study

Sara Lane, Administrative Services Director, along with FCS Group consultants Peter Moy, Project Manager, and Christine Elting, Project Analyst, presented the staff report. Mr. Moy identified that the four key study goals were to 1) identify the cost of service; 2) determine level of cost recovery; 3) compare City fees to comparable fees in other cities; and 4) assist City staff in developing fees and cost recovery recommendations. He reviewed the fee methodology used included collecting data; time estimates for how long it takes to provide services and how many hours spent on a specific permit; defining full cost of services; discussing cost recovery policy; and setting fees.

Mr. Moy stated that 56% of the Building and Inspection staff's time is spent on direct services and has a 75% cost recovery rate. He stated that the overall cost recovery for Planning is 27% and 32% for Public Works Engineering, and said direct cost are barely covered. Ms. Elting presented building and planning fee comparisons, and said the cities used in the comparisons were Burien, Kirkland, Lynnwood, Renton, and Sammamish. Mr. Moy then reviewed fee setting considerations.

Ms. Lane reviewed staff's overall cost recovery recommendations are to adjust the hourly rate to \$180; adjust all fees for cost recovery objectives; move to a flat rate where practical; and increase minimum hours where appropriate. She reviewed the cost recovery recommendations for building permits are to increase rates to median for valuations over \$1 Million; evaluate opportunities to create fees for specific activities for the minimum hourly fee plus additional hours; and maintain the current structure for the minimum hourly fee per fixture fee. She reviewed the cost recovery recommendation for Planning Fees are to adjust most permits to a flat fee; maintain minimum hour plus additional hours for those permits with greater variability in effort; and evaluate opportunities for new fees. She reviewed the cost recovery recommendations for Engineering fees are to maintain minimum hour plus additional hours for most permits with greater variability in effort, and evaluate opportunities for new fees. She then explained how cost recovery percentages will be improved.

Councilmember Hall pointed out that the numbers on the chart for the cost recovery goals do not match the policy recommendation statements. Ms. Lane responded they do not match because they deal with volumes and costs of individual permits. Councilmember Hall stated that 100% of the cost for multi-family and mixed-use building permits should be recovered and expressed concern that the City will sell itself short if permit volume increases and policy is not set to recover 100% of cost.

Councilmember McGlashan asked clarifying questions about what the new fees are and how the minimum fee process works. He said a fixed permit fee would be good. Ms. Lane responded that the new fees are those fees currently listed under another category. Ms. Markle explained that in some cases not enough fees were being collected for large projects and staff is proposing a new

way to calculate fees based on the size of the project. She added that there are also new fees being proposed that are not currently charged. In regards to how the minimum fee works, Ms. Markle explained that staff mostly rely on the minimum fee due to challenges with the current permit system that make it difficult to track hours. She said the City is in the process of implementing a new permit system, Track-It, that will make it easier to track hours. She anticipates that over the next three or four years, staff will have more accurate data to set fees with.

Deputy Mayor Winstead expressed that she would like to see the developer bear the permitting cost for larger commercial buildings rather than the General Fund and she favors looking at 100% cost recovery.

Councilmember Scully asked what it costs the City to issue a building permit and said hourly data needs to be collected.

Mayor Roberts commented that there are seven different categorizes of building permits by evaluation and asked if this is a common practice. He expressed concern that permits have not been tracked by hour and requested that they be tracked more carefully and billed at the correct rate. He asked what the cost recovery would have been if billing had been done correctly. Mr. Moy responded that they did not have a good sense of that. Mayor Roberts suggested that hourly tracking should be started immediately.

Councilmember McConnell commented that 100% cost recovery may be too high.

Ms. Lane commented the Study did not include a 100% cost recovery, and explained adjusting the cost recovery to the median will result in a 47% increases in fees collected.

9. ADJOURNMENT

At 8:29 p.m., Mayor Roberts declared the meeting adjourned.

Jessica Simulcik Smith, City Clerk

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Approval of Expenses and Payroll as of May 6, 2016
DEPARTMENT:	Administrative Services
PRESENTED BY:	Sara S. Lane, Administrative Services Director

EXECUTIVE / COUNCIL SUMMARY

It is necessary for the Council to formally approve expenses at the City Council meetings. The following claims/expenses have been reviewed pursuant to Chapter 42.24 RCW (Revised Code of Washington) "Payment of claims for expenses, material, purchases-advancements."

RECOMMENDATION

Motion: I move to approve Payroll and Claims in the amount of \$1,169,373.61 specified in the following detail:

***Payroll and Benefits:**

Payroll Period	Payment Date	EFT Numbers (EF)	Payroll Checks (PR)	Benefit Checks (AP)	Amount Paid
4/10/16-4/23/16	4/29/2016	66082-66266	14347-14357	63355-63360	\$623,241.77
					<u>\$623,241.77</u>

***Wire Transfers:**

Expense Register Dated	Wire Transfer Number	Amount Paid
4/27/2016	1107	\$1,952.84
		<u>\$1,952.84</u>

***Accounts Payable Claims:**

Expense Register Dated	Check Number (Begin)	Check Number (End)	Amount Paid
4/27/2016	63176	63176	(\$653.42)
4/27/2016	63260	63281	\$280,450.20
4/28/2016	63282	63297	\$5,396.22
4/28/2016	63298	63298	\$33,382.53
4/29/2016	63299	63299	\$6,250.00
5/4/2016	63300	63309	\$16,410.98
5/4/2016	63310	63335	\$99,745.50
5/4/2016	63336	63354	\$103,196.99
			<u>\$544,179.00</u>

***Accounts Payable Claims:**

	Expense Register Dated	Check Number (Begin)	Check Number (End)	Amount Paid
Approved By: City Manager <i>DT</i>	<hr/>			
	City Attorney <i>MK</i>			

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Adoption of Resolution No. 388 Adopting the 2017-2022 Transportation Improvement Plan
DEPARTMENT:	Public Works
PRESENTED BY:	Nytasha Sowers, Transportation Services Manager
ACTION:	<input type="checkbox"/> Ordinance <input checked="" type="checkbox"/> Resolution <input type="checkbox"/> Motion <input type="checkbox"/> Discussion <input type="checkbox"/> Public Hearing

PROBLEM/ISSUE STATEMENT:

In accordance with state law, the City is required to prepare a six-year Transportation Improvement Plan (TIP). The six-year TIP should include transportation projects, such as road and bridge work, as well as new or enhanced bicycle or pedestrian facilities. In addition to local projects, the TIP should also identify projects and programs of regional significance for inclusion in the regional TIP. The City's TIP is used to secure federal funding for transportation projects as part of the Statewide Transportation Improvement Plan.

The draft 2017-2022 TIP was presented to Council on May 9, 2016. This meeting also included a required public hearing on the TIP, at which there was no public comment. Adoption of proposed Resolution No. 388 would adopt the 2017-2022 TIP.

RESOURCE/FINANCIAL IMPACT:

There is no financial impact associated with adoption of the TIP. The projects identified in the City's TIP are a combination of funded projects in the CIP, including projects that are partially funded or underfunded, as well as currently unfunded projects the City would like to undertake should funding become available. Listing projects in the TIP makes them grant eligible, as most grant programs will not fund projects not included in a jurisdiction's TIP. The vast majority of projects included in the TIP are unfunded or partially funded. All of the funded programs are identified as underfunded, as additional work could be completed through these programs with supplemental funding

RECOMMENDATION

Staff recommends that Council adopt Resolution No. 388, which would adopt the 2017-2022 Transportation Improvement Plan.

Approved By: City Manager **DT** City Attorney **MK**

BACKGROUND

In accordance with RCW 35.77.010, cities in Washington State are required to prepare and adopt a comprehensive six-year transportation improvement plan (TIP). A city's TIP must be consistent with its comprehensive plan transportation element. RCW 35.77.010 requires that the City hold at least one public hearing on the TIP and to submit the adopted TIP to the Washington State Secretary of Transportation. The Department of Transportation has historically accepted submittal of TIPs through the month of July.

The TIP identifies projects to meet local transportation needs, as well as projects of regional significance, such as the 145th Street corridor improvements. It also includes some on-going programs, including the curb ramp, gutter and sidewalk program and the traffic safety improvements program. The TIP identifies projects for all modes of transportation, including bicycles, pedestrians, vehicles and transit. The City's TIP is used to secure federal funding for transportation projects as part of the Statewide Transportation Improvement Plan.

Projects in the TIP can be funded and unfunded and the draft TIP includes the transportation projects identified in the preliminary 2017-2022 Capital Improvement Plan (CIP). Including projects in the TIP improves the city's eligibility to secure grant funding. The TIP is prepared and presented to Council in advance of the CIP. The policy direction provided through adoption of the TIP is used to identify transportation projects for inclusion in the CIP. The City Council will review the City's proposed six-year CIP as part of the 2017 budget process later this fall.

DISCUSSION

The draft 2017-2022 TIP (Exhibit A) was presented to Council on May 9, 2016. The staff report for this meeting can be found at the following link:
<http://cosweb.ci.shoreline.wa.us/uploads/attachments/cck/council/staffreports/2016/staffreport050916-8a.pdf>.

The May 9, 2016 meeting included a public hearing at which there was no public comment regarding the draft 2017-2022 TIP. Council had several questions and comments primarily regarding grant funding and the N/NE 145th Corridor Project which were addressed at the meeting.

The draft 2017-2022 TIP utilizes last year's TIP as its foundation. Projects and programs included in the TIP include high priority projects identified in the 2011 Transportation Master Plan (TMP) for safety and operations, bicycle and pedestrian projects. Adoption of proposed Resolution No. 388 (Attachment A) would adopt the 2017-2022 TIP.

COUNCIL GOAL(S) ADDRESSED

The TIP addresses Council Goal 2, "Improve Shoreline's utility, transportation, and environmental infrastructure." By identifying and developing a plan for multi-modal transportation improvements, the City is working to preserve and enhance the

infrastructure. This plan also addresses Council Goal 5: “Promote and enhance the City’s safe community and neighborhood programs and initiatives” by funding the Traffic Safety Improvements program.

RESOURCE/FINANCIAL IMPACT

There is no financial impact associated with adoption of the TIP. The projects identified in the City’s TIP are a combination of funded projects in the CIP, including projects that are partially funded or underfunded, as well as currently unfunded projects the City would like to undertake should funding become available. Listing projects in the TIP makes them grant eligible, as most grant programs will not fund projects not included in a jurisdiction’s TIP. The vast majority of projects included in the TIP are unfunded or partially funded. All of the funded programs are identified as underfunded, as additional work could be completed through these programs with supplemental funding

RECOMMENDATION

Staff recommends that Council adopt Resolution No. 388, which would adopt the 2017-2022 Transportation Improvement Plan.

ATTACHMENTS

Attachment A: Proposed Resolution No. 388

Exhibit A: Draft 2017-2022 Transportation Improvement Plan

RESOLUTION NO. 388

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SHORELINE, WASHINGTON, ADOPTING A SIX-YEAR (2017-2022) TRANSPORTATION IMPROVEMENT PLAN AND DIRECTING THE SAME TO BE FILED WITH THE STATE SECRETARY OF TRANSPORTATION AND TRANSPORTATION IMPROVEMENT BOARD.

WHEREAS, the City Council of the City of Shoreline has previously adopted a Comprehensive Plan as required by the Growth Management Act, 36.70A RCW, which includes a six-year Transportation Improvement Plan required by RCW 35.77.010 as part of the Transportation Element of the Plan; and

WHEREAS, the City Council of the City of Shoreline has reviewed the work accomplished under the said Plan, determined current and future City Street needs, and based upon these findings a Six-Year Transportation Improvement Plan for the ensuing six (6) calendar years has been prepared as part of the Capital Improvement Plan Update; and

WHEREAS, a properly noticed public hearing was held on the Six-Year Transportation Improvement Plan on May 9, 2016;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SHORELINE, WASHINGTON, HEREBY RESOLVES AS FOLLOWS:

Section 1. Plan Adopted. The Six-Year Transportation Improvement Plan for the City of Shoreline for the ensuing six (6) calendar years (2017-2022 inclusive) attached hereto as Exhibit A and incorporated herein by this reference, which Plan sets forth the project location, type of improvement and estimated cost thereof, is hereby adopted.

Section 2. Filing of Plan. Pursuant to Chapter 35.77.010 RCW, the City Clerk is hereby authorized and directed to file a copy of this resolution forthwith, together with the Exhibit attached hereto, with the Secretary of Transportation and a copy with the Transportation Improvement Board for the State of Washington.

ADOPTED BY THE CITY COUNCIL ON MAY 23, 2016.

Mayor Christopher Roberts

ATTEST:

Jessica Simulcik Smith
City Clerk

City of Shoreline 2017-2022 Transportation Improvement Plan

1. What is the Six-Year Transportation Improvement Plan (TIP)?

The City of Shoreline Six-Year Transportation Improvement Plan (TIP) is a short-range planning document that is updated annually based upon needs and policies identified in the City's Comprehensive Plan and Transportation Master Plan. It identifies Shoreline's current needed transportation projects and programs for the next six years. Some projects identified in the TIP are significant enough in nature that they will take longer than six years to complete.

2. What is included in the TIP?

A project sheet for each project or program in the TIP has been developed and includes the following:

- **Scope/Narrative:** A description of the project or program including the specific work to be performed, project elements, project/program purpose and/or interagency coordination efforts.
- **Funding:** Identifies whether a project is funded, partially funded or unfunded and known funding sources.
- **Funding Outlook:** A description of the current funding projection for the project, including possible funding sources (when applicable).
- **Project Status:** Identifies Council goals achieved by each project, the stage of a project (such as design, environmental review or construction), previous years' work and expenditures and/or potential revenue sources for projects.
- **Purpose/Goals Achieved:** Identifies which of several purposes the project satisfies and/or general goals the project achieves including Non-motorized Transportation; System Preservation; Growth Management; Improves Efficiency and Operations; Safety; Major Structures; Corridor Study; and/or Interjurisdictional Coordination.

Projects in the TIP are sorted into three categories: Funded Programs, Funded Projects, Unfunded Projects. Projects and programs that are underfunded or partially funded are included in the funded categories. Generally, funded projects are those included in the City's 2017-2022 Capital Improvement Plan. All projects and programs identified for 2021 are unfunded. All of the funded programs are identified as underfunded, as additional work could be completed through these programs with supplemental funding. The TIP also identifies the potential for new projects or programs that may arise from current City planning efforts in the Emerging Projects section. The final section provides a summary of projects included in the 2017-2022 TIP that are scheduled for completion in 2016.

3. Project Costs and Funding

Each project listed in the TIP includes an estimated cost, the amount of funding secured or unsecured and the funding source(s) for the six year period covered by the TIP. Existing and new project and program costs need to cover all phases of a project (described below), including the staff time necessary to administer them. If grant funding has been secured from a specific source, it is identified. The Funding Outlook section of each project sheet identifies the total project cost and any previous expenditures. Potential grant funding sources are also identified in this section.

Projects listed that are necessary to accommodate growth and allow the City to maintain its adopted Levels of Service may be funded in part by transportation impact fees. The costs for projects programmed for the first three years of the TIP have been developed with a higher level of detail whereas those in the latter three years have been developed with less specificity, as the projects are generally less defined. Unless otherwise noted, project costs do not include the costs for placing overhead utilities underground.

4. Developing the TIP

The annual TIP update starts with the previously adopted TIP. Projects in the previously adopted TIP are reviewed and projects that have been completed, or because of changing conditions, are no longer needed are removed from the TIP. Existing projects may also be updated based upon completed studies, refined project scopes or revised cost estimates. The remaining projects carried over from the previous TIP are reviewed for changes to cost estimates, project funding, schedule, or scope during the update process to ensure that the best information is represented in the TIP.

New projects are generated from many sources, including the City's adopted Transportation Master Plan (TMP), Comprehensive Plan, Council priorities, identification of new issues or deficiencies, response to growth, accident locations or the potential to secure grant funding. The City may use tools such as pavement management rating, analysis of accident data and transportation modeling to help identify potential new projects. Potential new projects undergo a review of scope, priority, schedule and cost analysis.

Updated projects from the previous TIP and new projects are then used to create a draft TIP project list. The phasing and funding of these projects in the draft TIP is based on an evaluation of project priority compared with priorities laid out in the TMP and Comprehensive Plan, commitments to projects and programs that are already underway, secured grants, partnerships the City has entered into with other jurisdictions and agencies and new opportunities that arise to leverage local transportation funding in combination with other funding sources.

Once the draft TIP has been developed, a public hearing is held to provide an opportunity for the community comment. Based on the results of the public hearing and comments from the Shoreline City Council a final version of the TIP is developed. This final version is then adopted by the City Council.

5. Emerging Projects

New transportation projects are often generated from significant planning efforts for new or major redevelopments or land use subarea planning. In 2012, the City designated the Aurora Square area as a Community Renewal Area (CRA) and subsequently adopted a vision and plan for its redevelopment. Transportation improvements will be an important component in supporting redevelopment. The City has developed and adopted a Programmatic EIS to address the transportation impacts associated with redevelopment of the site. It is expected that redevelopment of the CRA will occur over many years, continuing beyond the six year time frame addressed in this TIP.

In anticipation of the commencement of light rail service in 2023, the City is planning for land use changes around the future stations located in Shoreline at NE 145th Street and NE 185th Street. Higher residential densities and a mix of land use types near the stations, as well as transit users

traveling to the stations will create an increased demand for multi-modal transportation facilities. The City of Shoreline is working with Sound Transit to develop multimodal access improvements to these stations as well as the potential for a multi-use trail along the rail track alignment between the 145th light rail station to the 195th pedestrian bridge.

Transportation impacts and needs associated with future land use changes as well as the necessary solutions to resolve them are outlined in the subarea plans. The redevelopment of the station areas is expected to occur over many decades. The projects needed to accommodate growth in the station areas will be incorporated into future TIPs.

6. Relationship of the TIP to other Transportation Documents

A. Six-Year Capital Improvement Plan

Once adopted, the TIP helps to guide funding and implementation priorities during the development of the transportation portion of the Capital Improvement Plan (CIP). The CIP is a six-year financial plan addressing capital needs and is updated along with the development of the City's operating budget. The CIP shows the City-funded portion of projects and is constrained by current budget forecasts, whereas the TIP shows the complete project list, including unfunded projects and programs. The first year of the CIP is adopted as part of the annual budget

B. Transportation Master Plan

The City of Shoreline's Transportation Master Plan (TMP) is the long-range blueprint for travel and mobility, describing a vision for transportation that supports the City's adopted Comprehensive Plan. The TMP provides guidance for public and private sector decisions on local and regional transportation investments, including short-, mid-, and long-range transportation and related land-use activities. In this way, the City can assess the relative importance of projects and schedule their planning, engineering and construction as growth takes place and the need for the facilities and improvements is warranted. It also establishes a prioritization of the projects to be included in future capital improvement plans. The TMP covers all forms of personal travel – walking, bicycling, transit and automobile.

C. State and Federal Requirements

State law requires that each city develop a local TIP and that it be annually updated (RCW 35.77.010). It also requires that projects be included in the TIP in order for cities to compete for transportation funding grants from most federal and state sources. Federal grant funded and regionally significant projects from the first three years of the City's TIP are included in the Regional TIP, which is assembled by the Puget Sound Regional Council for King, Kitsap, Pierce, and Snohomish Counties. The Regional TIPs from around the State are then combined to form the State TIP, which is approved by the Governor and then submitted to the Federal Highway Administration and Federal Transit Authority for their review and approval.

6. Funding Challenges

As is the case for most jurisdictions, the need for transportation improvements in Shoreline greatly outweighs the City's ability to fund them in both the short and long term. In addition to major capital projects such as intersection or corridor improvements, there is an on-going need to

maintain the existing system. This includes repair, maintenance and preservation work, such as Bituminous Surface Treatment (BST) or overlays, upgrades and repairs to traffic signals, installation of new street lights and curb ramp upgrades. It is difficult to estimate the annual backlog or degree to which the City's transportation program is underfunded, as new projects are identified annually and maintenance is a continuous necessity. The unfunded projects and programs included in this six year TIP (not including the unfunded portions of partially funded projects) total \$122,902,153.

The City of Shoreline funds transportation capital projects from the General Fund, Real Estate Excise Tax (REET), Transportation Benefit District (TBD) and grant revenue from local, state and federal governments. Because some of these revenue sources are so closely tied to the health of the economy they can be somewhat unpredictable, making it challenging for the City to plan for transportation improvements with assurance that funding will be available.

Historically the largest sources of funding for Shoreline's transportation programs and projects have been grants. Funding for transportation projects is available from federal, state and local resources. Each funding source has specific rules and guidelines about what types of projects they will fund, how much of a project will be funded and timelines for expenditure of funds. Most grant programs require a funding match, which means that the City must also contribute funding to the cost of a project. The granting agency may also have restrictions about the source of the funding match. For example, a state funded grant might be restricted from having another state funded grant serve as the match. Funding programs for bicycle and pedestrian transportation projects are very limited, especially in comparison to funding for highway and roadway projects. Quite often, granting agencies prefer to fund construction of projects rather than planning, design or environmental work. Having projects fully designed and "shovel ready" improves their ability to compete for funding. The competitive nature of grant funding and the specific requirements associated with available grants narrow the opportunities for many of the City's high priority projects to obtain outside funding.

7. Lifecycle of a Project

Depending upon the size and/or degree of complexity associated with a project, it can take several years to complete. For example, the three mile Aurora Corridor Improvement Project scheduled for completion in 2016, began the initial planning work in 1997. Large projects may be divided into several smaller projects in order to manage the project more effectively, comply with grant funding requirements or minimize inconvenience to the community during construction. Throughout all phases of a project, the City is committed to maintaining open communications with the community. The process to develop projects generally includes the following steps.

Planning and Alternatives Development – During this phase, conceptual ideas for a project are identified, evaluated and narrowed, sometimes to a single option. Citizens, community organizations, neighboring jurisdictions and other stakeholders help shape the project. Public meetings provide updates to the community and help the City gather feedback.

Preliminary Design and Environmental Review – This phase identifies potential environmental impacts of the project alternative(s). The level of review and documentation depends on the scope of the project and its potential for environmental impacts. An Environmental Impact Statement (EIS) is prepared for large projects with potentially significant impacts. Development of a State Environmental Policy Act (SEPA) checklist may be prepared for projects not requiring an EIS. A

similar review under the National Environmental Policy Act (NEPA) is required for projects that receive federal funding. The project's design moves from conceptual to preliminary as initial engineering begins.

During this phase:

- If required, a SEPA checklist or Draft EIS is published followed by a public comment period. Responses to those comments are found in the Final EIS.
- Preliminary design is completed.
- The City selects the project that will eventually be built.

Final Design and Property Acquisition – In this phase, architects and engineers define what the project will look like as well as the technical specifications for the project. Field work is performed including testing soil conditions and ground water levels, surveying, and locating utilities. Additionally, the City acquires any necessary private property and easements. This phase is often referred to as “Projects, Specifications and Estimate (PS and E)”.

Construction – Construction time varies widely from project to project. The City balances the need to complete the project on time and on budget while minimizing construction impacts to the community.

Unforeseen site conditions, weather, design corrections and the complexity of a project are some of the factors that can influence the schedule. Construction schedules can also be affected by environmental restrictions, such as permissible timeframes to work in fish bearing waters.

Contact Information

For additional information, contact Nytasha Sowers, Transportation Services Manager, 206.801.2481, nsowers@shorelinewa.gov.

FUNDED PROGRAMS (FULLY OR UNDERFUNDED)

1. Curb Ramp, Gutter and Sidewalk Program (*underfunded*)
2. Traffic Safety Improvements (*underfunded*)
3. Annual Road Surface Maintenance Program (*underfunded*)
4. Traffic Signal and Intelligent Transportation System (ITS) Improvements (*underfunded*)

FUNDED PROJECTS (FULLY OR PARTIALLY)

5. 25th Avenue NE Sidewalk
6. 145th Street (SR 523) Corridor Improvements (*partially*)
7. Echo Lake Safe Routes to School
8. Bicycle System Plan Implementation – Minor Improvements
9. Citywide Radar Speed Signs
10. Meridian Avenue N and N 155th Street Intersection Phase Changes
11. N/NE 175th Street Corridor Improvements (*partially*)
12. N/NE 185th Street Corridor Improvements (*partially*)
13. Richmond Beach Road Rechannelization

UNFUNDED PROJECTS

14. Community Renewal Area (CRA) Roadway Improvements
15. NE Perkins Way Improvements – 10th Avenue NE to 15th Avenue NE
16. 15th Avenue NE – NE 172nd Street to NE 195th Street
17. Fremont Avenue N – N 175th Street to N 185th Street
18. Point Wells Potential Mitigation Projects
19. Major Pavement Rehabilitation Projects
20. Meridian Avenue N - N 145th Street to N 205th Street
21. Aurora Avenue N at N 145th Street Dual Left Turn Lane
22. N 165th Street and Carlyle Hall Road N Sidewalk and Intersection Safety
23. N 152nd Street and Ashworth Avenue N Intersection Improvements
24. Ballinger Way - NE 205th St to 19th Ave NE Access Control Preliminary Design
25. N 185th Street and Linden Avenue N Intersection Improvements
26. 3rd Ave NW and NW Richmond Beach Intersection Improvements
27. New Sidewalk Projects

EMERGING PROJECTS

Community Renewal Area Projects
Light Rail Station Area Improvements
Transit Service Integration Plan

PROJECT SCHEDULED FOR SUBSTANTIAL COMPLETION IN 2016

Interurban/Burke-Gilman Connectors
145th Street Corridor Study
10th Avenue NW Bridge Rehabilitation
Aurora Ave N, 192nd – 205th Streets
Annual Road Surface Maintenance Program

- Meridian Ave N overlay
- 15th Ave NE overlay

Project	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
FUNDED PROGRAMS (FULLY OR PARTIALLY)							
Curb Ramp, Gutter & Sidewalk Program	\$ 153,000	\$ 153,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 1,106,000
Traffic Safety Improvements	\$ 157,881	\$ 160,775	\$ 163,814	\$ 167,005	\$ 167,005	\$ 167,005	\$ 983,485
Annual Road Surface Maintenance Program	\$ 1,000,000	\$ 1,100,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 6,900,000
Traffic Signal and Intelligent Transportation System (ITS) Improvements	\$ 116,000	\$ 122,000	\$ 128,000	\$ 135,000	\$ 150,000	\$ 150,000	\$ 801,000
FUNDED PROJECTS (FULLY OR PARTIALLY)							
25th Avenue NE Sidewalk	\$ 60,000	\$ 510,000	\$ 25,000	\$ -	\$ -	\$ -	\$ 595,000
145 th Street (SR 523) Corridor Improvements	\$ 2,448,000	\$ 2,448,000	\$ 2,000,000	\$ 5,000,000	\$ 20,000,000	\$ 20,000,000	\$ 51,896,000
Echo Lake Safe Routes to School	\$ 419,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 419,000
Bicycle System Plan Implementation – Minor Improvements	\$ 585,725	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 585,725
Citywide Radar Speed Signs	\$ 121,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 121,000
Meridian Avenue N and N 155th Street Intersection Phase Changes	\$ 55,000	\$ 304,000	\$ -	\$ -	\$ -	\$ -	\$ 359,000
N/NE 175 th Street Corridor Improvements	\$ 2,820,000	\$ 2,819,000	\$ -	\$ -	\$ -	\$ 77,156,000	\$ 82,795,000
N/NE 185 th Street Corridor Improvements	\$ 600,000	\$ -	\$ -	\$ -	\$ 8,539,000	\$ 8,539,000	\$ 17,678,000
Richmond Beach Road Rechannelization	\$ 200,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 200,000
UNFUNDED PROJECTS							
Community Renewal Area (CRA) Roadway Improvements	\$ 477,000	\$ 4,650,000	\$ 700,000	\$ 700,000	\$ -	\$ 14,500,000	\$ 21,027,000
NE Perkins Way Improvements – 10 th Avenue NE to 15 th Avenue NE	\$ -	\$ -	\$ -	\$ 3,681,540	\$ -	\$ -	\$ 3,681,540
15 th Avenue NE – NE 172 nd Street to NE 195 th Street	\$ -	\$ -	\$ -	\$ 6,176,793	\$ -	\$ -	\$ 6,176,793
Fremont Avenue N – N 175 th Street to N 185 th Street	\$ -	\$ -	\$ -	\$ 6,292,720	\$ -	\$ -	\$ 6,292,720
Point Wells Potential Mitigation Projects	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 45,490,000	\$ 45,490,000
Major Pavement Rehabilitation Projects	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 12,000,000
Meridian Avenue N Corridor Improvements	\$ 992,000	\$ -	\$ -	\$ -	\$ -	\$ 9,117,000	\$ 10,109,000
Aurora Avenue N at N 145 th Street Dual Left Turn Lane	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,700,000	\$ 4,700,000
N 165 th Street and Carlyle Hall Road N Sidewalk and Intersection Safety	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,482,000	\$ 2,482,000
N 152 nd Street and Ashworth Avenue N Intersection Improvements	\$ -	\$ -	\$ -	\$ 25,000	\$ 320,000	\$ -	\$ 345,000
Ballinger Way - NE 205th St to 19th Ave NE Access Control Preliminary Design	\$ -	\$ 200,000	\$ -	\$ -	\$ -	\$ -	\$ 200,000
N 185th Street and Linden Avenue N Intersection Improvements	\$ -	\$ -	\$ 530,100	\$ -	\$ -	\$ -	\$ 530,100
3rd Ave NW and NW Richmond Beach Rd Intersection Improvements	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,320,000	\$ 2,320,000
New Sidewalk Projects	\$ 172,000	\$ 1,227,000	\$ 1,519,000	\$ 590,000	\$ 2,029,000	\$ 2,011,000	\$ 7,548,000
Total Expenditures by Year	\$ 12,376,606	\$ 15,693,775	\$ 8,465,914	\$ 26,168,058	\$ 34,605,005	\$ 190,032,005	\$ 287,341,363

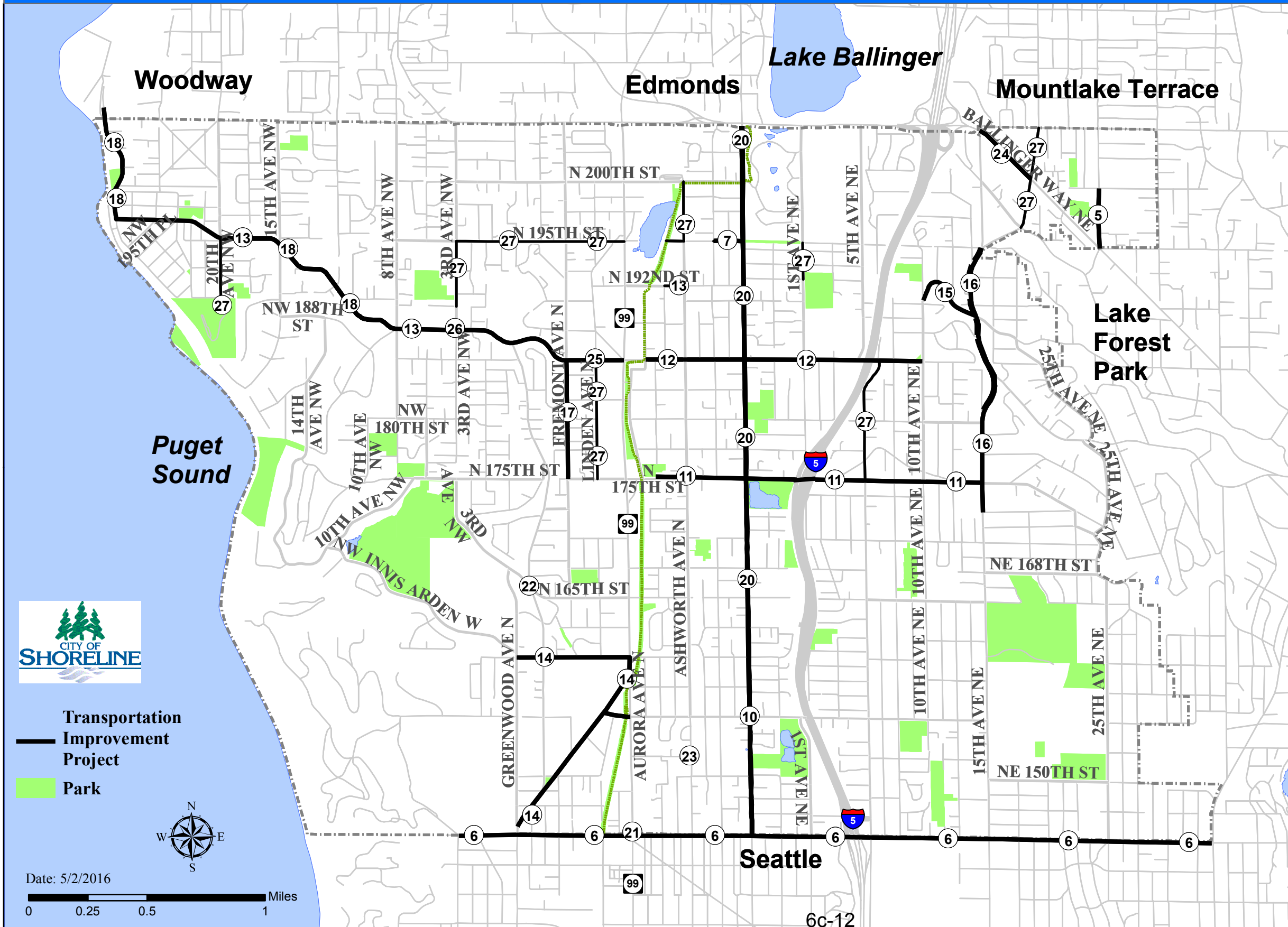
City of Shoreline Transportation Improvement Program 2017 to 2022

Project Location

- 5. 25th Avenue NE Sidewalk
- 6. 145th Street (SR 523) Corridor Improvements
- 7. Echo Lake Safe Routes to School
- 10. Meridian Avenue N and N 155th Street Intersection Phase Changes
- 11. N/NE 175th Street Corridor Improvements
- 12. N/NE 185th Street Corridor Improvements
- 13. Richmond Beach Road Rechannelization
- 14. Community Renewal Area (CRA) Roadway Improvements
- 15. NE Perkins Way Improvements – 10th Avenue NE to 15th Avenue NE
- 16. 15th Avenue NE – NE 172nd Street to NE 195th Street
- 17. Fremont Avenue N – N 175th Street to N 185th Street
- 18. Point Wells Potential Mitigation Projects
- 20. Meridian Avenue N - N 145th Street to N 205th Street
- 21. Aurora Avenue N at N 145th Street Dual Left Turn Lane
- 22. N 165th Street and Carlyle Hall Road N Sidewalk and Intersection Safety
- 23. N 152nd Street and Ashworth Avenue N Intersection Improvements
- 24. Ballinger Way – NE 205th Street to 19th Avenue NE – Access Control Preliminary Design
- 25. N 185th Street and Linden Avenue N Intersection Improvements
- 26. 3rd Ave NW and NW Richmond Beach Intersection Improvements
- 27. New Sidewalk Projects

Citywide Improvements

- 1. Curb Ramp, Gutter and Sidewalk Program
- 2. Traffic Safety Improvements
- 3. Annual Road Surface Maintenance Program
- 4. Traffic Signal and Intelligent Transportation System (ITS) Improvements
- 8. Bicycle System Plan Implementation – Minor Improvements
- 9. Citywide Radar Speed Signs
- 19. Major Pavement Rehabilitation Projects



Transportation Improvement Project
Park



Date: 5/2/2016



FUNDED PROGRAMS
(FULLY OR PARTIALLY)

Project # and Name

1. Curb Ramp, Gutter and Sidewalk Program

Scope / Narrative

The ongoing Curb Ramp, Gutter and Sidewalk Program includes replacement of curb ramps that do not comply with the Americans with Disabilities Act (ADA) standards; design and construction of new, ADA compliant curb ramps in locations where none exist; and repairing and replacing existing concrete gutters and sidewalks damaged by tree roots, cracking or settlement. In a related project, the City is undertaking a City-wide inventory of all pedestrian facilities in the public right of way as a step toward an ADA compliance plan. The City-wide inventory will help to determine priorities for this capital program as well.

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Roads Capital	\$ 153,000	\$ 153,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 1,106,000

Funding Outlook

This program is currently funded through an annual transfer from the General Fund. It is underfunded, as it is known that additional work is needed to fully maintain the existing sidewalks. It is unknown how much additional funding is needed at this time. A full inventory is required in order to accurately assess the need and an inventory and condition assessment is funded in the 2015 budget. Additionally, new requirements for curb ramp upgrades associated with projects such as traffic signal improvements and pavement overlays continue to increase the costs associated with this program. It is estimated this program is less than 50% funded. Future TIPs may include this information.

Project Status

Annual program, 2017-2022. This program helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

2. Traffic Safety Improvements

Scope / Narrative

This program addresses priority traffic and pedestrian safety concerns on both arterial and local streets. The primary purpose of this program is to design and implement small spot improvement projects to improve safety and enhance the livability of neighborhoods. Projects include traffic calming devices (speed humps, radar speed display signs, etc), capital infrastructure (curb ramps, sidewalks, etc) and operational changes (bike lanes, turn lanes, school signing, etc).

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Roads Capital	\$ 157,881	\$ 160,775	\$ 163,814	\$ 167,005	\$ 167,005	\$ 167,005	\$ 983,485

Funding Outlook

This program is currently underfunded. Additional improvements that could be implemented with supplemental funding include street lighting, ADA compliance upgrades, small sidewalk projects, and projects identified in the Neighborhood Traffic Action Plans. Addressing all the projects identified as high priority by residents in the traffic plans is estimated at \$37.6 million.

Project Status

Annual program, 2017-2022. This program helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure and Goal 5: Promote and enhance the City's safe community and neighborhood initiatives and programs.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

3. Annual Road Surface Maintenance Program

Scope / Narrative

The City's long-term road surface maintenance program is designed to maintain the City's roadway system at the highest Pavement Condition Index (PCI) rating within the limits of available funding. PCI is recalibrated annually and re-assessed City-wide at 5 year intervals. Roadway maintenance is accomplished by using a combination of asphalt concrete overlays and bituminous surface treatment (BST), both of which are preventative maintenance techniques. Asphalt overlays are used to maintain the structure of arterial streets, which have higher traffic volumes and higher wear, and BST is employed on residential streets, which have lower traffic volumes, lower wear and, if well maintained, a generally longer life span. These techniques typically extend pavement life between 10 and 15 years. Each year, the City identifies streets that require maintenance through this program. To maximize the impact of available funding and staff and coordinate with grant funding cycles, the City alternates each year between overlays and BST. As part of this program, the City renews pavement markings, traffic channelization and signs.

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Roads Capital	\$ 1,000,000	\$ 1,100,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 6,900,000
Federal - STP							\$ -
PROJECT TOTAL	\$ 1,000,000	\$ 1,100,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 6,900,000

Funding Outlook

This program is currently funded at approximately 50 percent.

Project Status

Annual program 2017-2022. This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

4. Traffic Signal and Intelligent Transportation System (ITS) Improvements

Scope / Narrative

The maintenance of safe and efficient traffic signals is an important part of the City's responsibility to all users of the transportation network including drivers, pedestrians and bicyclists. New traffic signal technology provides superior functionality compared to older, obsolete equipment. Intersection improvements are one of the most cost effective ways to improve traffic flow while effective maintenance and operation of traffic signals can increase safety and extend the life of the signal, decreasing overall program costs. Examples of signalized intersection improvements include, but are not limited to:

- New controllers which can accommodate transit signal priority, dynamic emergency vehicle preemption and coordination of traffic signals along a corridor for increased efficiency.
- Functional detection to ensure signals operate dynamically, based on actual user demand.
- Back up battery systems to keep signals operational during power outages.
- Communication to a central system for efficient signal timing changes, troubleshooting, and reporting.
- Accessible Pedestrian Signals and countdown signal heads for improved safety and ADA compliance.

The ability to keep traffic signals operating and vehicles moving is a key part of Shoreline's Emergency Management Plan.

□

Intelligent Transportation Systems (ITS) is the application of advanced information and communications technology to transportation. ITS helps roadway users make more informed decisions about travel routes thereby improving efficiency, safety, productivity, travel time and reliability. Elements of an ITS system can include variable message signs, license plate or bluetooth/wi-fi readers, real-time traffic flow maps, traffic monitoring cameras, and communication between traffic signals and a Traffic Management Center (TMC). Existing City ITS components include fiber optic lines, traffic monitoring cameras, and a central signal system for signals along Aurora. The City began operation of a TMC in 2013 to help manage these systems which may be expanded or modified as the City's ITS system grows. This project will fully integrate all City signals, with ITS improvements where appropriate, including traffic monitoring cameras. Future expansions of the system may include coordination with traffic signals in Seattle, cities to the north, and those operated by WSDOT.

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Roads Capital	\$ 116,000	\$ 122,000	\$ 128,000	\$ 135,000	\$ 150,000	\$ 150,000	\$ 651,000

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Funding Outlook

The annual funding for this project is not enough to completely rebuild two traffic signals each year, as a traffic signal rebuild typically costs \$60,000. While some signal upgrades were deferred due to the recession, the city still remains on schedule to rebuild an average of two signals each year, in part due to grant-funded CIP projects, such as the Aurora Corridor Improvement Project. The program is currently underfunded by approximately \$20,000 annually to stay on schedule for rebuilding two traffic signals each year. An additional \$750,000 is needed to complete the ITS components of this project. The ITS portion of the project is currently unfunded as well. The City currently does not have a good inventory of signal needs, however, it is expected that this inventory will be completed in 2015.

Project Status

Annual program 2017-2022. This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

FUNDED PROJECTS
(FULLY OR PARTIALLY)

Project # and Name

5. 25th Avenue NE Sidewalk

Scope / Narrative

This project will extend sidewalks along the west side of 25th Ave NE from NE 195th Pl to NE 200th St. Sidewalk will be installed in front of the proposed Public Works Maintenance Facility and Bruggers Bog Park. Intermittent on-street parking will also be installed.

Funding

FUNDING SOURCE	FUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Roads Capital	\$ 60,000	\$ 510,000	\$ 25,000				\$ 595,000

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

6. 145th Street (SR 523) Corridor Improvements

Scope / Narrative

145th Street (SR 523) serves as the boundary between the Cities of Shoreline and Seattle. The right-of-way is not within the City's jurisdiction. The southern half (eastbound lanes) is in the City of Seattle and the northern half (westbound lanes) is in unincorporated King County. Seattle classifies 145th Street as a Principal Arterial from Greenwood Ave N to Bothell Way NE (SR-522). From February 2015 to April 2016 the City of Shoreline undertook a multi-modal study of the corridor from 3rd Avenue NW to SR-522 (Bothell Way/ Lake City Way). The study included an evaluation of safety, traffic, transit and non-motorized needs resulting from anticipated changes in the area including growth and the siting of a new light rail station.

The study identified a preferred design concept to guide future design and engineering work on the corridor. This draft preferred concept was developed in partnership with the City of Seattle, the Washington State Department of Transportation, King County, Metro Transit and Sound Transit. Based on the preferred design concept developed through the 145th Multi-Modal Corridor Study corridor improvements will include:

- Improving vehicular capacity and safety, increasing transit speed and reliability, and improving non-motorized accessibility to I-5 and the future light rail station.
- Upgrading of the existing non-ADA compliant sidewalks and constructing new sidewalk for a continuous pedestrian system along the corridor.
- Installing illumination and landscaping along the corridor.
- Making bus stop improvements.
- Upgrading the existing stormwater management system to improve stormwater detention and treatment.

Funding for final design and environmental review of the I-5 to Aurora (State Route 99) segment has been secured. Preliminary engineering and environmental work for the segment from Interstate 5 to Aurora (State Route 99) will proceed in mid 2016.

Funding for design and environmental review for the section from SR-522 to I-5 and from Aurora (SR-99) to 3rd Ave NW has not been secured. Funding has not been secured for right-of-way acquisition and construction of the corridor.

Funding

FUNDING SOURCE	FUNDED		UNFUNDED				
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
Roads Capital	\$ 330,000	\$ 330,000					\$ 660,000
Federal - STP	\$ 2,118,000	\$ 2,118,000					\$ 4,236,000
Unknown			\$ 2,000,000	\$ 5,000,000	\$ 20,000,000	\$ 20,000,000	\$ 47,000,000
PROJECT TOTAL	\$ 2,448,000	\$ 2,448,000	\$ 2,000,000	\$ 5,000,000	\$ 20,000,000	\$ 20,000,000	\$ 51,896,000

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Funding Outlook

The estimates for 2018-2021 are included as placeholders. The 145th Multimodal Corridor Study provided a general project design and cost estimates for the project. It is anticipated that the total cost for this project will be significantly greater and that the project will continue beyond 2020. The City has submitted a total project cost estimate of \$200 million to the Puget Sound Regional Council for the purposes of regional transportation planning. The City was awarded grant funding for Plans, Specifications and Estimate as well as environmental review in 2014 (to be obligated in 2016 after completion of the 145th Multimodal Corridor Study) for the segment from Aurora Avenue N to Interstate 5.

Project Status

Project initiated in 2014. The Multimodal Corridor Study 2016. Design work for the segment from Aurora Avenue N to Interstate 5 is scheduled to begin in late 2016. This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|--|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input checked="" type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

7. Echo Lake Safe Routes to School

Scope / Narrative

This project will construct sidewalks (including curb and gutter), curb ramps, and crosswalks on N 195th Street between Meridian Avenue N and Wallingford Avenue N, directly adjacent to Echo Lake Elementary. The new sidewalk will connect to sidewalk already in place in front of the school east to the N 195th Street Trail, which connects student walkers and bicyclists to the surrounding neighborhoods.

Funding

FUNDING SOURCE	UNFUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2021 Estimate	
Safe Routes to School	\$ 410,000	\$ -					\$ 410,000
Roads Capital	\$ 9,000	\$ -					\$ 9,000
PROJECT TOTAL	\$ 419,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 419,000

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

8. Bicycle System Plan Implementation – Minor Improvements

Scope / Narrative

Implement the majority of the City of Shoreline's adopted Bicycle System Plan through the installation of bicycle lanes, sharrows and route signage. Wayfinding signage that helps guide nonmotorized travelers to destinations throughout Shoreline and in neighboring jurisdictions will accompany the installation of facilities. Implementation will include the design of facilities, procurement of materials, construction and project management. Improvements that would be installed as part of this project do not include those that would require significant capital projects, construction or right-of-way acquisition, as these are identified as components of other projects within this TIP.

Funding

FUNDING SOURCE	UNFUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Federal - STP	\$ 506,652						\$ 506,652
Roads Capital	\$ 79,073						\$ 79,073
PROJECT TOTAL	\$ 585,725	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 585,725

Funding Outlook

The total cost for this project is estimated to be approximately \$643,000. Design phase will be complete in 2016 and construction will be completed in 2017.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

9. Citywide Radar Speed Signs

Scope / Narrative

This project includes the installation of speed feedback signs (radar speed signs) at the following five locations:

1. Greenwood Ave N between Westminster Way N and N 160th Street (northbound and southbound)
2. 5th Ave NE between NE 192nd Street and NE 205th Street (northbound and southbound)
3. 1st Ave NE between N 145th Street and N 155th Street (northbound and southbound)
4. 15th Ave NW between NW Richmond Beach Rd and NW 205th St (northbound and southbound)
5. NW Innis Arden Way between Greenwood Ave N and 10th Ave NW (westbound only)

Funding

FUNDING SOURCE	FUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Roads Capital	\$ 1,000						\$ 1,000
HSIP	\$ 120,000						\$ 120,000
PROJECT TOTAL	\$ 121,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 121,000

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

10. Meridian Avenue N and N 155th Street Intersection Phase Changes

Scope / Narrative

This project will revise northbound/southbound signal phasing from permissive to flashing yellow arrow operation to address at-angle collisions at the intersection of Meridian Ave N and N 155th St. It will decrease intersection radii to lower vehicle turning speeds and reduce pedestrian crossing distance for increased pedestrian safety and repair and provide vehicle and bicycle detection where needed and rebuild intersection sidewalks, curb ramps and pedestrian signal system for ADA compliance.

Funding

FUNDING SOURCE	FUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Roads Capital	\$ 7,000						\$ 7,000
HSIP	\$ 48,000	\$ 304,000					\$ 352,000
PROJECT TOTAL	\$ 55,000	\$ 304,000					\$ 359,000

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

11. N/NE 175th Street Corridor Improvements

Scope / Narrative

This project incorporates a series of improvements along this corridor to improve safety and capacity. Individual projects include the following:

a. N 175th St – Stone Ave N to Meridian Ave N* and Interstate 5 to 15th Ave NE: This project will design and construct improvements which will tie in with those recently constructed by the Aurora project. The improvements include: reconstruction of the existing street to provide two traffic lanes in each direction, a center lane with two-way left turn areas, medians and turn pockets, bicycle lanes (integrated into the sidewalk), curb, gutter, and sidewalk with planter strip where feasible, illumination, landscaping and retaining walls. Intersections with high accident rates will be improved as part of this project. The profile of the roadway between Ashworth Ave N and Stone Ave N will be lowered to meet standard sight distance requirements. This project includes improvements to the I-5 intersections, in coordination with WSDOT.

b. N 175th St and Meridian Ave N*: Construct a northbound add lane on Meridian Ave N, which involves widening the northbound approach to include a second through lane. Rechannelize the southbound approach with a single left turn lane and increase the westbound left turn pocket length.

c. N/NE 175th St – Meridian Ave N to the Interstate 5 on-/off-ramps*: Extend the left-turn pockets between Meridian Ave N and I-5 to provide additional storage capacity for left turning vehicles at the intersections.

d. NE 175th St – 15th Ave NE – 25th Ave NE: Re-stripe the westbound approach to provide a dedicated left-turn pocket and shared through/right lane. With dedicated left-turn pockets, remove split-phase signal operation and optimize for eight-phase signal operation.

e. Interchange Improvements: Projects were identified in the City's TMP to accommodate growth and maintain the City's adopted transportation level of service including several of the projects listed above. In addition to these projects, the City's travel demand model also identified the potential need to improve the interchange at NE 175th Street and I-5. Currently, this interchange experiences delays during the AM and PM peak periods, due in part to the ramp metering, and this backup affects other intersections. Reconstruction of this interchange would allow the City to improve bicycle and pedestrian safety at this location, as well as improve the operations of the nearby intersections. Because this project is not entirely within the jurisdiction of the City, it will require coordination with WSDOT.

Some of these projects can be constructed individually, allowing the complete set of improvement to be phased over time.

* Projects have been identified in the City's Transportation Master Plan as necessary to accommodate growth and allow the City to maintain its adopted Levels of Service. These projects may be funded in part by transportation impact fees.

Continued on next page

Funding							
FUNDING SOURCE	FUNDED		UNFUNDED				2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
N 175 th St – Stone Ave N to Meridian Ave N* and Interstate 5 to 15 th Ave NE (a) - STP	\$ 1,640,000	\$ 1,640,000				\$ 6,660,000	\$ 9,940,000
N 175 th St – Stone Ave N to Meridian Ave N* and Interstate 5 to 15 th Ave NE (a) – impact fee						\$ 3,314,000	\$ 3,314,000
N 175 th St and Meridian Ave N (b) - STP	\$ 651,000	\$ 651,000				\$ 2,644,000	\$ 3,946,000
N 175 th St and Meridian Ave N (b) – impact fee						\$ 1,315,000	\$ 1,315,000
N/NE 175 th St – Meridian Ave N to the I-5 on-/off-ramps (c) - STP	\$ 529,000	\$ 528,000				\$ 2,146,000	\$ 3,203,000
N/NE 175 th St – Meridian Ave N to the I-5 on-/off-ramps (c) – impact fee						\$ 1,067,000	\$ 1,067,000
NE 175 th St – 15 th Ave NE – 25 th Ave NE (d) - unknown						\$ 10,000	\$ 10,000
Interchange Improvements (e)						\$ 60,000,000	\$ 60,000,000
PROJECT TOTAL	\$ 2,820,000	\$ 2,819,000	\$ -	\$ -	\$ -	\$ 77,156,000	\$ 82,795,000

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Funding Outlook

Projects identified in the City's Transportation Master Plan as necessary to accommodate growth and allow the City to maintain its adopted Levels of Service may be funded in part by transportation impact fees. The City pursued federal grant funding for design and environmental work through the Surface Transportation Program administered by PSRC in 2014 and was included as the first project eligible for funding on the contingency list. In February 2016 this project was selected off the contingency list and fully funded for design and environmental review. It is anticipated that the City will use transportation impact fees collected from private development to serve as the match for this project.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|--|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input checked="" type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input checked="" type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input checked="" type="checkbox"/> Corridor Study |

Project # and Name

12. N/NE 185th Street Corridor Improvements

Scope / Narrative

NE 185th Street at Interstate 5 is the future site of a light rail station planned as part of Sound Transit's Lynnwood Link Light Rail Extension project. With the construction of this station and the operation of light rail service, the City expects increases to traffic on N/NE 185th Street as residents will drive to access the parking garage planned as part of this facility, as well as increased bicycle, pedestrian and bus traffic. Additionally, the City anticipates that the surrounding areas will transition over time to more densely developed, mixed use neighborhoods, which will also be a source of increased multi-modal traffic. The development of the Point Wells property in Snohomish County is likely to put added pressure on this roadway as well. This project incorporates a series of improvements along this corridor to improve safety and capacity. Individual projects include the following:

- a. NE 185th St – 1st Ave NE to 7th Ave NE* and 7th Ave NE to 10th Ave NE: Rechanelize the roadway to add a center two-way left-turn lane, retain bicycle lanes and remove on-street parking.
- b. N 185th St and Meridian Ave N*: Construction of northbound and southbound add/drop lanes, which involves widening the northbound and southbound approaches to include a second through lane and receiving lane. This project also includes construction of an east to southbound right-turn pocket, which involves widening the eastbound approach. This signal will be coordinated with the signal at Meridian Ave N and 1st Ave NE.
- c. N 185th St – Midvale Ave N to Stone Ave N: Extend the second eastbound through lane from Midvale Ave N to Stone Ave N. The lane will terminate as a right-turn only lane at Stone Ave N.
- d. N/NE 185th St – Midvale Ave N – 10th Ave NE: Perform overlay/preservation work. Work may include milling the roadway and sealing the joints between the concrete panels to improve the smoothness and improve the pavement life span.
- e. N/NE 185th Street Corridor Study: Develop a corridor plan for 185th Street/10th Avenue NE/NE 180th Street that includes multi-modal transportation facilities necessary to support projected growth in the subarea, a phasing plan for implementation and a funding plan for improvements. This project is identified in the 185th Street Station Subarea Plan.

Some of these projects can be constructed individually, allowing the complete set of improvements to be phased over time. Preservation work may occur in advance of other projects in order to maintain them until funding is available for the larger capital projects.

*Projects have been identified in the City's Transportation Master Plan as necessary to accommodate growth and allow the City to maintain its adopted Levels of Service. These projects may be funded in part by transportation impact fees.

Continued on next page

Funding							
	FUNDED	UNFUNDED					
FUNDING SOURCE	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
NE 185 th St – 1 st Ave NE to 7 th Ave NE and 7 th Ave NE to 10 th Ave NE(a) - unknown					\$231,000	\$231,000	\$ 462,000
NE 185 th St – 1 st Ave NE to 7 th Ave NE (a) – impact fee					\$78,000	\$78,000	\$ 156,000
N 185 th St and Meridian Ave N(b) - unknown					\$4,110,000	\$4,110,000	\$ 8,220,000
N 185 th St and Meridian Ave N (b) – impact fee					\$1,370,000	\$1,370,000	\$ 2,740,000
N 185 th St – Midvale Ave N to Stone Ave N (c) - unknown					\$550,000	\$550,000	\$ 1,100,000
NE 185 th St – Midvale Ave N – 10 th Ave NE (d) - unknown					\$2,200,000	\$2,200,000	\$ 4,400,000
N/NE 185th Street Corridor Study (e) - unknown	\$ 600,000						\$ 600,000
PROJECT TOTAL	\$ 600,000	\$ -	\$ -	\$ -	\$ 8,539,000	\$ 8,539,000	\$ 17,678,000

Funding Outlook

Projects identified in the City’s Transportation Master Plan as necessary to accommodate growth and allow the City to maintain its adopted Levels of Service may be funded in part by transportation impact fees.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure. Bicycle lanes were installed in 2013. The roadway will need to be rechannelized again in order to provide the center turn lane.

- Purpose / Goals Achieved**
- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input checked="" type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

13. Richmond Beach Rd Rechannelization

Scope / Narrative

This project will re-channelize Richmond Beach Rd/NW 195th St/NW 196th St from 24th Ave NW to Dayton Ave N from four lanes to one lane in each direction plus a center turn lane. The primary goal of this project is to improve driver, pedestrian, and bicyclist safety and mobility. Re-channelization also provides the ability to implement on-street bicycle lanes as well as pedestrian refuge space for pedestrians crossing the street between controlled intersections.

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown	\$ 200,000						\$ 200,000

Funding Outlook

This project is competitive for funding from the Citywide Safety Grant administered through WSDOT. There may also be a nexus for new development, such as Point Wells, to fund safety improvements at this intersection.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

UNFUNDED PROJECTS

Project # and Name

14. Community Renewal Area (CRA) Roadway Improvements

Scope / Narrative

This project incorporates a series of improvements in the Community Renewal Area. Individual projects include the following:

- a. Reconstruct Greenwood/Innis Arden/160th intersection for improved operations. Project also includes sidewalks between Dayton and Greenwood.
- b. N 160th from Aurora to Dayton/Greenwood. This is a multi-phase project. N 160th will be restriped to 3-lanes and bikelanes as part of the Federally funded bicycle project in 2016. Following phases include new sidewalks, a gateway entrance on N 160th St for Aurora Square and a midblock pedestrian crossing. Most effectively done when the Sears property redevelops and only if traffic volumes warrant.
- c. Intersection at N 155th St and Westminster Way N. Westminster Way N to Aurora Ave N. Improves the main vehicle intersection and increases safety for pedestrians. Includes improvements to the section of N 155th St between Westminster Way N and Aurora Ave N. Most effectively done at one time and in conjunction with the redevelopment of the Sears property.
- d. Westminster Way N (North). N 155th St to N 160th St. Envisioned as a project in the Aurora Square CRA Renewal Plan, reworking Westminster Way N in this section provides a more pedestrian and bicycle friendly section with street parking that can help unite the small triangle property to the rest of Aurora Square. Most effectively completed with the redevelopment of the triangle property. Project includes improving a bike connector from 157th to 160th.
- e. Construct N 157th St. Westminster Way N to Aurora Ave N. New street connection makes Westminster between 155th and 157th pedestrian and cycle-friendly, creates a better entrance to Aurora Square, connects the triangle property to the rest of Aurora Square, and provides on street parking for future retail. Most effectively completed with the redevelopment of the triangle property.
- f. Westminster Way N (South). N 155th St to Fremont Ave N. Frontage improvements provide little support of renewal efforts in this location.

Continued on next page

Funding							
	UNFUNDED						
FUNDING SOURCE	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
Greenwood/ N 160th St/ Innis Arden intersection		\$ 100,000	\$ 700,000	\$ 700,000			\$ 1,500,000
Re-construct N 160th from Aurora to Dayton with bike lanes, sidewalks, and possibly a new signalized intersection	\$100,000					\$ 7,500,000	\$ 7,600,000
N 155th St (West) including intersection at Westminster	\$150,000	\$ 2,850,000					\$ 3,000,000
Westminster Way N (North) N 157th to Aurora		\$ 1,700,000					\$ 1,700,000
Construct N 157th St	\$227,000						\$ 227,000
Westminster Way N (South)						\$ 7,000,000	\$ 7,000,000
PROJECT TOTAL	\$ 477,000	\$ 4,650,000	\$ 700,000	\$ 700,000	\$ -	\$ 14,500,000	\$ 21,027,000

Funding Outlook

Many of these projects will be constructed by private development as properties within the Aurora Square Community Renewal Area are redeveloped. The cost estimate does not include the funding needed for utility undergrounding.

Project Status

This project helps to implement City Council Goal 1: Strengthen Shoreline's economic base and Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

- Purpose / Goals Achieved**
- | | |
|--|--|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input checked="" type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input checked="" type="checkbox"/> Corridor Study |

Project # and Name

15. NE Perkins Way Improvements – 10th Avenue NE to 15th Avenue NE

Scope / Narrative

Construct bicycle and pedestrian improvements on NE Perkins Way from 10th Ave NE to 15th Ave NE. This roadway segment currently includes two travel lanes and a pedestrian walking on the north side separated from the travel lanes by jersey barriers. No bicycle facilities are present. This segment is part of the Northern Connector route from the Interurban Trail in Shoreline to the Burke-Gilman Trail in Lake Forest Park. Upon completion of the separated trail at NE 195th Street from 1st Ave NE to 5th Ave NE and installation of signage along the remainder of the route, this segment will be the remaining gap within the connector route. A study is needed to determine the appropriate scope of improvements and costs for this project.

Funding

	UNFUNDED						
FUNDING SOURCE	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
Unknown				\$ 3,681,540			\$ 3,681,540

Funding Outlook

The funding identified for this project is to identify and design the appropriate improvements for the roadway and develop cost estimates. Because construction costs are unknown at this time, a placeholder for them is identified in 2019-2020. More refined construction costs and a timeline for completion will be updated in future TIPs. This project is likely to be competitive for grant funding.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input checked="" type="checkbox"/> Corridor Study |

Project # and Name

16. 15th Avenue NE – NE 172nd Street to NE 195th Street

Scope / Narrative

This project would construct sidewalks and accessible bus stops on the west side of the road from NE 180th St to NE 195th St. There are significant topographic challenges related to constructing a sidewalk on the west side of this arterial. A corridor study will be performed to identify a preferred transportation solution for this roadway segment. Alternatives to accommodate bicycles will be analyzed, including rechannelization of the roadway from four lanes to three. The cross-section of the road from NE 175th St to NE 180th St would be reduced from four lanes to three and bicycle lanes would be installed. Right-of-way may need to be purchased to complete this project.

Funding

	UNFUNDED						
FUNDING SOURCE	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
Unknown				\$ 6,176,793			\$ 6,176,793

Funding Outlook

The funding identified for this project is to identify and design the appropriate improvements for the roadway and develop cost estimates. Because construction costs are unknown at this time, a placeholder for them is identified in 2019-2021. More refined construction costs and a timeline for completion will be updated in future TIPs.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input checked="" type="checkbox"/> Corridor Study |

Project # and Name

17. Fremont Avenue N – N 175th Street to N 185th Street

Scope / Narrative

This project incorporates a series of improvements along this corridor to improve safety and capacity including:

- Rechannelization of the roadway to a three lane cross-section (one travel lane in each direction with a center turn lane) with bicycle lanes.
- Construction of sidewalks on both sides of the street. All sidewalks would be five to eight feet wide, include curb and gutter and five foot amenity zones separating the pedestrians from the roadway.
- Perform overlay/preservation work.

These projects can be constructed individually, allowing the complete set of improvement to be phased over time.

Fremont Ave N serves as a primary route to Shorewood High School and Shoreline's Town Center.
Tricia - Need updated cost estimate

Funding

FUNDING SOURCE	UNFUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown				\$ 6,292,720			\$ 6,292,720

Project Status

This project helps to implement City Council Goal 1: Strengthen Shoreline's economic base and Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Funding Outlook

The funding identified for this project is to identify and design the appropriate improvements for the roadway and develop cost estimates. Because construction costs are unknown at this time, a placeholder for them is identified in 2019-2021. More refined construction costs and a timeline for completion will be updated in future TIPS.

Purpose / Goals Achieved

- | | |
|---|--|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input checked="" type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

18. Point Wells Potential Mitigation Projects

Scope / Narrative

The proposed Point Wells development in Snohomish County will result in significant traffic impacts in the City of Shoreline. Mitigation projects for the Point Wells development will be funded and potentially constructed by private developers. Preliminarily identified projects are listed below.

- a. NW 195th/196th St – Richmond Beach Dr NW to 24th Ave NW: NW 196th St and NW 195th Street are unimproved roadways with a speed limit of 25 miles per hour and two 12 foot wide lanes with limited sidewalks. Preliminary recommended improvements to the roadway should include sidewalks on one side of the street (including Richmond Beach Drive between NW 195th St/NW 196th Street) and narrowing lanes to slow traffic flow and improve pedestrian comfort. This project will also include a roundabout or other traffic calming technique at the 24th Ave NW intersection.
- b. NW 196th St – 24th Ave NW to 20th Ave NW: NW 196th St is a collector arterial with a speed limit of 25 miles per hour. It consists of two 12 foot wide lanes with a sidewalk on the north side and part of the south side of the street. Improvements to the roadway should include construction of a complete sidewalk on the south side of the street.
- c. NW 195th St at 20th Ave NW: Construct a traffic signal at this intersection which is currently controlled by stop signs on all approaches.
- d. NW Richmond Beach Road at 15th Ave NW: Improve operations and safety at the existing off-set intersection. This could include signalization or construction of roundabouts.
- e. Richmond Beach Dr NW – NW 196th St to NW 205th St: Richmond Beach Dr NW is the only road to serve the Point Wells site. It is designated as a collector arterial and local secondary street. It consists of two 12 foot wide lanes with no sidewalks. Some areas on the east side are wide enough to accommodate on-street parking. Improvements to this roadway include, at a minimum, widening to help maintain traffic flow and construction of a sidewalk on one side of the street.
- f. NW Richmond Beach Rd at 8th Ave NW: Improve safety and operation at this existing five legged intersection through a reconfiguration that eliminates the southwest approach or construction of a roundabout.
- g. NW/N Richmond Beach Rd - Richmond Beach Dr NW to Fremont Ave N: Perform overlay/preservation work. Preservation work may occur in advance of other projects in order to maintain them until funding is available for the larger capital projects.
- h. Off-Corridor Sidewalk/Pedestrian Safety Improvements: Staff and the developer are currently reviewing potential off-corridor sidewalks to improve pedestrian safety on arterial streets that connect to the corridor.
- i. Traffic Calming and Bicycle Improvements: Implement traffic calming techniques to minimize cut-through traffic in the area between Richmond Beach Drive and 20th Ave NW, on NW 190th Street west of 8th Ave NW and bicycle improvements on east-west streets paralleling the Richmond Beach Road corridor.

Continued on next page

Funding							
	UNFUNDED						
FUNDING SOURCE	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
NW 195th/196 th St – Richmond Beach Dr NW to 24 th Ave NW (a) – developer mitigation						\$1,500,000	\$ 1,500,000
NW 196 th St – 24 th Ave NW to 20 th Ave NW (b) – developer mitigation						\$300,000	\$ 300,000
NW 195 th St at 20 th Ave NW (c) – developer mitigation						\$1,340,000	\$ 1,340,000
NW Richmond Beach Road at 15 th Ave NW (d) – developer mitigation						\$2,210,000	\$ 2,210,000
Richmond Beach Dr NW – NW 196 th St to NW 205 th St: (e) – developer mitigation						\$18,250,000	\$ 18,250,000
NW Richmond Beach Rd at 8 th Ave NW: (f) – developer mitigation						\$2,140,000	\$ 2,140,000
NW/N Richmond Beach Rd - Richmond Beach Dr NW to Fremont Ave N (g) – developer mitigation						\$4,000,000	\$ 4,000,000
Off-Corridor Sidewalk/Pedestrian Safety Improvements (h) – developer mitigation						\$15,050,000	\$ 15,050,000
Traffic Calming and Bicycle Improvements (i) - developer mitigation						\$700,000	\$ 700,000
PROJECT TOTAL	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 45,490,000	\$ 45,490,000

Continued on next page

Funding Outlook

Many of these projects will be funded and constructed by private developers as mitigation for the Point Wells development. It is unknown at this time when projects will be constructed.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|--|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input checked="" type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input checked="" type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input checked="" type="checkbox"/> Corridor Study |

Project # and Name

19. Major Pavement Rehabilitation Projects

Scope / Narrative

Replacement of the roadway pavement is called for when regular maintenance has been deferred for an extended period and the pavement structure becomes sufficiently worn or damaged that the overlay or bituminous surface treatment preservation techniques employed in the City's Annual Road Surface Maintenance program (Project # 3) are ineffective. Timing is important: The cost of reconstructing a roadway is dramatically higher than the cost of preventive maintenance over the same time period. Several road segments in Shoreline require replacement of all or most the roadway pavement:

- N/NE 155th St: Aurora Ave N to 15th Ave NE
- N/NE 185th St: Midvale Ave N to 10th Ave NE (costs included with Project #18)
- NW/N Richmond Beach Rd: Richmond Beach Dr. NW to Fremont Ave N
(Costs included with Project #17)
- Fremont Ave N: N 175th St to N 185th St (costs included with Project #15)
- Westminster Way N: N 145th St to N 155th St
- 8th Ave NW: NW Richmond Beach Rd to NW 180th St
- N/NW 200th St: 3rd Ave NW to Aurora Ave N
- N/NW 195th St: 3rd Ave NW to Aurora Ave N
- Linden Ave N: N 175th St to N 185th St
- 8th Ave NW: NW Richmond Beach Rd to NW 180th St
- NW 201st St: 23rd Pl. NW to 24th Ave. NW
- 23rd Pl NW: 23rd Ave NW to 20th Ave NW
- 21st Pl NW: 21st Ave NW to 23rd Pl NW
- 24th Ave NW: NW 196th St to NW 201st St
- Ashworth Ave. N: N 183rd St. to N 185th St
- 20th Ave NW: NW 197th St to 23rd Pl NW
- N 183rd St: Ashworth Ave N to Meridian Ave N
- NE 175th: I-5 to 15th Ave NE

On roadways where both capital projects and preservation work are identified in this TIP, the preservation work may occur in advance of those projects in order to maintain them until funding is available for the larger capital projects. The costs for these projects are identified on the individual project pages.

Funding

FUNDING SOURCE	UNFUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 2,000,000	\$ 12,000,000

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Funding Outlook

The City will pursue federal grant funding for overlay work. Grant funding would be pursued for the projects that are most highly qualified. The annual funding identified for 2017-2022 will not be adequate to perform overlay work for all of the roadways identified.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

20. Meridian Avenue N – N 145th Street to N 205th Street

Scope / Narrative

This project incorporates a series of improvements along this corridor to improve safety and capacity including:

- Rechannalization of the roadway to add a center two-way left-turn lane and bicycle lanes (requires removal of on-street parking)
- Installation of traffic calming measures
- Repair of damaged sidewalks, curbs and gutters and installation of new sidewalks where missing
- Installation of curb ramps to improve ADA accessibility
- Roadway overlay work
- Possible undergrounding of utilities.

Right-of-way may need to be acquired in order to meet ADA requirements around trees. This project has been identified in the City's Transportation Master Plan as necessary to accommodate growth and allow the City to maintain its adopted Levels of Service. These projects may be funded in part by transportation impact fees. Overlay from N 190th Street - N 205th Street scheduled to occur in conjunction with Project #3. Rechannalization scheduled to occur in conjunction with Project #8.

As part of improvements to this corridor, the City may choose to incorporate additional projects identified in this TIP, such as intersection improvements at N 175th St (Project #16) or N/NE 185th St (Project #18).

Funding

FUNDING SOURCE	UNFUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown						\$6,590,000	\$ 6,590,000
Roads Capital	\$ 317,000						\$ 317,000
Federal - STP	\$ 675,000						\$ 675,000
Impact Fee						\$2,527,000	\$ 2,527,000
PROJECT TOTAL	\$ 992,000	\$ -	\$ -	\$ -	\$ -	\$ 9,117,000	\$ 10,109,000

Funding Outlook

Projects identified in the City's Transportation Master Plan as necessary to accommodate growth and allow the City to maintain its adopted Levels of Service may be funded in part by transportation impact fees. 2016 estimates include awarded grant funds for overlay work from N 190th Street - N 205th Street.

Continued on next page

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|--|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input checked="" type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input checked="" type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

21. Aurora Avenue N at N 145th Street Dual Left Turn Lane

Scope / Narrative

This project consists of construction of an additional south to east bound left turn lane (for a total of two) at N 145th St and Aurora Ave N and construction of a new signal at N 149th St and Aurora Ave N. The N 145th St dual left turn lane will require acquisition of additional right-of-way along the western edge of Aurora Ave N (the Aurora project constructed "interim" width sidewalks in this location). Schedule of this project may be influenced by redevelopment of the northwest corner of Aurora Ave N and N 145th St, implementation of improvements to the 145th St corridor or improvements by the City of Seattle. The additional width required for this turn lane is currently under consideration by the City of Seattle as part of their Aurora Ave N project planning. Shoreline would only proceed with this project in conjunction with construction by the City of Seattle as part of their Aurora Ave N project. The new signal at N 149th St will need to meet signal warrants and receive Washington State Department of Transportation approval. This signal project should be combined with the dual left turn at N 145th St in order to address queue length demands. The 145th Street Corridor Study will include evaluation of this project for consistency with the corridor improvements.

Funding

	UNFUNDED						
FUNDING SOURCE	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
Unknown						\$ 4,700,000	\$ 4,700,000

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|--|
| <input type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input checked="" type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

22. N 165th Street and Carlyle Hall Road N Sidewalk and Intersection Safety

Scope / Narrative

This project will improve an odd-shaped intersection to improve visibility and safety, as well as providing pedestrian safety features. The design has not been completed and one of the first steps will be to scope out alternatives.

Funding

FUNDING SOURCE	UNFUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown						\$ 2,482,000	\$ 2,482,000

Funding Outlook

The funding identified for this project is to identify and design the appropriate improvements for the roadway and develop cost estimates. Because construction costs are unknown at this time, a placeholder for them is identified in 2022. More refined construction costs and a timeline for completion will be updated in future TIPs.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

23. N 152nd Street and Ashworth Avenue N Intersection Improvements

Scope / Narrative

This project will construct a sidewalk along the north side of N 152nd St from the existing sidewalk (approximately 275 feet to the west) to Ashworth Ave N and the west side of Ashworth Ave N from N 152nd St to N 153rd Street. The sidewalk will wrap around the corner and provide a connection to the pedestrian walkway to the south (scheduled for completion in 2014).

Funding

FUNDING SOURCE	UNFUNDED						2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
WSDOT				\$ 25,000	\$ 320,000		\$ 345,000

Funding Outlook

This project is competitive for funding from the Pedestrian and Bicycle Safety Grant administered through WSDOT.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

**24. Ballinger Way - NE 205th St to 19th Ave NE Access Control
Preliminary Design**

Scope / Narrative

Access control improvements along this corridor are needed to address vehicular and pedestrian collisions as identified in the City's 2014 Annual Traffic Report. Preliminary design to determine the scope of access control and intersection improvements is needed as a first step. Scoping will also identify pedestrian safety improvement opportunities, specifically related to midblock crossings. Right-of-way may need to be acquired in order to provide U-turns at signals and/or at access points.

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown		\$ 200,000					\$ 200,000

Funding Outlook

This project is competitive for funding from the Citywide Safety Grant administered through WSDOT.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

25. N 185th Street and Linden Avenue N Intersection Improvements

Scope / Narrative

This project would rebuild the intersection of Linden Ave N and N 185th Street in order to revise signal phasing to address at-angle collisions as noted in the City's Annual Traffic Report. This project would also decrease intersection radii to lower vehicle turning speeds and reduce pedestrian crossing distances for increased pedestrian safety. Sidewalks, curb ramps and pedestrian signal systems for ADA compliance would also be addressed. The current signal infrastructure does not have capacity to provide these phase changes and pedestrian improvements unless the intersection is rebuilt.

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown			\$ 530,100				\$ 530,100

Funding Outlook

This project is competitive for funding from the Citywide Safety Grant administered through WSDOT.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

26. 3rd Ave NW and NW Richmond Beach Rd Intersection Improvements

Scope / Narrative

This intersection has regularly been the highest ranked site for number of collisions in the City. This project would rebuild the intersection of 3rd Avenue NW and NW Richmond Beach Road in order to provide left turn pockets in the eastbound and westbound directions. This would allow for safer and more efficient signal phasing to address at-angle collisions as noted in the City's Annual Traffic Report. Sidewalks, curb ramps and pedestrian signal systems for ADA compliance would also be addressed. Additionally, the current signal infrastructure is located on a span wire which would be changed to signal pole structures. Interim phasing and signal improvements may be paired in conjunction with Project #29.

Funding

FUNDING SOURCE	PARTIALLY FUNDED					UNFUNDED	2017-2022 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown						\$ 2,320,000	\$ 2,320,000

Funding Outlook

This project is competitive for funding from the Citywide Safety Grant administered through WSDOT. There may also be a nexus for new development, such as Point Wells, to fund safety improvements at this intersection.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|--|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input checked="" type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input checked="" type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

Project # and Name

27. New Sidewalk Projects

Scope / Narrative

The 2011 Transportation Master Plan (TMP) includes a Pedestrian System Plan, which identifies key pedestrian corridors in Shoreline that result in a comprehensive pedestrian network throughout the City. Over 100 projects are identified in order to complete the system. These projects are prioritized in the TMP.

The City's standard design for sidewalks includes construction of an amenity zone between the curb and the sidewalk. The amenity zone provides a buffer between pedestrians and traffic and is often vegetated. The amenity zone can be utilized as a stormwater management and treatment facility through the use of low impact development techniques such as rain gardens. It is the City's policy to maintain open stormwater channels whenever possible and these are often in the right-of-way where sidewalks would be constructed. In these circumstances, the City will need to implement flexibility in its design standards to maintain these channels as much as possible.

The primary focus of the sidewalk projects listed in this TIP is to complete sidewalks on one side of a street in order to create continuous walkways along a street or corridor. The sidewalk projects listed in this TIP include a combination of projects that fill in gaps between existing segments, projects that are well qualified for grant programs and those projects that will be required as mitigation for public projects.

Funding

FUNDING SOURCE	UNFUNDED						2016-2021 Total
	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	
Unknown	\$ 172,000	\$ 1,227,000	\$ 1,519,000	\$ 590,000	\$ 2,029,000	\$ 2,011,000	\$ 7,548,000

Funding Outlook

In the past, the City has applied for grant funding for sidewalks from several state sources including the WSDOT Pedestrian and Bicycle Program, WSDOT Safe Routes to School and the Transportation Improvement Board as well as the federal Transportation Alternatives Program. Sidewalks have also been funded through federal Surface Transportation Program as part of larger roadway projects, such as the Aurora Corridor Improvement Project.

Project Status

This project helps to implement City Council Goal 2: Improve Shoreline's utility, transportation, and environmental infrastructure.

Purpose / Goals Achieved

- | | |
|---|---|
| <input checked="" type="checkbox"/> Non-motorized | <input type="checkbox"/> Major Structures |
| <input type="checkbox"/> System Preservation | <input type="checkbox"/> Interjurisdictional Coordination |
| <input type="checkbox"/> Improves Efficiency & Operations | <input type="checkbox"/> Growth Management |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Corridor Study |

STREET	FROM	TO	COST	ESTIMATED PROJECT START YEAR	DESIGN	CONST.	2017 Estimate	2018 Estimate	2019 Estimate	2020 Estimate	2021 Estimate	2022 Estimate	2017-2022 Total
20 th Ave NW	Saltwater Park entrance	NW 195 th St	\$700,000	2017	\$112,000 (2017)	\$588,000 (2018)	\$ 112,000	\$ 588,000					\$ 700,000
1 st Ave NE	NE 192 nd St	NE 195 th St	\$955,000	2018	\$181,000 (2018)	\$774,000 (2019)		\$ 181,000	\$ 774,000				\$ 955,000
Ashworth Ave N	N 195 th St	N 200 th St	\$890,000	2020	\$140,000 (2016)	\$750,000 (2017)				\$ 140,000	\$ 750,000		\$ 890,000
NW/N 195 th St	3 rd Ave NW	Aurora Ave N	\$1,400,000	2022	All in 2022							\$ 1,400,000	\$ 1,400,000
3 rd Ave NW	NW 189 th St	NW 195 th St	\$380,000	2022	All in 2022							\$ 380,000	\$ 380,000
5 th Ave NE	NE 175 th St	NE 185 th St	\$1,500,000	2020	\$450,000 (2020)	\$1,050,000 (2021)				\$ 450,000	\$ 1,050,000		\$ 1,500,000
Linden Ave N	N 175 th St	N 182 nd St	\$820,000	2018	\$75,000 (2018)	\$745,000 (2019)		\$ 75,000	\$ 745,000				\$ 820,000
19 th Ave NE	Ballinger Way NE/NE 195 th St	NE 205 th St	\$330,000	2021	\$99,000 (2021)	\$231,000 (2022)					\$ 99,000	\$ 231,000	\$ 330,000
N 195 th St*	Interurban Trail	Ashworth Ave N	\$443,000	2017	\$60,000 (2018)	\$383,000 (2019)	\$ 60,000	\$ 383,000					\$ 443,000
N 192 nd St*	Stone Ave N	Ashworth Ave N	\$130,000	2021		\$130,000 (2021)					\$ 130,000		\$ 130,000
			\$7,548,000				\$ 172,000	\$ 1,227,000	\$ 1,519,000	\$ 590,000	\$ 2,029,000	\$ 2,011,000	\$ 7,548,000

EMERGING PROJECTS

The City of Shoreline is currently engaged in several long range planning efforts that will identify additional transportation improvements needed in the City. Because the type and costs of potential projects will not be known until the completion of the planning stage, it is difficult to include them in the TIP at this time. Once the planning process is complete and projects more clearly defined, they can be included in future TIPs.

Community Renewal Area Projects: In 2012, the Shoreline City Council designated the 70+ acre Aurora Square area as a Community Renewal Area (CRA) where economic renewal would clearly deliver multifaceted public benefits. The associated CRA Plan adopted in 2013, outlines a vision for the CRA, as well as the need for transportation infrastructure improvements to help achieve that vision. The recently adopted Programmatic EIS for the CRA identifies needed improvements that will enhance multi-modal access to Aurora Square as well as circulation on site. Transportation projects included in the EIS include:

- Intersection improvements at:
 - N 155th Street and Westminster Way N
 - N 155th Street and Aurora Avenue N
 - N 160th Street and Linden Avenue N
 - Aurora Avenue N between Westminster Way N and N 155th Street
- Reconfiguration of Westminster Way N/connection to Aurora Avenue N
- Improvements to N 160th Street (TIP Project # 12)
- Sidewalks and bicycle facilities on streets leading/connecting to Aurora Square

Once projects are finalized, they will be included in future TIPs. It is expected that redevelopment of the CRA will occur over many years, continuing beyond the six year time frame addressed in this TIP.

Light Rail Station Area Planning:

In anticipation of the commencement of light rail service in 2023, the City is planning for land use changes around the future stations located in Shoreline at NE 145th Street and NE 185th Street. Higher residential densities and a mix of land use types near the stations, as well as transit users traveling to the stations will create an increased demand for multi-modal transportation facilities. Transportation impacts and needs associated with future land use changes as well as the necessary solutions to resolve them are outlined in the subarea plans. The redevelopment of the station areas is expected to occur over many decades. The projects needed to accommodate growth in the station areas will be incorporated into future TIPs.

Transit Service Integration Plan

With the beginning of light rail service in Shoreline in 2023, in the City anticipates significant changes to its transit network. In preparation for this change, the City is planning to develop of a Transit Service Integration Plan (TSIP) that will address transit needs throughout Shoreline when light rail service begins and as the City's population and employment base grow. The plan will identify Shoreline's key transit corridors, evaluate the demand for parking citywide and identify transit facilities and infrastructure needed to support the City's transit network and

service and improve transit level of service, speed and reliability. This information will help identify those infrastructure improvements and capital improvement projects that will be City funded. The TSIP is scheduled for completion in 2016.

PROJECTS SCHEDULED FOR SUBSTANTIAL COMPLETION IN 2016

PROJECT NAME	PROJECT DESCRIPTION	COST	FUNDING SOURCES
Aurora Corridor Improvement Project – N 192 nd Street to N 205 th Street	This project began at N 192nd St and extended to N 205th St. The project scope of work included adding Business Access and Transit (BAT) lanes, curbs, gutters, landscaping/street furnishings, sidewalks on both sides. The project added a landscaped center median safety zone with left turn and U-turn provisions, interconnects traffic signals including pedestrian crosswalks, improved transit stops with new shelters and new street lighting, placed overhead utility lines underground and improved the existing storm water drainage system with natural stormwater management treatments. Improvements at major intersections to enhance east-west traffic flow were also being included in the project. This was the final phase of a three mile long project.	\$45,000,000	Roads Capital, King County Metro, CMAQ, TIB, STP, Regional Mobility, FTA, DOE, HSIP
NE 195 th Street Separated Trail – 1 st Avenue NE to 5 th Avenue NE	This project included design and construction of a ten foot wide separated bicycle and pedestrian trail on the north side of NE 195 th St. This project was the final separated trail segment of the Northern Route of the Interurban/Burke-Gilman Connector. This project connects to the separated trail located to the west between Meridian Ave N and 1 st Ave NE and leads to the pedestrian and bicycle bridge crossing I-5.	\$705,000	CMAQ, Roads Capital
Interurban/ Burke-Gilman Connectors	<p>This project constructed improvements to strengthen the connections between Shoreline’s Interurban Trail and the Burke-Gilman Trail to the east in Lake Forest Park along two routes identified cooperatively by the Cities of Shoreline and Lake Forest Park. Projects include:</p> <ul style="list-style-type: none"> • Completion of the sidewalk gap on the north side of NE 150th St between 18th Ave NE and 20th Ave NE • Rechannelization of NE 150th St from 15th Ave NE to 25th Ave NE to provide for bicycle lanes • Rechannelization of NE 155th St from 5th Ave NE to 15th Ave NE to provide for bicycle lanes • Installation of markings (lanes and sharrows) and signage for bicycles, including signage through Hamlin Park • Construction of a short pathway at N 152nd Street and Ashworth Avenue N that provides access to the connectors along N 155th Street <p>The City worked with Lake Forest Park to ensure facilities and signage were coordinated.</p>	\$540,000	WSDOT Pedestrian & Bicycle Safety Program
Safety Enhancements on Aurora Avenue N	This project improved and upgraded safety and accessibility elements on Aurora Ave N. Enhancements included relocation of pedestrian push buttons closer to some curb ramps, installation of skid resistant hand hole/junction box covers and updating street signs to meet current MUTCD standards.	\$420,000	HSIP
Einstein Safe Routes to School (NW 195 th Street)	<p>This project improved pedestrian access to Einstein Middle School through the following projects:</p> <ul style="list-style-type: none"> • Construction of sidewalks where missing on the south side of NW 195th St from 3rd Ave NW to 8th Ave NW 	\$640,000	WSDOT Safe Routes to School Program

	<ul style="list-style-type: none"> • Construction of a sidewalk on the east side of 5th Ave NW between NW 195th St and NW 196th Pl • Installation/replacement of curb ramps at the intersections with 3rd Ave NW, 5th Ave NW and 8th Ave NW • Installation of four School Zone Flashing Signs on all legs of the NW 195th St to 3rd Ave NW intersection • Improved accessibility into the school campus <p>This project connected into the existing sidewalks, resulting in a continuous sidewalk along this stretch of roadway.</p>		
145 th Street Corridor Study	<p>This project performed a multi-modal corridor study of 145th Street (SR 523) from Bothell Way NE (SR 522) to 3rd Ave NW. Work was performed in conjunction with the City of Seattle, the Washington State Department of Transportation, King County, Metro Transit and Sound Transit. The study undertook an examination of transportation needs for the corridor including safety, traffic, transit and non-motorized needs resulting from anticipated changes in the area such as growth, location of light rail station(s) and regional tolling. The process included traffic analysis, development of a base map, evaluation of multiple potential alternatives and development of a preferred alternative, robust public involvement, creation of cost estimates the various sections of the corridor and identification of a strategy for funding and implementation.</p>	\$596,000	Federal – STP, Roads Capital
10 Avenue NW Bridge Rehabilitation	<p>Hidden Lake Bridge No. 167 C, located on 10th Ave NW at Innis Arden Way was built in 1931 and is showing signs of deterioration and was in need of rehabilitation. In 2014, the bridge condition was evaluated and it was determined that certain measures could be taken to extend the life of the bridge. This project designed and constructed the improvements recommended in the May 2014 Evaluation Report, thereby protecting use of the bridge for pedestrians and vehicles.</p>	\$548,000	Roads Capital

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Motion to Authorize the City Manager to Enter Into the Kiosk Services Interlocal Agreement Between the City of Shoreline and the King County MED-Project LLC
DEPARTMENT:	Shoreline Police Department
PRESENTED BY:	Chief Shawn Ledford
ACTION:	<input type="checkbox"/> Ordinance <input type="checkbox"/> Resolution <input checked="" type="checkbox"/> Motion <input type="checkbox"/> Discussion <input type="checkbox"/> Public Hearing

PROBLEM/ISSUE STATEMENT:

The King County Medication Education and Disposal Project (MED-Project) is a pharmaceutical product stewardship organization, representing more than 95% of the pharmaceutical producer market in King County. The MED-Project is dedicated to compliance with the King County secure medicine return regulations for the disposal of residential unwanted medicine, which requires producers to finance and operate this program in King County. The MED-Project's goal is to make it easier for residents to dispose of their unwanted medications.

This proposed Interlocal Agreement is between the City of Shoreline and the MED-Project, and would provide a local option for Shoreline residents to dispose of their medication at the Shoreline Police Station. If approved, a drop box will be located in the lobby of the Shoreline Police Station and available to the public during normal business hours.

RESOURCE/FINANCIAL IMPACT:

There is no financial impact to the City of Shoreline in entering into this Interlocal agreement. The costs related to the installation and maintenance of the drop box, as well as disposal of the unwanted medication, is handled by the MED-Project.

RECOMMENDATION

Staff recommends the Council move to authorize City Manager to enter into the Kiosk Services Interlocal Agreement between the City of Shoreline and the King County MED-Project LLC.

Approved By: City Manager **DT** City Attorney **MK**

BACKGROUND

The King County Medication Education and Disposal Project (MED-Project) is a pharmaceutical product stewardship organization, representing more than 95% of the pharmaceutical producer market in King County. The MED-Project is dedicated to compliance with the King County secure medicine return regulations for the disposal of residential unwanted medicine, which requires producers to finance and operate this program in King County. The MED-Project was approved by the King County Board of Health on March 17, 2016, and its goal is to make it easier for residents to dispose of their unwanted medications.

DISCUSSION

This proposed Interlocal Agreement is between the City of Shoreline and the MED-Project, and would provide a local option for Shoreline residents to dispose of their medication at the Shoreline Police Station. If approved, a drop box will be located in the lobby of the Shoreline Police Station and available to the public during normal business hours.

The Interlocal Agreement will become effective on upon signature by both parties. The term of this Interlocal Agreement is two years, unless the termination date is extended by both parties.

RESOURCE/FINANCIAL IMPACT

There is no financial impact to the City of Shoreline in entering into this Interlocal agreement. The costs related to the installation and maintenance of the drop box, as well as disposal of the unwanted medication, is handled by the MED-Project.

RECOMMENDATION

Staff recommends the Council move to authorize City Manager to enter into the Kiosk Services Interlocal Agreement between the City of Shoreline and the King County MED-Project LLC.

ATTACHMENTS

Attachment A - Kiosk Services Interlocal Agreement Between the City of Shoreline and the King County MED-Project LLC

KIOSK SERVICES AGREEMENT

King County MED-Project
Medication Education & Disposal

This Kiosk Services Agreement, including as amended, supplemented or otherwise modified from time to time (the "Agreement") is entered into between the King County MED-Project LLC ("MED-Project") and Shoreline Police Department (each individually, a "Party," collectively the "Parties").

Introductory Statement

King County, Washington approved the King County Board of Health Secure Medicine Return Regulations for the disposal of household pharmaceutical products in 2013 (the "Regulations"). Subsequent to approval of the Regulations, the MED-Project Product Stewardship Plan, which, among other things, provides for the use of kiosks at LEA collection sites to collect Unwanted Medicine (defined below) from King County households, was reviewed and approved by King County.

NOW, THEREFORE, in consideration of the mutual promises and covenants set forth herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. **Definitions.** The following terms shall have the respective meanings set forth below:
 - 1.1. "Applicable Laws" shall mean all applicable federal, state, county, and local laws, statutes, ordinances, codes, rules, regulations, orders, decrees, guidance or pronouncements of any governmental, administrative or judicial authorities including, but not limited to, the King County Board of Health Secure Medicine Return Regulations §§ 11.50.010 through 11.50.160 (2013), federal Controlled Substances Act, 21 U.S.C. §§ 801 *et seq.*, U. S. Drug Enforcement Administration controlled substances disposal regulations, 21 C.F.R. §§ 1300 *et seq.*, Washington State Department of Health Pharmacy Quality Assurance Commission Guidance Document: "Secure and Responsible Drug Disposal Program" (2016) (available at <http://www.doh.wa.gov/portals/1/Documents/Pubs/690294.pdf>), and any amendments or modifications to these legal requirements.

- 1.2. "DEA" shall mean the U.S. Drug Enforcement Administration.
- 1.3. "Effective Date" shall mean the date defined in Section 20 of this Agreement.
- 1.4. "Emergency Requests" shall mean requests for Services in Section 3.2 of this Agreement in response to any events, situations, activities or circumstances that pose a risk or potential risk of harm or injury to property or persons.
- 1.5. "Kiosk(s)" shall mean DEA-compliant receptacles used for the collection of Unwanted Medicine (as defined below) provided by MED-Project or LEA and identified in Exhibit A.
- 1.6. "LEA" shall mean Shoreline Police Department, 1206 N 185th St, Shoreline, WA 98133.
- 1.7. "LEA Collection Site" shall mean the site(s) listed in Exhibit B.
- 1.8. "Losses" shall mean any costs, expenses, damages or diminution of value.
- 1.9. "Manager" shall mean the individual(s) identified in Exhibit C.
- 1.10. "Plan" shall mean the approved MED-Project Product Stewardship Plan.
- 1.11. "Services" shall mean the obligations identified in Section 3.2 of this Agreement.
- 1.12. "Service Technicians" shall mean the employees designated by Vendor to perform the obligations of Service Technicians in the Standard Operating Procedures, provided as Exhibit D.
- 1.13. "Termination Date" shall mean the date this Agreement terminates pursuant to Sections 8.1.1 through 8.1.5 of this Agreement.
- 1.14. "Vendor" shall mean the qualified vendor contracted by MED-Project and identified further in Exhibit E, including any vendor substituted by MED-Project for the initial Vendor.
- 1.15. "Unwanted Medicine" shall have the same meaning as "Unwanted Medicine" under Section VI of the Plan.

2. Representations and Warranties.

- 2.1. LEA hereby represents and warrants as follows:
 - 2.1.1. LEA possesses all required permits, licenses and qualifications required under Applicable Laws (i) to collect, handle, process and dispose of Unwanted Medicine pursuant to the terms of

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this Agreement, and (ii) to collect Unwanted Medicine in such manner as may be required by Applicable Laws and the terms of this Agreement. LEA is currently, and shall remain, in compliance with all such permits, licenses and qualifications.

2.1.2. LEA possesses all required authorizations and governmental authority to enter into this Agreement and this Agreement has been duly authorized and executed by LEA in compliance with all required governmental authorizations.

2.1.3. LEA's execution, delivery, and performance of this Agreement does not, and will not, conflict with any agreement, instrument or understanding to which LEA is a party or by which it may be bound.

2.2. MED-Project hereby represents and warrants for itself, and to the extent applicable, with respect to Vendor, as follows:

2.2.1. Vendor possesses all required permits, licenses and qualifications required under Applicable Laws to collect, handle, process and dispose of Unwanted Medicine. Vendor is currently, and shall remain, in compliance with all such permits, licenses and qualifications.

2.2.2. MED-Project possesses all required authorizations and corporate authority to enter into this Agreement and this Agreement has been duly authorized and executed by MED-Project in compliance with all required corporate authorizations.

2.2.3. MED-Project's execution, delivery, and performance of this Agreement does not, and will not, conflict with any agreement, instrument or understanding to which MED-Project is a party or by which it may be bound.

3. Services.

3.1. LEA, Vendor, and MED-Project shall perform all obligations required of them under this Agreement in compliance with Applicable Laws.

3.2. MED-Project, through the Vendor, shall:

3.2.1. If the Manager requests a Kiosk from MED-Project, and MED-Project approves the Kiosk request, within 120 days of the approval deliver a Kiosk to LEA at a time mutually agreed to by both Parties and when the Manager is present;

3.2.2. Assist LEA with installation of the Kiosk if: (1) requested to do so by the Manager; (2) LEA Collection Site provides adequate space for installation of the Kiosk; and (3) the Manager is present at LEA Collection Site at the time of Kiosk installation.

3.2.3. Review and inspect the Kiosk when Vendor collects Unwanted Medicine from the Kiosk;

3.2.4. Perform maintenance of the Kiosk if requested by the Manager or deemed necessary by Vendor or MED-Project;

3.2.5. Remove Kiosk(s) delivered pursuant to Section 3.2.1 of this Agreement from LEA Collection Site if a replacement Kiosk is scheduled for delivery pursuant to Section 3.2.1 of this Agreement;

3.2.6. Remove Kiosk(s) delivered pursuant to Section 3.2.1 of this Agreement from LEA Collection Site if this Agreement terminates pursuant to Section 8 of this Agreement;

3.2.7. Supply each Kiosk with liners in accordance with the Standard Operating Procedures provided in Exhibit D; liners must meet the requirements of Applicable Laws, including, but not limited to, 21 C.F.R. §§ 1300 *et seq.*;

3.2.8. Provide LEA with a regular schedule for the collection of Unwanted Medicine from Kiosk(s) and notify the Manager in advance of any changes to this schedule;

3.2.9. Collect Unwanted Medicine in accordance with the schedule identified in Section 3.2.8 of this Agreement or upon request by the Manager and approval by MED-Project;

3.2.10. Conduct collection under Section 3.2.9 of this Agreement in accordance with the Standard Operating Procedures provided in Exhibit D;

3.2.11. Respond to Emergency Requests from LEA;

3.2.12. Transport and dispose of Unwanted Medicine collected from Kiosk(s) in accordance with all Applicable Laws and the Plan.

3.3. Vendor shall be solely responsible for providing all such Services in Section 3.2. LEA agrees to look solely to Vendor for such Services. MED-Project shall have the right on 30 days' prior notice to the Manager to change the Vendor. In such a case, the new entity that becomes the Vendor will be responsible under this Agreement for Services

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required of Vendor from and after the date of such change.

3.4. LEA shall allow MED-Project, through its Vendor, to provide the Services in Section 3.2 of this Agreement at LEA Collection Site and shall cooperate with MED-Project and its Vendor in the provision of these Services. Such cooperation includes, but is not limited to:

- 3.4.1. Identifying a Manager at LEA Collection Site;
- 3.4.2. Requesting Kiosk(s) from MED-Project, if necessary, within 30 days of the Effective Date and if a Kiosk delivered pursuant to Section 3.2.1 of this Agreement becomes damaged or malfunctions and cannot be repaired by Vendor;
- 3.4.3. Providing adequate space for the installation of Kiosk(s) in compliance with Applicable Laws and making the Manager present at LEA Collection Site at the time of Kiosk installation;
- 3.4.4. Notifying Vendor of any Kiosk maintenance concerns or needs, including, but not limited to, any damage to or malfunction of a Kiosk;
- 3.4.5. Notifying Vendor if a Kiosk is full;
- 3.4.6. Ensuring LEA employees, including the Manager, perform all of their obligations in the Standard Operating Procedures provided as Exhibit D (including when collection is performed pursuant to Emergency Requests), and;
- 3.4.7. Labeling Kiosk(s) with the signage provided by MED-Project and identified in Plan Appendix F.

4. Payment.

4.1. LEA shall not be responsible for paying the charges of Vendor for the Services Vendor renders under Section 3.2 of this Agreement.

5. Nature of the Relationship.

5.1. Each Party is entering into and will perform the activities contemplated by this Agreement solely as an independent entity. This Agreement does not create any other relationship between the Parties, or with Vendor, including but not limited to the relationship of partners, joint venturers, or agent or legal representative of the other for any purpose whatsoever. Neither Parties will (i) make any

representation that would create an apparent agency, partnership or joint venture relationship with the other Party or with Vendor, (ii) have the power, expressed or implied, to obligate or bind the other or the Vendor in any manner whatsoever, or (iii) be responsible for any act or omission of the other or the Vendor or any employee of the other or of the Vendor. No employee of LEA, MED-Project or the Vendor is or will be considered an employee of the other Party or the Vendor for any purpose in connection with the performance of this Agreement.

6. Report of Theft or Diversion.

6.1. In the event of any theft or diversion of Unwanted Medicine collected at a Kiosk, or environmental incident, including spills and releases reported to any governmental authority, occurring during performance of this Agreement, the Party that becomes aware of such condition or event shall notify the other Party immediately.

7. Indemnification.

- 7.1. To the fullest extent permitted by law, MED-Project shall defend, indemnify, and hold harmless LEA from and against all Losses to the extent arising out of or related to any and all third party claims, liabilities, liens, demands, obligations, actions, proceedings, suits or causes of action to the extent arising out of or related to MED-Project's (a) breach of this Agreement, or (b) sole negligence, recklessness or willful misconduct.
- 7.2. Notwithstanding the foregoing language in Section 7.1, MED-Project shall not be liable for Losses under Section 7.1 to the extent such Losses arise out of or related to LEA's (a) breach of this Agreement, or (b) sole negligence, recklessness, or willful misconduct.

8. Term, Termination.

- 8.1. The term of this Agreement shall commence as of the Effective Date and shall continue in force until:
 - 8.1.1. Notice from LEA to MED-Project of MED-Project's breach of this Agreement. This Agreement shall terminate immediately upon such notice.
 - 8.1.2. Notice from MED-Project to LEA of LEA's breach of this Agreement. This Agreement shall terminate immediately upon such notice.

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- 8.1.3. Notice from either Party to the other Party that this Agreement is terminated without cause. This Agreement shall terminate seven days after such notice.
- 8.1.4. If the representations and warranties set forth in Section 2.1 or 2.2 cease to continue to be correct, or DEA issues a notice, guidance, regulation or other communication applicable to LEA, Vendor or MED-Project making it reasonable to conclude that activities contemplated by this Agreement are viewed by DEA as impermissible or a violation of Applicable Laws, this Agreement shall terminate immediately.
- 8.1.5. Two years from the Effective Date, unless the Termination Date is extended pursuant to Section 14 of this Agreement.
- 8.2. Compliance with Section 3.2.6 of this Agreement shall be MED-Project's sole financial obligation with respect to any termination of the Agreement.

9. Severability.

- 9.1. In the event any provision of this Agreement shall be judicially interpreted or held to be void or otherwise unenforceable as written, such provision shall be deemed to be revised and modified to the extent necessary to make it legally enforceable. In the event that a provision cannot be made legally enforceable, the remaining terms of this Agreement shall be enforceable as though the void or unenforceable provision did not exist.

10. Assignment/Subcontracting.

- 10.1. Except as expressly contemplated under this Agreement, neither Party shall assign or subcontract any of its duties or obligations hereunder or assign this Agreement or its rights hereunder without the express written permission of the other Party, such consent not to be unreasonably withheld. Any assignment, delegation or subcontracting in violation of the above shall be void and ineffective. Notwithstanding this or any other provision of this Agreement, MED-Project shall have the right at any time to substitute Vendors by notifying LEA in writing of such change.

11. Survival.

- 11.1. The obligations set forth in Sections 5, 7, 8.2, and 17 shall survive termination of this Agreement.

12. Third Party Beneficiaries.

- 12.1. Except as specifically set forth herein, nothing in this Agreement, express or implied, is intended or shall be construed to confer upon or give to any person, entity, company or organization, other than LEA or MED-Project, any right, remedy, cause of action or claim under or by reason of this Agreement or any term or provision hereof, all of which shall be for the sole and exclusive benefit of LEA and MED-Project.

13. Notice.

- 13.1. All notices to be provided in connection with this Agreement, including "requests" in sections 3.2.1, 3.2.2, 3.2.4, 3.2.9, and 3.4.2 of this Agreement, shall be in writing. Notices shall be deemed effective (i) when delivered by hand to the Party entitled to receive notice, (ii) on the next business day after delivery to a nationally-recognized express delivery service with instructions and payment for overnight delivery, or (iii) upon confirmation of receipt when sent by e-mail.
- 13.2. All notices in connection with this Agreement shall be sent to the individual or individuals that each Party designates to receive such correspondence on behalf of the Party. Initially, notices shall be provided, if to MED-Project, to:

Victoria Travis, PharmD, MBA
 Program Director
 King County MED-Project LLC
 4096 Piedmont Ave Unit 544
 Oakland, CA 94611
 kingcounty@med-project.org
 Phone: (844) 6-PROJECT
 Fax: (510) 686-8837

and if to LEA, to:

Dahlia Corona
 Community Service Officer
 Shoreline Police Department
 1206 N 185th St
 Shoreline, WA 98133
 dahlia.corona@kingcounty.gov

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Phone: (206) 801-2719
Fax: (206) 546-0680

14. Complete Agreement, Headings, Modification.

14.1. This Agreement, along with its Exhibits, sets forth the complete agreement of the Parties with respect to the subject matter hereof. No prior or contemporaneous oral or written agreement or representation shall be effective to modify the express terms of this Agreement. Headings have been inserted for the convenient reference of the Parties and shall not be used to modify or interpret the express terms of the Agreement. No modification to this Agreement shall be valid unless it is made in writing, specifically states that it amends this Agreement, and is signed by authorized representatives of both Parties.

15. Signatures.

15.1. This Agreement is legally binding when, and not until, each Party has received from the other a counterpart of this Agreement signed by an authorized representative. The Parties may sign separate, identical counterparts of this document; taken together, they constitute one Agreement. The signed counterpart may be delivered by any reasonable means, including electronic transmission.

16. Jurisdiction and Venue.

16.1. This Agreement is made and entered into in Washington state and shall be interpreted and construed in accordance with the laws of Washington state. The Parties submit to the exclusive jurisdiction of the Washington state and federal courts.

17. Publicity/Disclosure.

17.1. Unless required by law, neither Party may disclose the terms or subject matter of this Agreement to any third party, without the prior written consent of the other Party, except that MED-Project or LEA may provide this Agreement to the King County Local Hazardous Waste Management Program and/or King County Prosecuting Attorney and Vendor.

17.2. Neither Party shall use the name, trade name, service marks, trademarks, trade dress or logos of the other Party in releases, advertising or any other

publications, without such Party's prior written consent in each instance; except that either Party is authorized to use the other Party's name, trade name and logo with regard to public outreach and educational efforts taken with regard to the Plan. This provision applies to written and online releases and communications, including those appearing on a website and those circulated via social media platforms including, but not limited to, Facebook, Twitter, and LinkedIn.

18. Authority.

18.1. Each individual executing this Agreement in a representative capacity represents and warrants that he or she is duly authorized to execute and deliver this Agreement on behalf of the Party and its employees and that upon execution, this Agreement shall be binding upon the Party and its employees in accordance with its terms.

19. Waiver.

19.1. No consent or waiver, express or implied by a Party, to or of any breach or default by the other in the performance by that other Party of obligations under this Agreement shall be deemed or construed to be a consent or waiver to or of any other breach or default in the performance by that other Party of the same or any other obligation of that Party under this Agreement. Failure of a Party to complain of any act or failure to act of the other, or to declare the other in default, irrespective of how long that failure continues, shall not constitute a waiver by that Party of rights under this Agreement. The giving of consent by a Party in any one instance shall not limit or waive the necessity to obtain that Party's consent in any future instance.

20. Effective Date

20.1. The Agreement shall be effective on the last date signed by a Party in accordance with Section 15 of this Agreement.

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IN WITNESS WHEREOF, the Parties hereto by their duly authorized representatives have executed and delivered this Agreement as of the Effective Date.

Shoreline Police Department

King County MED-Project LLC

By: _____
Name: Shawn Ledford
Title: Chief of Police

By: _____
Name: Victoria Travis, PharmD, MBA
Title: Program Director

Date: _____

Date: _____

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Exhibit A

Kiosk(s) Approved for Inclusion in the MED-Project Product Stewardship Plan

Kiosk Description	LEA Collection Site
King County MED-Project Kiosk	Shoreline Police Department 1206 N 185th Street Shoreline, WA 98133

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Exhibit B
LEA Collection Site(s)

Name	Address
Shoreline Police Department	1206 N 185th Street Shoreline, WA 98133

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Exhibit C
Manager(s)

Name	Manager's Work Address	LEA Collection Site Address	Telephone Number	Email Address
Dahlia Corona	Shoreline Police Department 1206 N 185th Street Shoreline, WA 98133	Shoreline Police Department 1206 N 185th Street Shoreline, WA 98133	P: (206) 801-2719 C: (206) 391-9985 F: (206) 546-0680	dahlia.corona@kingcounty.gov
Victoria Crabtree	Shoreline Police Department 1206 N 185th Street Shoreline, WA 98133	Shoreline Police Department 1206 N 185th Street Shoreline, WA 98133	P: (206) 801-2719 C: (206) 391-9985 F: (206) 546-0680	victoria.crabtree@kingcounty.gov
Derrick Boone	Shoreline Police Department 1206 N 185th Street Shoreline, WA 98133	Shoreline Police Department 1206 N 185th Street Shoreline, WA 98133	P: (206) 801-2719 C: (206) 391-9985 F: (206) 546-0680	derrick.boon@kingcounty.gov

KIOSK SERVICES AGREEMENT**Exhibit D****Standard Operating Procedures**

1. Services in Section 3.2 of this Agreement, other than responses to Emergency Requests, will be conducted Monday - Friday from 8:00am - 6:00pm PST. Except for responses to Emergency Requests, these Services will not be conducted on federal holidays recognized by the United States Office of Personnel Management (available at: <https://www.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/>).
2. The Service Technicians will park the service vehicle in an area designated by the Manager and enter the building from an entrance specified by the Manager. The Service Technicians will provide picture identification to the Manager upon request.
3. The Service Technicians shall ensure that, when unattended, the service vehicle shall be locked and the vehicle and its contents secured.
4. Upon entering LEA Collection Site, the Service Technicians will ask for the Manager. If the Manager is not available within 15 minutes (or 30 minutes in the case of an Emergency Request), the Service Technicians will exit LEA Collection Site and follow-up with the Manager to reschedule service.
5. Once the Manager arrives, the Service Technicians will go directly to the Kiosk along with the Manager and other LEA Collection Site employee.
6. The Manager and other LEA Collection Site employee will produce keys to access the double-locked Kiosk.
7. The Manager and other LEA Collection Site employee will remove the inner container and liner from the Kiosk and seal the inner liner. The Kiosk will then be locked, including the small opening that allows contents to be deposited into the Kiosk.
8. Under the supervision of the Manager and other LEA Collection Site employee, the Service Technicians will take the entire inner container and liner to the service vehicle for packaging.
9. The Service Technicians will place the inner container and liner in the back of the service vehicle.
10. The Service Technicians will weigh the inner container and liner, remove the liner from the container, and place the liner into an appropriately sized shipping container.
11. The shipping container will be lined to prevent any leakage.
12. The Service Technicians will attach a unique barcode label that will be confirmed by Vendor once received at the designated disposal facility.
13. The Service Technicians will secure the shipping container with tamper evident tape.
14. All shipping containers will be marked and labeled in compliance with Applicable Laws.
15. The Service Technicians will return to LEA Collection Site with the Manager and other LEA Collection Site employee. The Manager and Service Technicians will provide any paperwork required by Applicable Laws. If not otherwise required by Applicable Laws, the Service Technicians will record their own names as well as the names of the Manager and other LEA Collection Site employee participating in the service.
16. The Manager, other LEA Collection Site employee, and the Service Technicians will return to the Kiosk for inspection. The Manager and other LEA Collection Site employee will produce keys to access the double-locked Kiosk.
17. Under the supervision of the Manager and other LEA Collection Site employee, the Service Technicians will replace the liner in the inner container and place both into the Kiosk.
18. The Kiosk will be locked by the Manager and other LEA Collection Site employee, and the Service Technicians will exit LEA Collection Site, completing the service.

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Exhibit E
Notice and Contact Data for Vendor

Burlington Environmental, LLC
1629 East Alexander Ave.
Tacoma, WA 98421
(253) 383-3044

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Community Group Presentation: Shoreline Solar Project		
DEPARTMENT:	City Manager's Office		
PRESENTED BY:	John Norris, Assistant City Manager		
ACTION:	<input type="checkbox"/> Ordinance	<input type="checkbox"/> Resolution	<input type="checkbox"/> Motion
	<input type="checkbox"/> Discussion	<input type="checkbox"/> Public Hearing	<input checked="" type="checkbox"/> Community Group Presentation

PROBLEM/ISSUE STATEMENT:

Council Rule of Procedure 5.4 provides the opportunity for Councilmembers to sponsor a Community Group presentation at one meeting a month. The purpose of the Community Group presentation is to provide a means for non-profit organizations to inform the Council, staff and public about their initiatives or efforts in the community to address a specific problem or need.

Deputy Mayor Winstead and Councilmember McConnell have sponsored this Community Group presentation from the Shoreline Solar Project (SSP). Maryn Wynne and Larry Owens, Co-founders of the SSP, will be present at the Council meeting tonight to represent the SSP. As a prelude to the Solarize Shoreline campaign that the City is currently involved in with Northwest SEED and the SSP, Ms. Wynne and Mr. Owens will present "Solar 101" information to better educate the Council, staff and the citizens of Shoreline on solar energy. Topics will include the main types of solar energy systems currently available and what systems work great in the Pacific Northwest.

More information about the SSP can also be found on their website (www.shorelinesolar.org), and more information about the Solarize Shoreline campaign can be found at www.solarizewa.org.

RESOURCE/FINANCIAL IMPACT:

There is no resource or financial impact anticipated from this presentation.

RECOMMENDATION

No action is required. Staff recommends that the Council hear from the Shoreline Solar Project and ask questions of the presenters.

Approved By: City Manager **DT** City Attorney **MK**

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Discussion of Hidden Lake Dam Removal Alternatives Analysis		
DEPARTMENT:	Public Works		
PRESENTED BY:	John Featherstone, Engineer II – Surface Water		
ACTION:	<input type="checkbox"/> Ordinance	<input type="checkbox"/> Resolution	<input type="checkbox"/> Motion
	<input checked="" type="checkbox"/> Discussion	<input type="checkbox"/> Public Hearing	

PROBLEM/ISSUE STATEMENT:

Hidden Lake is the man-made pond located east of the intersection of NW Innis Arden Way and 10th Avenue NW, partially within Shoreview Park. The lake originated over 80 years ago when Boeing Creek was dammed to create a fishing pond and small hatchery. In 1996, King County constructed the present dam and re-established Hidden Lake as an environmental enhancement to mitigate impacts of the West Point Sewage Treatment Plant expansion, effectively creating a stormwater management facility. Sediment deposition within the lake occurs at a high rate and the City’s Surface Water Utility was required to remove large volumes of sediment in order to maintain the lake as an open water feature.

On September 8, 2014, the City Council discussed this issue in a presentation of the Hidden Lake Management Plan Feasibility Study and authorized staff to cease dredging the lake and begin a phased approach to remove Hidden Lake Dam and re-establish Boeing Creek. This staff report provides the results of the alternatives analysis completed in the first phase of the Hidden Lake Dam Removal Project and the staff recommendation on a preferred approach for project design and implementation.

In the alternatives analysis, three main design alternatives were originally developed under the Draft Alternative Analysis Report, with a fourth alternative subsequently conceived as a phased, optimized variation upon one of the original three. Each of the four alternatives would modify the existing lake configuration in order to safely convey flood flows and manage sediment and provide differing levels of restoring the Hidden Lake site and surrounding areas to natural conditions.

The alternatives can be summarized as follows:

- Alternative 1 is the most minimal approach and would modify the existing dam and the lake outflow structures associated with it to preserve the long-term structural integrity of the dam. A concrete spillway would be constructed on the dam face, from the dam crest to an existing concrete pad near the entrance to the two culverts at the NW Innis Arden Way crossing of Boeing Creek, and the existing outlet piping would be removed or decommissioned in place.

- Alternative 2 is an approach targeting a much higher degree of restoring the site to natural conditions as it will remove Hidden Lake Dam and excavate new creek channels in the existing lake footprint. Two channels would split around higher ground near the middle of the existing lake, combining into a single channel excavated down to the elevation of the upstream entrance to the existing NW Innis Arden Way culverts and include planting areas surrounding the new channel in the existing (former) lake area.
- Alternative 3 provides both a high degree of restoration of natural conditions and removal of multiple fish passage barriers. It will remove the dam and the outlet piping, excavate a single new creek channel through the existing lake bed, replace the NW Innis Arden Way culverts with a large box culvert or small bridge and modify the creek channel for a distance of about 150 feet downstream of NW Innis Arden Way to enable fish passage and improve habitat. This alternative would also include planting areas surrounding the new channel in the existing lake area and along the modified channel extents downstream of the road, which would mostly be forested vegetation.
- Alternative 4, which was not included in the Draft Alternative Analysis Report, uses a phased variation upon Alternative 3 above to maximize grant funding opportunities and minimize risks:
 - Phase 1 would first implement the elements of Alternative 3 located within Shoreview Park, including dam removal and channel excavation/restoration, and add trail improvements. This phase will address the flood hazard due to sediment loading in a timely fashion and could be built upon in a later Phase 2 to fully implement a final condition as described in Alternative 3.
 - Phase 2 will involve completing design and construction of the remaining Alternative 3 elements, including removal of downstream fish passage barriers such the NW Innis Arden Way culverts and riprap cascade. To increase grant funding appeal and the overall habitat benefits of the project, Phase 2 scope may be modified to include removal of the downstream Seattle Golf Club dam and provide associated stream improvements.

Alternative 4 allows the City to prioritize addressing the flood hazard and cost issues associated with continued sedimentation of the lake (in Phase 1) with a following project (Phase 2) that provides further fish passage and habitat and roadway infrastructure protection.

RESOURCE/FINANCIAL IMPACT:

The estimated costs of design, permitting, and construction for each of the alternatives as presented in the Alternatives Analysis report are:

- Alternative 1 - \$680,000
- Alternative 2 - \$2,350,000
- Alternative 3 - \$5,200,000
- Alternative 4 (including Seattle Golf Club dam removal) - \$7,900,000

There is approximately \$35,000 remaining in the 2016 budget to continue work on this project, and the 2016-2021 CIP has \$1,000,000 allocated to the project in 2020. Grant funding is likely necessary to implement Alternatives 2, 3 and 4. In order to move any

alternative forward in a timely fashion the CIP and budget will need to be adjusted for the alternative selected and earlier funding of design and grant activities than currently shown in the CIP.

RECOMMENDATION

Staff recommends Alternative 4 as the alternative which maximizes grant funding opportunities and minimizes time-sensitive flood hazard risks, while improving upon the full range of benefits offered by Alternative 3 (fish passage and habitat, roadway infrastructure protection, improvements for the users of Shoreview Park, and the greatest overall reduction of flood risk). These benefits were favored in public and stakeholder outreach efforts. Added potential benefits of Alternative 4 include trail restoration within Shoreview Park and removal of the Seattle Golf Club dam and associated downstream improvements.

Recognizing the need to address the flood hazard due to sediment loading in a timely fashion, staff further recommends that if the City is not successful in acquiring a Recreation and Conservation Office Land and Water Conservation Fund grant or otherwise securing grant funding for implementation of the proposed Alternative 4, Phase 1 by 2018-2019, that staff will provide Council with an updated recommendation. This recommendation would consider a revised array of options to address the flood hazard in a timely manner utilizing Surface Water Utility funding.

Approved By: City Manager **DT** City Attorney **MK**

INTRODUCTION

The following staff report presents the alternatives (including costs) for Council to consider based on the recently prepared Draft Hidden Lake Design Alternatives Analysis (Attachment A). Staff seeks City Council concurrence and approval to implement a preferred design alternative to modify the existing lake configuration in order to safely convey flood flows and manage sediment transported in Boeing Creek.

BACKGROUND

Hidden Lake is a man-made pond located east of the intersection of NW Innis Arden Way and 10th Avenue NW, partially within Shoreview Park. The lake originated over 80 years ago when Boeing Creek was dammed to create a fishing pond and small hatchery near William Boeing's estate. Archived aerial photos and other sources establish that Hidden Lake was completely sediment-filled by 1970 and overgrown with mature vegetation by 1995. King County constructed the present dam and re-established Hidden Lake in 1996 as an environmental enhancement in relation to impacts of West Point Sewage Treatment Plant expansion, effectively creating a stormwater management facility because the County's design included a maintainable sediment trap in the upstream end of the lake. Ownership of Hidden Lake is shared between the City of Shoreline (as part of Shoreview Park) and five private property owners to the north and west.

The existing lake configuration traps sediment that would otherwise be carried downstream to replenish sediment-starved downstream reaches of Boeing Creek and near-shore habitat within the Puget Sound at Innis Arden Beach. Sediment deposition within the lake occurs at a high rate and as a result the City's Surface Water Utility had been required to remove large volumes of sediment to maintain the lake as an open water feature. From 2002 to 2013, the Surface Water Utility spent over \$600,000 to implement seven separate dredging projects which removed a total of nearly 13,000 cubic yards of material. The actual volume of removed material was about six times greater than the deposition volume estimated by King County in developing the lake re-establishment design in the mid-1990s.

On September 8, 2014, the City Council discussed this issue as presented in the Hidden Lake Management Plan Feasibility Study and authorized staff to cease dredging the lake and begin a phased approach to remove Hidden Lake Dam and re-establish Boeing Creek at Hidden Lake. This decision followed the Hidden Lake Management Plan Feasibility Study and a July 24, 2014, recommendation from the Parks, Recreation and Cultural Services (PRCS)/Tree Board. No sediment removal has occurred since the summer of 2013. The staff report for the September 8, 2014 City Council discussion can be found at the following link:

<http://cosweb.ci.shoreline.wa.us/uploads/attachments/cck/council/staffreports/2014/staffreport090814-8a.pdf>.

In 2015, the Hidden Lake Dam Removal Project team (consisting of City staff and a consultant team led by Herrera Environmental Consultants) developed three distinct design alternatives for alteration or removal of Hidden Lake Dam. Each alternative would modify the existing lake and its associated outflow configuration to safely convey

flood flows and manage sediments that will continue to be transported into the existing lake area in Boeing Creek during storm events in the basin. These alternatives are intended to inform the City regarding a range of design strategies and to help the City select a preferred configuration for project design and implementation. Hidden Lake is expected to fill with sediment by 2020 to 2025, and risks to NW Innis Arden Way and other utilities and infrastructure within the road right-of-way will arise if no action is taken to alter or remove the dam.

Conceptual alternatives in development were presented to the PRCS/Tree Board on October 22, 2015, and in a Public Meeting at Shoreview Park on October 24, 2015. Comments received were used to further refine the alternatives. A summary of the Alternatives Analysis results and a preliminary staff recommendation favoring Alternative 3 were presented to and received approval from the PRCS/Tree Board on January 28, 2016.

DISCUSSION

The Hidden Lake Dam Removal Project team has prepared a Draft Design Alternatives Analysis report (Attachment A). Methods of analysis used to develop and evaluate the alternatives include:

- Hydrology and hydraulics: computer modeling for multiple simulated streamflow scenarios
- Geotechnical conditions: new geotechnical borings were conducted at the dam to supplement existing data for understanding subsurface soil conditions that will be encountered in modifying or removing the dam
- Geomorphology: sediment transport and deposition and other influential geologic processes and dynamics
- Existing habitat and species: wetland and stream habitats
- Cultural resources: potential for historical/archaeological resources within the project area
- Public input: general public meeting and outreach to adjacent property owners
- Permitting considerations: likely permit requirements for known regulations
- Maintenance implications: qualitatively assessed based on City staff input and consultant engineering expertise

Detailed descriptions of the three alternatives including methods and results of the analyses are presented within the Draft Design Alternatives Analysis report. Presented below are summary descriptions of each alternative highlighting distinguishing characteristics.

When dredging was stopped at the end of 2013, Hidden Lake was expected to fill with sediment by 2020 to 2025. If no action is taken to alter or remove the dam, as the lake gradually fills with sediment, there is increased risk for flooding of the NW Innis Arden Way culverts and damage to the NW Innis Arden Way roadway, embankment, and to downstream public and private assets. Therefore, a “no action” alternative is not considered viable for further evaluation.

Alternative 1

As the most minimal approach, Alternative 1 would modify the existing dam and the lake outflow structures associated with it to preserve the long-term structural integrity of the dam. A concrete spillway would be constructed on the dam face, from the dam crest to an existing concrete pad near the entrance to the two culverts at the NW Innis Arden Way crossing of Boeing Creek, and the existing outlet piping would be removed or decommissioned in place. All creek flow would pass over the new spillway, from summer low flow to major flood flows. The spillway crest elevation would be lower than the existing dam crest, thereby lowering the lake surface elevation by three (3) to four (4) feet, resulting in a smaller lake. No stream channel would be constructed through the lake bed. As the lake bed fills with sediment behind the dam, Boeing Creek would naturally create a channel(s), gradually sluicing out some of that sediment.

Thereafter, the creek would reach equilibrium within the current lake footprint area, transporting inflowing sediment through the dam spillway and into the reach of Boeing Creek downstream of NW Innis Arden Way. Floodplain areas on both sides of the creek would most likely form in what is currently the lake footprint. Over time, vegetated wetland habitat is anticipated to colonize those floodplain areas. Because nonnative and invasive species (i.e., weeds) would likely grow in the new floodplain areas and invade wetlands, post-construction vegetation monitoring and management, including weed control measures and supplemental planting, would be necessary to promote native vegetation growth.

As well, the culverts beneath the roadway could become plugged with flood-borne debris passing through the lake and over the dam. City staff would therefore need to routinely inspect and maintain the culverts to reduce and prevent risk of a catastrophic road embankment washout.

Alternative 2

An approach targeting a much higher degree of restoring the site to natural conditions, Alternative 2 would remove Hidden Lake Dam and excavate new creek channels in the existing lake footprint. Two channels would split around higher ground near the middle of the existing lake, combining into a single channel excavated down to the elevation of the upstream entrance to the existing NW Innis Arden Way culverts. The new channel construction work would occur on City-owned park land (on the eastern side of the existing lake footprint) and on four privately owned parcels (on the western side). Secured large woody debris would be placed in the creek channels, where feasible, to enhance aquatic habitat. Areas adjacent to the new channels within the existing lake footprint would be planted with native vegetation.

As with Alternative 1, post-construction vegetation monitoring and management would be necessary, and long-term maintenance attention would be needed to prevent the culverts beneath the roadway from being plugged with flood-borne debris. Alternative 2 would construct floodplain areas with wetland characteristics that emulate pre-lake conditions and that would be similar to the naturally formed floodplain areas that would develop eventually under Alternative 1. Following construction, minimal maintenance activity would be needed (other than vegetation management during several years of native vegetation establishment) for the new creek channels upstream of the road to function as intended over the long term.

The existing NW Innis Arden Way culverts and channel conditions immediately downstream are barriers to fish passage. While Alternative 2 as conceived thus far would not remove those barriers, the design (unlike that for Alternative 1) would enable potential future excavation through the roadway crossing to replace the culverts and thus create a fish-passable stream section, under a future project action, comparable to that described for Alternative 3.

Alternative 3

To provide both a high degree of restoration of natural conditions and removal of multiple fish passage barriers, Alternative 3 would: remove the dam and the outlet piping; excavate a single new creek channel through the existing lake bed; replace the NW Innis Arden Way culverts with a large box culvert or small bridge; and modify the creek channel for a distance of about 150 feet downstream of NW Innis Arden Way to enable fish passage and improve habitat. Unlike Alternative 2, the channel excavation within the Hidden Lake area would be exclusively on City-owned land. In total, Alternative 3 would create or improve approximately 1,000 feet of creek channel from upstream of the lake to downstream of the road. Work would also include planting areas surrounding the new channel in the existing lake area and along the modified channel extents downstream of the road, which would mostly be forested vegetation.

Because the channel bed and banks would be relatively steep and at a deeper elevation throughout the length of the restored creek, it would be more difficult to reestablish floodplain areas and associated wetlands along the creek than compared to Alternative 2 and thus some off-site wetland mitigation may be required to satisfy permit requirements.

As with Alternatives 1 and 2, post-construction vegetation monitoring and management would be necessary in much of the existing lake footprint. A distinct benefit of Alternative 3 from an operations and maintenance perspective is that it would eliminate risks associated with road embankment washout due to flood-borne debris clogging the existing culverts, and eliminate the need for a future costly project to remove and replace the culverts when they reach the end of their service life, which is expected to occur by 2040.

Alternative 4 (Not Included in the Draft Report)

After drafting the Alternatives Analysis report, staff considered a variation of Alternative 3 that used a phased approach to maximize grant funding opportunities and minimize flood hazard risks:

- Phase 1 would first implement the elements of Alternative 3 located within Shoreview Park, including dam removal and channel excavation/restoration. Improvements in this phase will address the risks to roadway infrastructure and related flooding due to sediment loading in a timely fashion and can be built upon in Phase 2 to fully implement a final condition as described in Alternative 3. To this end, the city has applied for a Washington State Recreation and Conservation Office (RCO) Land and Water Conservation Fund (LWCF) grant to fund a major portion of this effort, if awarded, including additional scope providing greater enhancements to Shoreview Park (such as restoring a currently-impassable portion of the Hidden Lake Loop Trail).

- Phase 2 will involve completing design and construction of Alternative 3 elements – including replacing the NW Innis Arden Way culverts and restoring the downstream riprap cascade. To increase grant funding appeal and the overall habitat benefits of the project, Phase 2 scope may be modified to include removal of the downstream Seattle Golf Club dam and associated stream improvements. This will require additional planning and design as well as significant grant funding for this work. Likelihood of obtaining grant funding is difficult to predict, and it could take a lengthy amount of time (10 years or longer) to secure funding and implement improvements.

This alternative allows the City to prioritize addressing the flood hazard and cost issues associated with continued sedimentation of the lake (in Phase 1) with a following project (Phase 2) that provides further fish passage and habitat and roadway infrastructure protection. This alternative was developed after preparation of the Alternatives Analysis report and is not included in that report or the corresponding summary information in this staff report.

Presented below are further comparisons of the alternatives for three selected topics that inform the alternatives discussed above.

Adjacent Private Property Owners

Hidden Lake is spread over five private properties in addition to Shoreview Park. In August and September 2015, the owners of those properties were interviewed individually to gain their views on specific aspects of a potential dam and lake removal/modification project. A meeting was held with the owners of four of the properties along the west side of the lake on October 20, 2015, to further discuss the project and obtain their input on the alternatives under consideration. The project team reached out to these owners in early 2016 offering to follow up on the prior conversations seeking any further feedback on the alternatives. As of the submittal date for this Staff Report, no response has been received.

Future project participation of all five private property owners is uncertain, and ultimately some may not allow project work to occur on their property. Accordingly, Alternatives 1, 3, and 4 were developed to allow for full implementation contingent only upon the involvement of one property owner at the western/downstream end of the lake, who has been generally open to the proposed conceptual changes (although no formal agreement has been reached). Implementation of Alternative 2 would require consent of all five adjacent private property owners, three of whom declined to grant property access for field data collection during this alternatives analysis phase and may not be willing to grant access for construction.

While Alternatives 1, 3, and 4 would require no construction work on the other four private properties, weed control and native vegetation planting are advisable on some or all of those properties to maximize ecological benefits of the project, as described above, and doing so would require private property owner permission.

Park Uses and Values

All alternatives have the potential to install amenities and improvements specifically for the users of Shoreview Park, such as trail renovations and interpretive displays. However, Alternatives 2, 3, and 4 best accommodate such amenities because they would involve construction work upstream of the dam, whereas Alternative 1 would focus all construction work in the dam area, which is currently not directly accessible to park users. Potential park improvements that could be incorporated in the design will be further developed in the next phase of the project. Alternatives 2, 3, and 4 (which would construct a stream channel through the existing lake and yield a predictable landscape within what is currently open water in the lake footprint) could readily allow for larger-scale park improvements, potentially funded by grants.

For example, a proposal based on Phase 1 of Alternative 4 has been submitted in an application for grant funding from the Washington State RCO LWCF. If received, this grant would fund portions of stream restoration work in addition to park amenities such as a new trail segment along the restored creek, two interpretative displays, and trail restoration work along currently impassable portions of the Hidden Lake Loop Trail.

Removal of Fish Passage Barriers

The 2013 Boeing Creek Basin Plan identified four major complete barriers to upstream fish movement along the main stem of Boeing Creek: the Seattle Golf Club diversion dam, riprap cascades below NW Innis Arden Way, the NW Innis Arden Way culverts, and the Hidden Lake dam. The basin plan recommended taking advantage of any opportunities to improve Boeing Creek fish passage as related to future Hidden Lake-related work (under Recommended Project BC-Hab-1).

Alternative 1 would not improve fish passage in any way; by installing a concrete spillway this alternative would effectively fortify the existing fish passage barrier of Hidden Lake.

Alternatives 2 and 3 represent partial, incomplete approaches to remove fish passage barriers. Alternative 2 would improve fish passage by removing the Hidden Lake dam, but would not address any of the other three downstream barriers. Alternative 3 would remove three of the four major barriers, but not the most-downstream barrier of the Seattle Golf Club dam.

Alternative 4 is the only comprehensive approach among the alternatives to remove all four major fish passage barriers: Phase 1 would remove the Hidden Lake dam in the near future; Phase 2 would eventually remove the remaining three barriers if the removal for the Seattle Golf Course dam is added to the project scope.

Comparison of Alternatives

Table 1 presents a summary comparison of Alternatives 1, 2 and 3 with respect to a wide range of criteria defined by the project team, based in part on public feedback obtained to date. This comparison table was developed for the Alternatives Analysis report; while Alternative 4 is not included, it is roughly analogous to Alternative 3 for most criteria.

Table 1. Comparison of Alternatives.

Criteria	Alternative 1	Alternative 2	Alternative 3
Cost	\$680,000	\$2,350,000 ^a	\$5,200,000 ^b
Required Participation of Several Adjacent Private Property Owners	No	Yes	No
Park Uses and Values	Low	High	High
Wetland Mitigation Likely Required	No	No	Yes
Enables Fish Passage	No	No ^c	Yes
Other Habitat Benefits in the Project Area (e.g., waterfowl, forest, wetlands, amphibians, beaver)	Low	High	Medium
Habitat Benefits Due to Suspended Sediment Loading Near Mouth of the Creek (within 20 years)	Low	Medium	High
Downstream Gravel Supply	Low (eventual)	High (immediate)	High (immediate)
Predictability of Native Plant Establishment in Project Area	Low	High	Medium
Maintenance Needs for Safe Conveyance of Flood Flows and Sediment	High	Medium	Low
Relative Grant Funding Attractiveness	Low	Medium ^d	High
Permitting Complexity	Medium	Medium	High

^a If the culverts beneath NW Innis Arden Way were replaced as part of this alternative to allow fish passage, the total cost would increase to approximately \$5,550,000.

^b The new box culvert or bridge beneath NW Innis Arden Way would require temporary closure of roadway traffic to excavate into the deep earth fill prism underlying the existing roadway. The deep excavation and associated traffic control requirements are significant cost components of Alternative 3.

^c Fish passage could be achieved with Alternative 2 if the culverts beneath NW Innis Arden Way were replaced as under Alternative 3.

^d Grant funding attractiveness would be rated high for Alternative 2 if fish passage improvements were included in it.

STAKEHOLDER OUTREACH

Conceptual alternatives in development were presented to the PRCS/Tree Board on October 22, 2015, and in a Public Meeting at Shoreview Park on October 24, 2015. Comments received were used to further refine the alternatives. A summary of the Alternatives Analysis results and Staff recommendation were presented to and received approval from the PRCS/Tree Board on January 28, 2016.

The Draft Design Alternatives Analysis report was made available to the general public on the Hidden Lake Dam Removal project website on March 25, 2016. The City's neighborhoods coordinator sent notice of this posting to neighborhood associations for Innis Arden, Highland Terrace, Richmond Highlands, Westminster Triangle, and Richmond Beach. Further public outreach will be done once the preferred alternative has been selected and refined to a preliminary design stage.

See the Adjacent Private Property Owners sub-section under the Discussion section above for information regarding stakeholder outreach specific to these adjacent property owners.

RESOURCE/FINANCIAL IMPACT

Preliminary construction costs were developed by comparing alternatives to known costs for similar previous projects and utilizing detailed quantity-based backup, such as earthwork quantities estimated using a three-dimensional terrain model. The estimated total costs for each alternative include costs for project administration, design, permitting, and construction, with a 50% contingency amount applied towards construction. Costs of Alternative 4 are rough order of magnitude estimates above the costs used in Alternative 3.

The estimated costs of design, permitting, and construction for each of the alternatives as presented in the Alternatives Analysis report are:

- Alternative 1 - \$680,000
- Alternative 2 - \$2,350,000
- Alternative 3 - \$5,200,000
- Alternative 4 (including Seattle Golf Club dam removal) - \$7,900,000

Funding Sources

There is approximately \$35,000 remaining in the 2016 budget to continue work on this project, and the 2016-2021 CIP has \$1,000,000 allocated to the project in 2020. Grant funding is likely necessary to implement Alternatives 2, 3 and 4. In order to move any alternative forward in a timely fashion the CIP and budget will need to be adjusted for the alternative selected and earlier funding of design and grant activities than currently shown in the CIP.

As estimated costs vary widely between the three alternatives, the makeup of funding sources for this project will be dependent on which alternative is implemented:

- Alternative 1 has the lowest cost and could be implemented using only Surface Water Utility funds, which would likely be necessary since it also has the least grant appeal.
- Alternative 2, without fish passage improvements, would accordingly have lower costs and probably have less overall grant appeal than Alternative 3. However, it will cost much more and (with habitat improvements) have more grant appeal than Alternative 1. The overall costs of Alternative 2 are high enough to likely require grant funding to cover a significant portion of total costs.
- Alternative 3 costs are sufficiently high to require grant funding for a significant portion of the total costs. The combination of enabling fish passage and habitat improvements is expected to have the greatest grant appeal. However, to have maximum appeal to fish passage-oriented grants this project would greatly benefit by creating a combined application which includes removal of the obsolete Seattle Golf Club diversion dam that spans Boeing Creek at a location several hundred feet downstream of NW Innis Arden Way.
- Alternative 4 costs are higher than Alternative 3 due to additional scope for phasing the project and including the Seattle Golf Club dam removal and associated stream improvements. This project would have greater habitat restoration benefits than Alternative 3, increasing the possibility of obtaining grant funding.

- For Phase 1, the City has applied for a \$500,000 Washington State RCO LWCF grant that can fund a major portion of this effort, if awarded, including additional scope providing greater enhancements to Shoreview Park (including restoring a currently-impassable portion of the Hidden Lake Loop Trail). The approximate remaining cost of \$800,000 (for grant match and dam removal) would come from a future allocation of surface water funds and potentially other grant sources. The estimated total cost of Phase 1 is \$1.3M.
- The estimated cost of Phase 2 is \$4.6M for the remaining work anticipated in Alternative 3 and a (rough order of magnitude) estimated cost of \$2M for removal of the Seattle Golf Club dam and associated stream improvements for a total estimated Phase 2 cost of \$6.6M. This will require additional planning and design as well as significant grant funding for this work, which will be a multi-year effort with some risk of success.

Feedback to date from state-level grant programs focusing on habitat restoration has indicated that without eliminating significant fish passage problems downstream in Boeing Creek, Alternative 3 may not be worthy of grant funding in light of many other locations around Puget Sound where less money can yield greater habitat gains. However, the Seattle Golf Club recently contacted City staff to express interest in removal of their diversion dam (the single remaining significant fish passage barrier downstream of the project), provided that external funding for this work can be obtained. With this in mind, Alternative 4 allows the project to include working with the Seattle Golf Club to develop an approach to remove this dam in coordination with the Hidden Lake Dam Removal project and possibly submit a single fish passage-related grant application which combines the two efforts to maximize funding appeal for both efforts.

In addition to the Washington State RCO LWCF grant application, other preliminary contacts which have already been made in pursuit of potential grant funding include WRIA 8, WDFW Fish Barrier Removal Board, FEMA's flood hazard mitigation grant program, and Puget Sound Partnership.

RECOMMENDATION

Staff recommends Alternative 4 as the alternative which maximizes grant funding opportunities and minimizes time-sensitive flood hazard risks, while improving upon the full range of benefits offered by Alternative 3 (fish passage and habitat, roadway infrastructure protection, improvements for the users of Shoreview Park, and the greatest overall reduction of flood risk). These benefits were favored in public and stakeholder outreach efforts. Added potential benefits of Alternative 4 include trail restoration within Shoreview Park and removal of the Seattle Golf Club dam and associated downstream improvements.

Recognizing the need to address the flood hazard due to sediment loading in a timely fashion, staff further recommends that if the City is not successful in acquiring a Recreation and Conservation Office Land and Water Conservation Fund grant or otherwise securing grant funding for implementation of the proposed Alternative 4, Phase 1 by 2018-2019, that staff will provide Council with an updated recommendation.

This recommendation would consider a revised array of options to address the flood hazard in a timely manner utilizing Surface Water Utility funding.

ATTACHMENT

Attachment A – Draft Hidden Lake Design Alternatives Analysis Report

**DRAFT
DESIGN ALTERNATIVES ANALYSIS**

**HIDDEN LAKE DAM REMOVAL PROJECT
SHORELINE, WASHINGTON**

**Prepared for
City of Shoreline**

**Prepared by
Herrera Environmental Consultants, Inc.**



Note:

Some pages in this document have been purposely skipped or blank pages inserted so that this document will copy correctly when duplexed.

DESIGN ALTERNATIVES ANALYSIS

HIDDEN LAKE DAM REMOVAL PROJECT SHORELINE, WASHINGTON

Prepared for
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DRAFT
March 18, 2016

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EXECUTIVE SUMMARY

The City of Shoreline (City), via direction from its city council, has ceased dredging of sediments in Hidden Lake in response to a feasibility study of lake management alternatives (AltaTerra 2014), which illuminated the high cost of continuing to dredge the lake, as compared to other viable management options. With the decision to stop dredging the lake, the City needs to develop and implement a different approach to conveying Boeing Creek flows (including major flood flows) and sediments through the existing lake area and downstream of NW Innis Arden Way. Otherwise, Hidden Lake is expected to fill with sediment in the next 5 to 10 years, depending on the occurrence and magnitude of Boeing Creek flood events, and risks to NW Innis Arden Way and other utilities and infrastructure in the road right-of-way will arise if no action is taken to alter or remove the dam.

This report presents an analysis of three alternatives for alteration or removal of the dam and corresponding creek channel modifications in the existing lake area. The alternatives are intended to inform the City regarding a range of design strategies and to help the City select a preferred configuration for project design and implementation.

DESCRIPTION OF THE ALTERNATIVES

Alternative 1 is the simplest of the three alternatives. It would modify the existing dam and the lake outflow structures associated with it to preserve the long-term structural integrity of the dam. A concrete spillway would be constructed on the dam face, from the dam crest to an existing concrete pad near the entrance to the culverts at the NW Innis Arden Way crossing of Boeing Creek. The spillway crest elevation would be lower than the existing dam crest, thereby lowering the lake surface elevation by 3 to 4 feet, resulting in a smaller lake. No stream channel would be constructed through the lake bed. As the lake bed fills with sediment behind the dam, Boeing Creek would naturally create a channel(s), gradually sluicing out some of that sediment. Thereafter, the creek would reach equilibrium within the current lake footprint area, transporting inflowing sediment through the dam spillway and into the reach of Boeing Creek downstream of NW Innis Arden Way. Floodplain areas on both sides of the creek would most likely form in what is currently the lake footprint. Over time, vegetated wetland habitat is anticipated to colonize those floodplain areas. Because nonnative and invasive species (i.e., weeds) would likely grow in the new floodplain areas and invade wetlands, post-construction vegetation monitoring and management, including weed control measures and supplemental planting of native species, would be necessary.

Alternative 2 would remove the Hidden Lake dam and includes excavating new creek channels in the existing lake footprint. Two channels would split around higher ground near the middle of the existing lake, combining into a single channel excavated down to the entrance to the existing NW Innis Arden Way culverts. The new channel construction work would occur on City-owned park land (on the eastern side of the existing lake footprint) and on four privately owned parcels (on the western side). Secured large woody debris would be placed in the creek channels, where feasible, to enhance aquatic habitat. Areas adjacent to the new channels within the existing lake footprint would be planted with native vegetation.

As with Alternative 1, post-construction vegetation monitoring and management would be necessary. Alternative 2 would construct floodplain areas with wetland characteristics that emulate pre-lake conditions and that would be similar to the naturally formed floodplain areas that would develop eventually under Alternative 1. The existing NW Innis Arden Way culverts and downstream channel conditions are barriers to fish passage. While Alternative 2 would not remove those barriers, the design (unlike that for Alternative 1) would enable potential future excavation through the roadway crossing to create a fish-passable stream section comparable to that described for Alternative 3. Following construction, aside from vegetation management, minimal maintenance activity would be needed for the creek to function as intended over the long term.

Alternative 3 is the largest of the three alternatives analyzed in this report, but a major component of it—improving fish passage by replacing the existing culverts beneath NW Innis Arden Way and modifying the creek channel downstream of the roadway—could also be a component of Alternative 2, in which case, Alternative 2 would become the largest of the three alternatives.

Alternative 3 would involve removing the dam and excavating a single new creek channel through the existing lake bed. Unlike Alternative 2, the channel excavation would be exclusively on City-owned land. Alternative 3 would also replace the NW Innis Arden Way culverts with a large box culvert or small bridge, and would modify the creek channel for a distance of about 150 feet downstream of the road to promote fish passage and improve habitat. In total, Alternative 3 would create and improve approximately 1,000 feet of creek channel from upstream of the lake to downstream of the road. Work would also include planting areas surrounding the new channel in the existing lake area and along the modified channel extents downstream of the road, which would mostly be forested vegetation. Because the channel bed and banks would be relatively steep and at a deeper elevation throughout the length of the creek modified by Alternative 3, it would be more difficult to re-establish floodplain areas and associated wetlands along the creek than under Alternative 2. As with Alternatives 1 and 2, post-construction vegetation monitoring and management would be necessary in much of the existing lake footprint.

SUMMARY OF ALTERNATIVES ANALYSIS

The alternatives analysis considered hydrology and hydraulics, geotechnical conditions, geomorphology (including sediment transport and large woody debris), existing habitat and species, and cultural resources, as well as other factors. Those other factors include private-property ownership and related concerns, effects on Shoreview Park, effects on creek habitat and private property downstream of the lake, implementation costs (and how to cover them), long-term maintenance requirements and associated costs, potential to restore salmonid fish passage through the lake area, and the anticipated complexity in obtaining required permits and regulatory approvals (including potential mitigation requirements) to implement a project that alters the dam and the lake.

Results of the alternatives comparison are summarized below and in Table ES-1. In addition to helping the City select an alternative, the results can inform development of a preferred alternative that combines features of the alternatives considered in this alternatives analysis.

Criteria	Alternative 1	Alternative 2	Alternative 3
Cost	\$680,000	\$2,350,000 ^a	\$5,200,000 ^b
Required Participation of Several Adjacent Private Property Owners	No	Yes	No
Park Uses and Values	Low	High	High
Wetland Mitigation Likely Required	No	No	Yes
Enables Fish Passage	No	No ^c	Yes
Other Habitat Benefits in the Project Area (e.g., waterfowl, forest, wetlands, amphibians, beaver)	Low	High	Medium
Habitat Benefits Due to Suspended Sediment Loading Near Mouth of the Creek	Low	Medium	High
Downstream Gravel Supply	Low (eventual)	High (immediate)	High (immediate)
Predictability of Native Plant Establishment in Project Area	Low	High	Medium
Maintenance Needs for Safe Conveyance of Flood Flows and Sediment	High	Medium	Low
Relative Grant Funding Attractiveness	Low	Medium ^d	High
Permitting Complexity	Medium	Medium	High

^a If the culverts beneath NW Innis Arden Way were replaced as part of this alternative to allow fish passage, the total cost would increase to approximately \$5,550,000

^b The new box culvert or bridge beneath NW Innis Arden Way would require temporary closure of roadway traffic to excavate into the deep earth fill prism underlying the existing roadway. The deep excavation and associated traffic control requirements are significant cost components of Alternative 3.

^c Fish passage could be achieved with Alternative 2 if the culverts beneath NW Innis Arden Way were replaced as under Alternative 3.

^d Grant funding attractiveness would be rated high for Alternative 2 if fish passage improvements were included in it.

Findings of Hydrologic and Hydraulic Analyses

The hydrology of Boeing Creek in the project vicinity and downstream will not change significantly as a result of implementing any of the three alternatives. Hydraulic modeling of existing conditions and the three alternatives revealed three key findings:

1. The lake has limited capacity to store floodwaters in the 100-year flood event, which is not an issue under existing conditions because the outlet manhole structure and associated piping that conveys creek flows through the dam to the culverts beneath NW Innis Arden Way are able to pass significant amounts of flow. The limited flood attenuation in the lake during higher flood flows means that the magnitude and timing of flood flows downstream of the dam site would not change with any of the alternatives (Herrera 2016). In fact, a slight decrease in the downstream peak flow is predicted for Alternative 3 and a greater decrease is predicted for Alternative 2 due to the difference between “dead” storage (lake volume occupied by water before a flood wave comes through) in the lake under existing conditions compared to the “live” flood storage created in the excavated channels and floodplain areas for Alternatives 2 and 3.

2. The lake outlet manhole structure and associated piping has sufficient capacity to convey moderate flood flows such that the model predicts minor lake elevation changes at increasing flow rates, and no overtopping of the dam in the 2-year flood. Thus, removing the existing lake outflow structures under any alternative would not cause a notable change in peak flow rates or flood duration during moderate flood events downstream of NW Innis Arden Way.
3. Model results for all three alternatives demonstrated a significant decrease in water surface elevations in the project area and extending upstream of the lake. This is because water surface elevations under existing conditions are governed by the geometry and elevation of the dam crest at the existing lake outlet, and lowering or removing the dam would result in a creek water surface elevation profile through the existing lake bed that is lower than the existing lake water surface, even during floods. Therefore, none of the alternatives would have adverse flooding effects on park land or private property upstream of the dam.

The creek hydrographs used as input to the hydraulic model are approximate and were derived based upon several sources of information. If a streamflow gage were installed at a location approximately 400 to 600 feet upstream of the existing lake, the flow data collected at that gage could be used to refine the model findings for design of a preferred alternative. Gage data would be particularly useful if it captured some large flow events before detailed project design is completed.

Findings of Geomorphic Analyses

Currently, there are unstable slopes in many locations along Boeing Creek, both upstream and downstream of the lake. Because the hydrology of the Boeing Creek basin as a whole will not change significantly as a result of any of the three alternatives, such geomorphic patterns are expected to continue into the future.

The City's lake dredging records indicate an average of 1,100 cubic yards of sediment, predominantly sand, deposited in Hidden Lake per year between 2002 and 2013 (AltaTerra 2014). Total sediment load in the Boeing Creek basin is estimated to be approximately 2,500 cubic yards per year (Herrera 2016), indicating that roughly half of the sediment entering Boeing Creek flow each year has been retained in Hidden Lake. The material that passes through the lake is called wash load, the finest portion of suspended load. Finer-grained material, including some sand, likely remains suspended during turbulent and higher-velocity flood flows, and passes through the lake. Bedload (coarser material) transport volumes are much smaller—estimated to be approximately 300 cubic yards per year in Boeing Creek. No bedload currently reaches the Hidden Lake outlet. The only bedload (primarily gravel) downstream of the dam has been scavenged by the creek as it has incised into older historical creek deposits in the middle of the ravine downstream of NW Innis Arden Way.

All three alternatives would increase sediment delivery, over time, to the Boeing Creek channel downstream of Hidden Lake. The character and volume of that sediment will vary depending on the alternative.

The lake is expected to be filled with sediment in 5 to 10 years, unless an extremely rare flood event occurs sooner. It would take longer than that for a well-developed, stable channel to re-establish in the lake bed under Alternative 1. Until equilibrium channel conditions occur

naturally, the landscape in the existing lake footprint would exhibit many isolated, ephemeral pools and, possibly, many braided channels. Following lowering of the dam spillway elevation under Alternative 1, there also would be a risk of a headcut (channel bed erosion and deepening propagating in the upstream direction, leading to some potentially undesirable effects upstream of the lake) developing until the creek profile stabilizes through the existing lake area. Some suspended sediment load would likely be stored for a longer period (for at least 20 years) in the lake reach as the floodplain aggrades. However, immediately following construction, much of the suspended sediment would be remobilized until a stable channel can form through the existing lake bed.

Of the three alternatives, Alternative 2 most closely mimics known predevelopment geomorphic conditions in the lake reach above NW Innis Arden Way. Bedload transport through the existing lake area would be enabled immediately after construction. Alternative 2 would also result in storage of some suspended sediment load in floodplain areas, particularly in the upstream portion of the existing lake. Therefore, channel degradation downstream of the lake likely would be reduced, while sand supply to the nearshore areas of Puget Sound at the creek mouth would increase. Because the constructed channel gradient would be relatively steep (4 percent or greater in parts of the site), significant engineering controls such as constructed boulder riffles and bank revetments would be required to prevent unwanted channel deformation under Alternative 2.

Like Alternative 2, Alternative 3 would immediately convey all bedload and suspended sediment load through the existing lake area to downstream reaches of Boeing Creek. Unlike Alternative 2, there would be essentially no capacity for storage of sediment in floodplain areas within the existing lake footprint. Most or all of the estimated 2,500 cubic yards of sediment supplied to the lake per year would be transported downstream of NW Innis Arden Way under Alternative 3, which would likely trigger channel migration and minor bank erosion accordingly, particularly downstream of the Seattle Golf Club diversion dam. Alternative 3 would result in the greatest benefits associated with sediment delivery in nearshore areas of Puget Sound within a few years of project construction, which is a goal of recovery planning for endangered Puget Sound Chinook salmon. Like Alternative 2, the constructed channel gradient would be relatively steep in parts of the site under Alternative 3, requiring significant but very feasible engineering controls.

Findings of Ecological Analyses

Hidden Lake provides open water habitat for fish, such as cutthroat trout, and waterfowl species. Under Alternative 1, the amount of open water habitat would decrease immediately as the lake level is lowered upon constructing the new dam spillway, and would decrease further over time as sediment fills the lake bed. However, as Boeing Creek re-establishes a channel and vegetated wetlands in the floodplain, a higher functioning wetland and stream area would develop. It is very likely that nonnative and invasive species (weeds), such as reed canarygrass and Himalayan blackberry, would occupy the new floodplain areas and invade wetlands under Alternative 1, decreasing their habitat value. Therefore, post-construction vegetation monitoring and management, including weed control measures and supplemental planting of native species, should be included if this alternative is implemented. Overall, the habitat created under Alternative 1 would function higher than existing conditions.

Alternative 2 is a controlled version of Alternative 1 in which the open water habitat in Hidden Lake would be manually converted to a complex wetland and stream area.

Groundwater discharge into the new channel would occur a few feet above the constructed channel bed through much of the site, which would provide a downstream habitat benefit of increased base flow in Boeing Creek. Wetlands created in the existing lake area would be planted with native vegetation throughout the floodplain on both private and City-owned park property, and would be maintained to control the presence of invasive species. The combined wetland and stream habitat provided in Alternative 2 would be expected to function higher than that provided under Alternative 1 or 3.

Alternative 3 would provide a high functioning stream habitat through the reach on City park property, but, because of the relatively steep and deeper nature of the constructed channel, little to no wetland habitat could be re-established adjacent to the channel. The floodplain west of the constructed channel could be allowed to establish vegetation naturally, as in Alternative 1. With the potential for nonnative, invasive species establishing in that area, post-construction vegetation monitoring and management is recommended if Alternative 3 is implemented. Similar to Alternative 2, groundwater discharge into the new channel would occur a few feet above the constructed channel bed through much of the site, which would provide a downstream habitat benefit, although less benefit than that under Alternative 2.

A compelling reason for the City to consider Alternative 3 is that improving fish passage conditions in creeks throughout the Puget Sound basin is a focus of local, state, and federal agencies and others engaged in salmon recovery. Therefore, it may be possible to obtain grant funding related to fish passage to cover some of the project cost. Enabling fish passage from downstream in Boeing Creek would result in a greater ecological lift for Boeing Creek than Alternative 2 (and far greater than Alternative 1). However, the desired fish passage capability for salmonids from the mouth of the creek upstream through the current lake area could not be achieved until additional fish passage barriers are removed farther downstream, most notably at the Seattle Golf Club diversion dam.

Input Received from Lakeside Residents and the General Public

Input received from lakeside residents and the general public to date was used to shape the distinct features of the three alternatives. Lakeside residents voiced several concerns and opinions, including:

- Concern about privacy and potential for trespassing, with elimination of the lake allowing park users or others to walk across the restored creek onto their land
- Concern for the loss of the lake and the unique habitats and aesthetic value it provides
- Concern about potentially reduced property values
- Potential for inadvertent impacts on mature trees west of the lake shoreline
- Potentially high cost of the project to the City and its taxpayers
- Potential for marshy conditions to develop in the existing lake bed that would attract mosquitoes and make it difficult to walk on the eastern edge of their property, which indicates less support for Alternative 2 as described herein
- Desire for ecological benefits to be achieved if the lake is converted to a different landform, which indicates less desire for Alternative 1 as described herein

Input received from the general public focused on the following topics.

- Effects of the project on the character of Boeing Creek downstream of Hidden Lake, and whether implementing the project means the City would pursue removing the Seattle Golf Club diversion dam
- A desire for improved trail(s) along the southeast side of the restored Boeing Creek channel in the existing lake bed
- Concern for the loss of a place that is popular for taking dogs to swim
- The unique ecological value that is contained within Shoreview/Boeing Creek Park and how the project could enhance that value; in relation to this, interest in placing informational signage about the ecological effects of the project

Permitting Expectations

Project activities undertaken for any of the three alternatives include clearing and grading and working within environmentally critical areas or critical area buffers, requiring permits from federal and state regulatory agencies and the City of Shoreline. Each alternative would require, at a minimum, a Clean Water Act Section 404 permit (for wetland impacts) from the US Army Corps of Engineers (USACE), a Hydraulic Project Approval from the Washington Department of Fish and Wildlife, a State Environmental Policy Act (SEPA) threshold determination from the City of Shoreline, a critical areas special use permit from the City of Shoreline, and onsite mitigation of temporary construction impacts. Project permitting is simplified because no species listed under the federal Endangered Species Act are present in the project area, and the project is expected to receive a determination of non-significance (DNS) or mitigated DNS on environmental elements analyzed under SEPA.

The complexity of permitting for each alternative differs in the way each alternative project configuration would comply with Clean Water Act Section 404, City of Shoreline code, and the mitigation that may be required for impacts on wetlands and buffers. Alternatives 1 and 2 would likely be covered under streamlined federal permitting requirements because compensation for wetland impacts would not likely be required. Alternative 3 may require more complex federal agency permitting because it would likely result in an overall decrease in wetland area and functions compared to existing conditions. In addition, offsite mitigation may be required for project impacts on wetlands and their buffers under Alternative 3.

Maintenance Implications

Alternative 1 would require a minor amount of maintenance attention from the City and would be similar to current maintenance (with no dredging), although that maintenance would be critical to ensure safe conveyance of flood flows from the lake outlet across NW Innis Arden Way. Maintenance activities would be focused on keeping the Hidden Lake dam spillway clear of debris, plus occasional inspections of the culverts beneath NW Innis Arden Way. To support permitting of Alternative 1, a commitment by the City for vegetation monitoring and management to prevent the spread of weeds would likely be needed.

Alternatives 2 and 3 would require greater maintenance attention than Alternative 1. Additional maintenance associated with these two alternatives would be related to expected permit requirements to ensure planted vegetation survival, to control invasive weed growth in the existing lake footprint, and to ensure that the constructed stream channel is functioning as intended. The inspection and maintenance needs for these three purposes would generally be focused within the first 5 to 10 years following construction. Thereafter, maintenance needs would likely be minimal.

INTRODUCTION

The City of Shoreline (City), via direction from its city council, has ceased dredging of sediments in Hidden Lake in response to a feasibility study of lake management alternatives (AltaTerra 2014). The study illuminated the high cost of continuing a dredging program, as compared to other viable management options. With the decision to stop dredging the lake, the City needs to develop and implement a different approach to conveying Boeing Creek flows (including major flood flows) and sediments through the existing lake area and downstream of NW Innis Arden Way. Otherwise, Hidden Lake is expected to fill with sediment in the next 5 to 10 years, depending on the occurrence and magnitude of Boeing Creek flood events, and risks to NW Innis Arden Way and other utilities and infrastructure in the road right-of-way will arise if no action is taken to alter or remove the dam.

This report presents an analysis of alternatives for removing the dam or otherwise making the dam compatible with an expected condition of the lake filling with sediments in the coming years. The alternatives are intended to inform the City regarding a range of design strategies and to help the City select a preferred configuration for project design and implementation. Three distinct alternatives were developed and analyzed. Each alternative would modify the existing lake and its associated outflow structures to safely convey flood flows and manage sediments that will continue to be transported into the existing lake area in Boeing Creek during storm events in the basin. Two of the alternatives involve removal of the dam that impounds Hidden Lake, and the other alternative would lower the lake outlet elevation at the dam.

Numerous factors affect the City's decision regarding the future of Hidden Lake and the dam that impounds it, all of which are discussed in this report. The factors include private property ownership and related concerns, effects on Shoreview Park, effects on creek habitat and private property downstream of the lake, implementation costs (and how to cover them), long-term maintenance requirements and associated costs, potential to restore salmonid fish passage through the lake area, and the anticipated complexity in obtaining required permits and regulatory approvals (including potential mitigation requirements) to implement a project that alters the dam and the lake. Herrera Environmental Consultants, Inc. (Herrera) uses these factors to compare the alternatives in this report.

BACKGROUND: EXISTING FLOW CONVEYANCE CONDITIONS RELEVANT TO ALTERNATIVES

Hidden Lake outflows are conveyed in a pair of 30-inch-diameter pipes that extend from the outlet control manhole (see Figure 1) to a concrete apron that routes the flow into a pair of 48-inch-diameter culverts beneath NW Innis Arden Way. The outlet control manhole and the 30-inch pipes have had the capacity to convey the highest flood flows observed by City staff, such that flow does not spill over the top of the dam except in the most extreme of flood events. The culverts beneath NW Innis Arden Way are large enough to pass all flood flows, sediment, and most waterborne debris to the Boeing Creek channel downstream of the road without inducing formation of a deep pool at their upstream entrance. The age of the culverts is uncertain, but it can be inferred that they were built (along with the road above them) at the same time as the homes in the area, which was in 1954 to 1955 (Eric Gilmore, personal communication November 24, 2015).

The City has inspected the culverts under NW Innis Arden Way and found that they are in good condition and do not need to be replaced in the near future due to assessed risk of failure. Although the culverts are apparently structurally sound, at roughly 60 years old, they are approaching the typical functional lifespan for comparable infrastructure. If one or both of the culverts were to fail during a flood event, complete loss of the roadway embankment and all associated infrastructure (utilities, guardrail, signage, etc.) could occur and the resultant cost of repairing the roadway and the associated infrastructure would be significant.



Figure 1. Existing Lake Outlet Structure as Viewed from the Dam.

With cessation of sediment removal by dredging in the lake, the lake is expected to fill with sediment in the coming years. The time period for that to occur depends on the occurrence and magnitude of Boeing Creek flood events. It is conceivable that the existing outlet control manhole could eventually become plugged with sediment and debris during a flood event, triggering flow over the top of the dam at all times. If that occurs, there is a risk of the earthen dam partially breaching because its spillway is not sufficiently armored to resist erosion. If the dam breaches, there is risk that soil and debris could clog the twin creek culverts beneath NW Innis Arden Way, potentially causing a catastrophic road washout, as noted above.

As described in the Hidden Lake Management Plan Feasibility Study (AltaTerra 2014), controlling sediment production and delivery in Boeing Creek is a long-term challenge for the City, which has no ability to stop sediment from entering the Hidden Lake area in the foreseeable future. Therefore, given that sediment will no longer be dredged from the lake and the resultant risks of dam failure and/or roadway culvert failure, a “no action” alternative is not viable for the City.

DESCRIPTION OF ALTERNATIVES

Three alternatives, representing a range of construction complexity and cost, are considered in this report. Each would modify the existing lake and its associated outflow configuration, as described in this section.

ALTERNATIVE 1

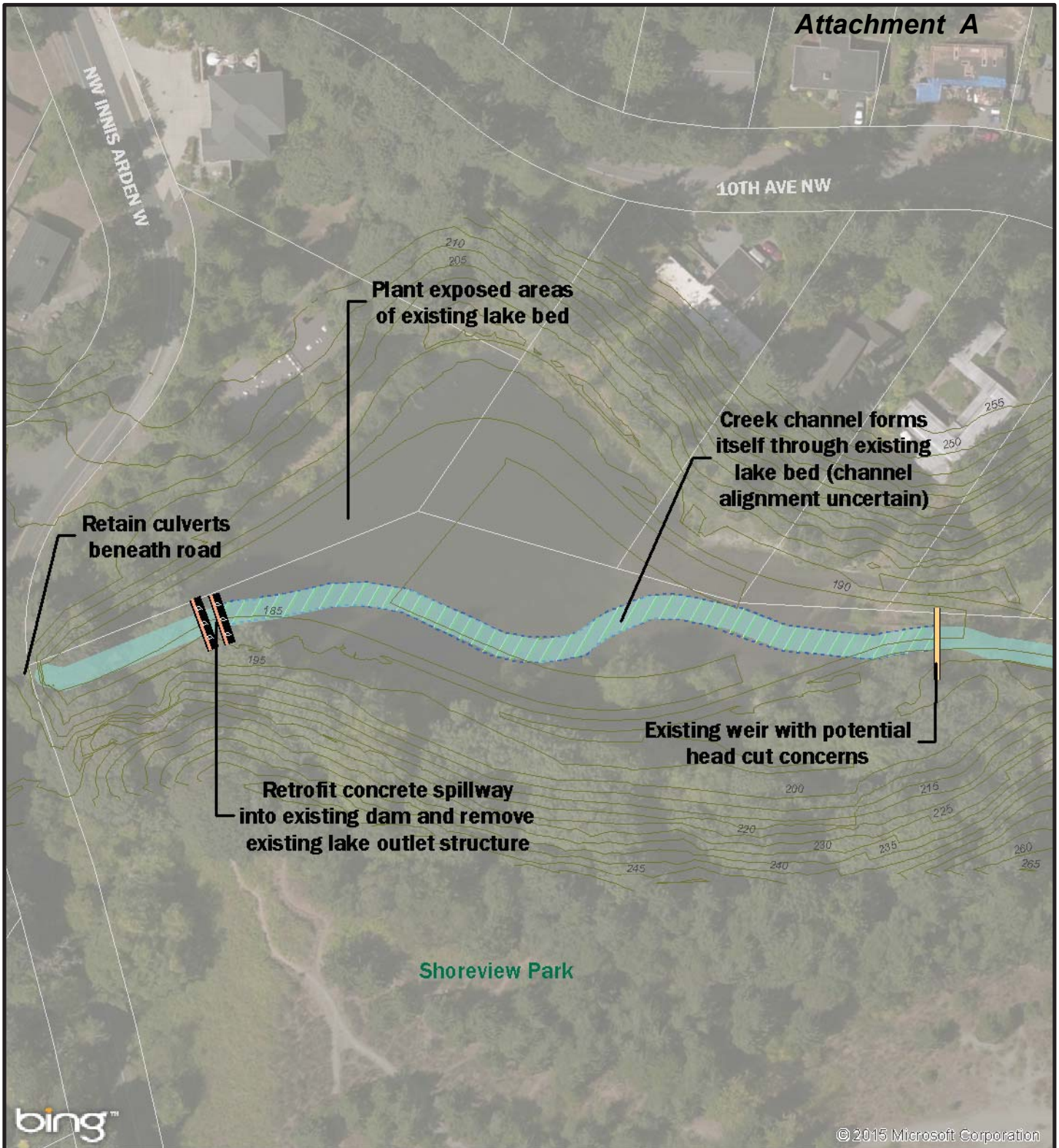
Alternative 1 is the simplest of the three alternatives. It would modify the existing dam and the lake outlet structures to preserve the long-term structural integrity of the dam. Figure 2 shows a basic layout of this alternative.

The dam is composed mainly of compacted soil but also contains rock gabion mattresses built into the downstream slope to resist erosion in major flood events. Without the rock gabion mattresses, flood flows spilling over the dam crest and down the southern embankment face could significantly erode the dam embankment soil.

Under Alternative 1, a concrete spillway approximately 90 feet long and 20 feet wide would be constructed from the dam crest to the existing concrete pad at the roadway culvert entrance area. A defined spillway channel would replace the gabion mattresses either partially or completely. The extents of the gabion mattresses were not certain as of the time this report was written, and additional analysis that is beyond the scope of this alternatives analysis would need to be conducted to determine if some of the gabions could be retained while making the remaining extents of the gabion mattresses structurally sound. The outlet control manhole and pipes extending from it through the dam would be decommissioned in place, thus minimizing disturbance to the lower part of the dam that is in solid condition.

No stream channel would be constructed through the lake bed. Boeing Creek would naturally create a channel(s), gradually sluicing out some of the sediment in the lake bed. Thereafter, the creek would reach an equilibrium configuration in the lake footprint that would enable transporting inflowing sediment through the dam spillway and into the reach of Boeing Creek downstream of NW Innis Arden Way. Floodplain areas on both sides of the creek would most likely form in what is currently the lake footprint. Over time, vegetated wetland habitat is anticipated to colonize those floodplain areas. Due to the urban nature of the Boeing Creek basin upstream of the lake and the seed bank within the sediment settling in the lake bed, there is a high likelihood that nonnative and invasive species (i.e., weeds) would occupy the new floodplain areas and invade wetlands. Post-construction vegetation monitoring and management, including weed control measures and supplemental planting of native species would be necessary to prevent this outcome.

So that all lake outflows pass over the existing dam, the new spillway crest elevation would be lower than the existing dam crest. Accordingly, the new lake would be smaller in area and the lake surface elevation would be 3 to 4 feet lower than at present. The timeframe for sediment to fill in the smaller lake would be dependent on the frequency and magnitude of Boeing Creek flows. Based upon the City's dredging records since 2002, a reasonable expectation is that the remaining lake volume would fill with sediment within 5 to 10 years after constructing the new spillway in the dam.



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Legend

- Approximate channel alignment
- Alignment uncertain
- Existing dam
- Existing weir
- Contour
- Parcel



Figure 2. Alternative 1 Layout.

0 50 100 200 Feet

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ALTERNATIVE 2

Alternative 2 would involve excavating new creek channels in the lake bed. The channels would be split around higher ground near the middle of the existing lake, combining into a single channel excavated down to the concrete pad at the entrance to the existing roadway culverts. This alternative would remove the earthen dam and the gabion mattresses in the downstream face of it, the lake outlet structures, and a creek flow bypass system previously used in conjunction with dredging operations near the upstream end of the lake. Areas adjacent to the new channels within the existing lake footprint would be planted with native vegetation.

Alternative 2 would construct floodplain areas with wetland characteristics that emulate pre-lake conditions and that would be similar to the naturally formed floodplain areas that would develop eventually under Alternative 1. Figure 3 shows a basic layout of Alternative 2.

The existing culverts under NW Innis Arden Way would be retained as is. In the area of the existing dam, the side slopes of the excavated creek channel would be relatively steep to avoid disturbing a near-vertical slope on the east side of the dam and to minimize excavation on private property on the west side of the dam.

To reduce construction costs and provide floodplain area that is beneficial for aquatic habitat and for retaining some of the sediment volume delivered in Boeing Creek, the channel slope entering the upstream end of the existing lake would be steepened at approximately 4 to 6 percent to maximize floodplain area through the remainder of the existing lake footprint. The higher flow velocities and associated shear stress on the bed and banks induced in the steepened upstream channel section would require some erosion-resistant features.

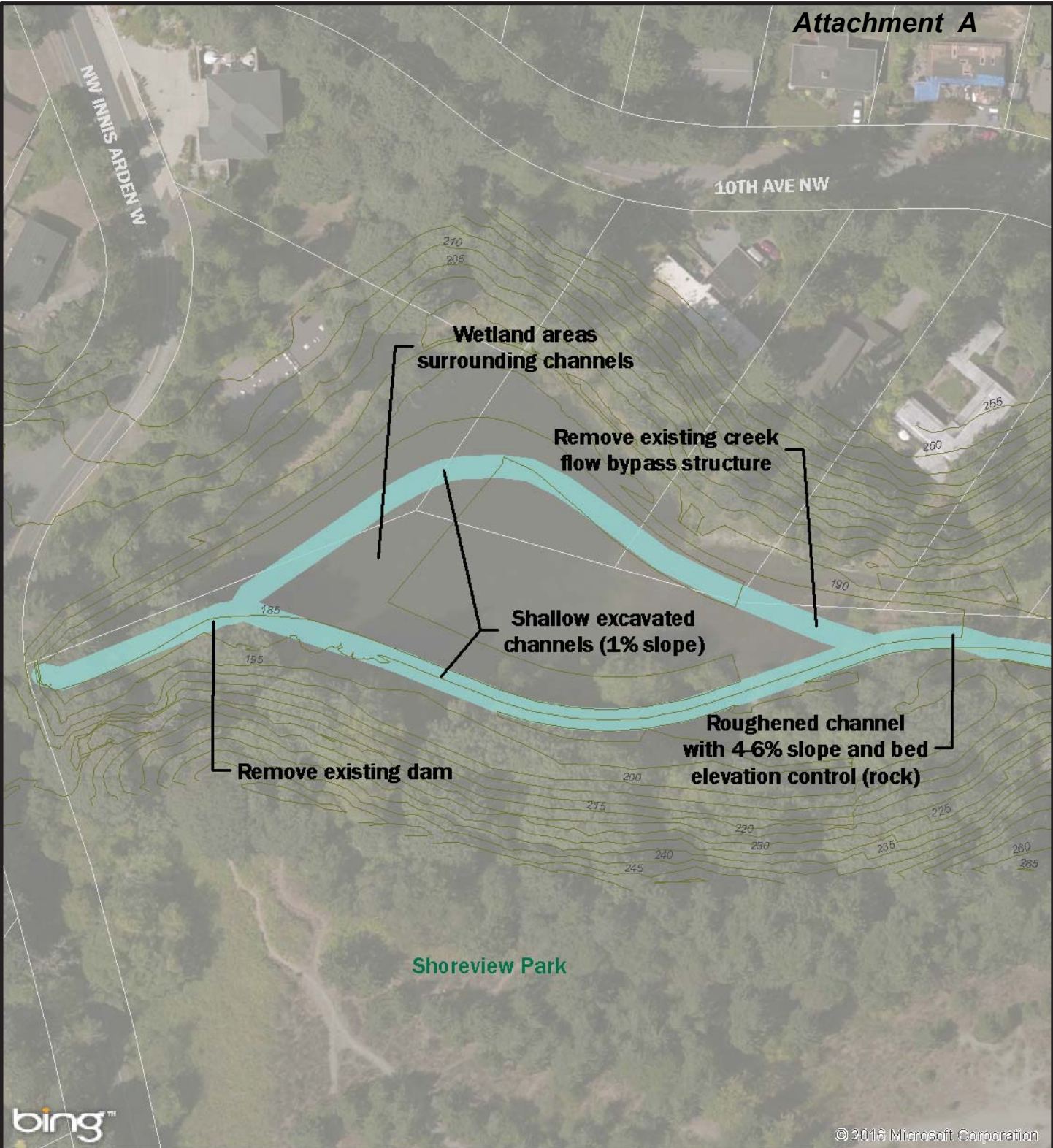
Through most of the existing lake footprint, the new channels would be relatively flat at approximately 1 percent slope. The flatter, more frequently inundated middle portion of the former lake footprint would lend itself to establishment of a vegetated wetland area. In addition to planting native vegetation, post-construction vegetation monitoring and management, including weed control measures and supplemental planting of native species, would be necessary to maximize native planting success.

Replacing the Culverts Beneath NW Innis Arden Way

The existing culverts beneath the road are a complete barrier to upstream fish passage. Creating conditions that promote fish passage through the project area is of interest to the City over the long term.

To allow fish passage in Boeing Creek from its mouth at Puget Sound to a point upstream of the existing lake, fish passage barriers farther downstream in the creek, primarily the Seattle Golf Club diversion dam, would also need to be removed via other projects. Removal of the Hidden Lake dam and restoring fish passage through the NW Innis Arden Way crossing could be a first major step in that larger fish passage restoration effort.

For purposes of this report, Alternative 3 includes fish passage components, but that is somewhat arbitrary. Replacing the culverts with a wider opening that simulates natural streamflow and improving channel conditions downstream of the road could also be included in Alternative 2. Alternative 1, which would retain part of the existing dam and install a steep spillway on the face of it, is not conducive to



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Legend




-  Approximate channel alignment
-  Contour
-  Parcel



Figure 3. Alternative 2 Layout.



USDA, Aerial (2013)
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At the downstream end of the site, the single-thread channel approaching the NW Innis Arden Way culverts would be flat, with effectively no slope, to enable potential future excavation through the roadway crossing to create a fish-passable stream section comparable to that described for Alternative 3. The existing roadway culverts and downstream channel conditions are barriers to upstream fish passage. While it would not remove those barriers, the Alternative 2 design (unlike Alternative 1) would accommodate potential future fish passage improvements in this immediately downstream area. If the new channel approaching the culverts from the existing dam vicinity were set at a higher elevation profile than described above (which, in turn, would mean setting the channels through the existing lake bed at higher elevation), fish passage would be difficult to accomplish in the future without significant excavation and associated costs to re-plant vegetation and re-establish a stable channel further north of NW Innis Arden Way.

The Washington Department of Fish and Wildlife (WDFW) has design guidelines for “roughened channels” that are well-suited for the new, steeper channel section at the upstream end of the project site. A roughened channel is composed of large boulders, with smaller cobbles and sediment amid the boulders, that are sized to resist erosion in flood events while allowing fish passage at a wide range of flow levels, as occurs naturally in mountainous streams in the region (Barnard et al. 2013).

Secured large woody debris would be placed in the creek channels that are created within the existing lake footprint, where feasible, for enhanced aquatic habitat. A mix of native shrubs and trees would be planted in areas disturbed during construction on both sides of the new channels.

The new channel construction work would occur on City-owned park land (on the eastern side of the existing lake footprint) and on four privately owned parcels (on the western side). Following construction, aside from maintenance of vegetation plantings for several years to ensure that desired native vegetation survives and thrives, minimal maintenance activity would be needed for the creek to function as intended over the long term.

ALTERNATIVE 3

Alternative 3 is the largest of the three alternatives analyzed for purposes of this report, but a major component of it—improving fish passage by replacing the existing culverts beneath NW Innis Arden Way and modifying the creek channel downstream of the roadway—could also be a component of Alternative 2, in which case, Alternative 2 would become the largest of the three alternatives.

Like Alternative 2, Alternative 3 would involve excavating a new creek channel through the lake bed after removing the dam structure and lake outlet structures. Alternative 3 would also replace the NW Innis Arden Way culverts with a large box culvert or small bridge, would remove the concrete pad near the upstream entrance to the culverts, and would modify the creek channel downstream of the road to smoothly transition the new channel profile through the road crossing and improve fish passage conditions in a section of the downstream channel that currently hinders fish passage because it is steep and partly filled with riprap (large quarry rock). In total, Alternative 3 would involve creating and improving approximately 1,000 feet of creek channel from upstream of the lake to downstream of the road. Work would also include planting areas surrounding the new channel, and extending across the

entire existing lake area if possible based on private property owner willingness, which would mostly be forested vegetation, and planting disturbed areas adjacent to the creek downstream of the NW Innis Arden Way crossing. Figure 4 shows a basic layout of Alternative 3.

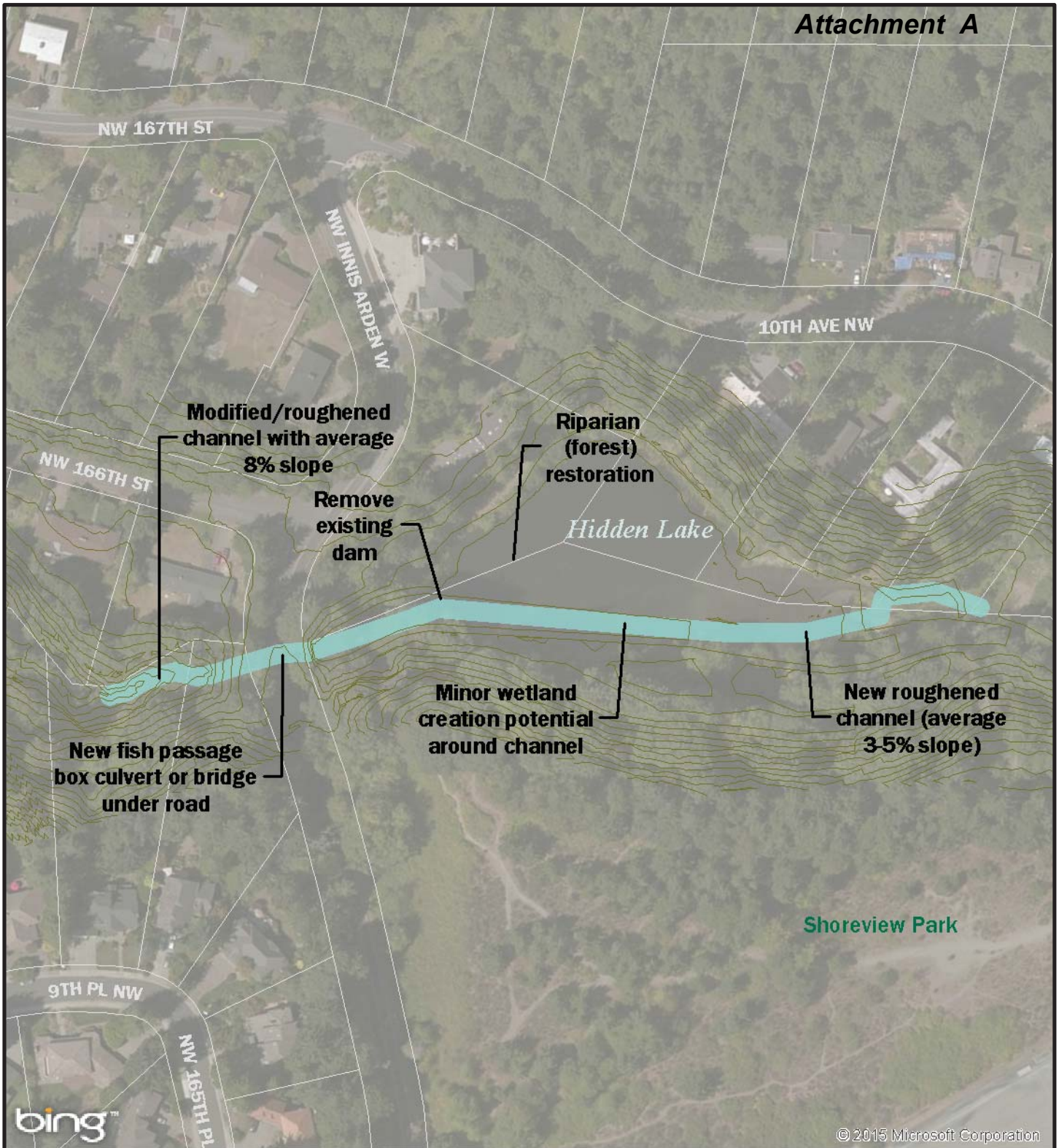
By replacing the roadway culverts with a structure that allows for natural stream channel conditions within it, creating better conditions for fish habitat and passage downstream of the road, and creating a gradual creek channel slope through the existing lake area, continuous fish passability would be enabled from several hundred feet downstream of NW Innis Arden Way to the upstream end of the lake area.

A compelling reason for the City to consider this large-scale alternative is that improving fish passage conditions in creeks throughout the Puget Sound basin is a focus of local, state, and federal agencies and others engaged in salmon recovery. Therefore, it may be possible to obtain grant funding related to fish passage to cover some of the project cost. Enabling fish passage from downstream in Boeing Creek would also result in a greater ecological lift for Boeing Creek than Alternative 2 (and far greater than Alternative 1).

The new creek channel through the existing lake bed could be constructed exclusively on City-owned land within the eastern half of the lake. The channel slope would be relatively steep (4 percent on average) in the upstream half of the project area and also in the modified channel section downstream of NW Innis Arden Way (approximately 8 percent). Therefore, a roughened channel design approach (Barnard et al. 2013) would be used for those sections of the creek.

The new box culvert or bridge beneath NW Innis Arden Way would require temporary closure of roadway traffic to excavate into the deep earth fill prism underlying the existing roadway. The deep excavation and associated traffic control requirements are significant cost components of this alternative. The new culvert or bridge structure would be wider than the stream channel, per WDFW fish passage design requirements (Barnard et al. 2013).

A mix of native shrubs and trees would be planted in areas disturbed during construction on both sides of the new creek channel. Because the channel bed and banks would be relatively steep and at a deeper elevation throughout the length of the creek modified by Alternative 3, it would be more difficult to re-establish floodplain areas and associated wetlands along the creek than under Alternative 2. This is a consideration in comparing Alternatives 2 and 3, as discussed later in this report. As with Alternative 1, there is a high likelihood that the seed bank from the sediment delivered into the project area in Boeing Creek flow would enable weedy vegetation to occupy the new floodplain areas and invade wetlands. Portions of the lake bed that are not excavated for the new creek channel (on the west side) but that are no longer inundated by lake water would be vulnerable to invasive and weedy vegetation growth. Therefore, post-construction vegetation monitoring and management, including weed control measures and supplemental planting of native species, would be necessary in much of the existing lake footprint to prevent this outcome.



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Legend




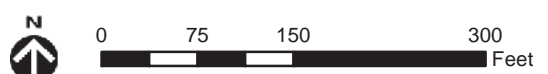
-  Approximate channel alignment
-  Contour
-  Parcel



Figure 4.
Alternative 3 Layout.



USDA, Aerial (2013)
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METHODS OF ANALYSIS

HYDROLOGY AND HYDRAULICS

Hydrologic analysis included consolidating data from previous studies for the Boeing Creek basin to develop inflow hydrographs at the upstream end of the Hidden Lake project area. Three flow scenarios were chosen, representing an extreme high flow scenario (100-year flood); a moderate, geomorphically significant flood (2-year flood); and an average base flow (mean annual flow). The hydrograph for the mean annual flow was assumed to be a constant flow of 2.7 cubic feet per second (cfs), based on data from King County gage 4j (King County 2015a). The 100-year and 2-year flood hydrographs were developed using hydrograph shapes based upon available King County data for gages 4a and 4e (King County 2015b, 2015c) and scaling the hydrographs to the peak flow estimates presented in the Hidden Lake Management Plan Feasibility Study (AltaTerra 2014); those estimates are 227 cfs for the 100-year flood and 72 cfs for the 2-year flood. Development of the hydrographs is described in detail in the Hidden Lake Dam Removal Project Hydrologic, Hydraulic, and Sediment Transport Analysis memorandum (Herrera 2016).

Herrera performed hydraulic analysis of streamflow characteristics within the project area using the two-dimensional finite volume RiverFlow2D Plus hydrodynamic model. The analysis was done for existing conditions and the three alternatives. A two-dimensional model was chosen to best capture lateral distribution of flows and velocities that would not be captured in a one-dimensional model. The required model inputs included a topographic surface, hydraulic boundary conditions at the upstream and downstream limits of the model, and hydraulic roughness (Manning's "n") values for channel and floodplain areas. Details of the model development, input data, assumptions, and results are provided in Herrera (2016). Key existing hydraulic features, including the NW Innis Arden Way culverts and Hidden Lake outlet structure, were included in the model. The hydraulic characteristics predicted by the existing conditions model for those features were back-checked outside of the model to ensure they were being accurately represented.

Unsteady boundary conditions (i.e., a continuous hydrograph as opposed to a single flow value) were used for the 2-year and 100-year hydrologic events to better understand the existing flood flow attenuation effects of the lake and changes in that flow attenuation that could be expected for each alternative. Boeing Creek in the Hidden Lake area is delineated as a Zone A floodplain in the published Flood Insurance Rate Map for the project area. Zone A means that no Base Flood Elevations (for the 100-year flood event) have been established. Flood and erosion risks, as well as sediment transport characteristics were assessed by comparing the model results for existing conditions to the model results for each of the three alternatives.

GEOTECHNICAL CONDITIONS

It is important to understand the subsurface soil conditions in the dam area and in the project area in general to be sure that the conceptual design and cost estimate for each alternative is accurate with respect to proposed earthwork. Documentation from previous geotechnical investigations at Hidden Lake (Shannon & Wilson 1995) was reviewed. Then, in September 2015, two new geotechnical borings were drilled in the dam to confirm soil characteristics within and beneath the dam. Appendix A contains a plan showing the locations of the new borings, as well as a geologic cross-section interpreted from the borings and the corresponding boring logs.

GEOMORPHOLOGY

Herrera conducted a geomorphic assessment of existing conditions and potential changes in sediment transport and deposition under each alternative. The assessment was based upon existing information that was summarized primarily by AltaTerra (2014) and reconnaissance of Boeing Creek from upstream of Hidden Lake to the creek mouth at Puget Sound in June 2015. Herrera also used early maps of the area (GLO 1859) to understand predevelopment conditions. The reason for investigating predevelopment geomorphic conditions is that professional experience has shown that a suite of physical processes that have been occurring for centuries will likely continue to play a role in the formation of the landscape, given enough time, even in systems that have been altered by upstream development, which is the case for Boeing Creek.

Sediment Transport

Calculations were performed to estimate the sediment volume delivered to the lake and areas downstream using a recently developed sediment production model (Syvitski et al. 2003; Syvitski et al. 2005). Previous Hidden Lake sediment loading estimates, such as those provided by King County (1995), have been shown to be significantly underestimated (AltaTerra 2014). Sediment production rates in the Boeing Creek basin upstream of the lake are useful for understanding the extent to which suspended sediment currently passes through the lake and for determining the geomorphic ramifications of the alternatives within the existing lake area and downstream. The sediment volume calculations are described further in Herrera (2016).

Large Woody Debris

Herrera prepared qualitative estimates of the large woody debris loading to Boeing Creek within the lake area and in downstream reaches of the creek under existing conditions and for each of the alternatives. Large woody debris enables habitat-forming processes, but it can also present risks to existing conveyance structures and increase future maintenance. The estimates were based upon past conditions observed and documented and upon anticipated future vegetation changes associated with each alternative.

EXISTING HABITAT AND SPECIES

To determine the historical and current presence of wetlands and streams in and near the project area, Herrera reviewed available documentation and databases and conducted a site visit. Information gathered was used to classify and preliminarily rate existing wetlands and streams.

Wetlands identified within the project area were classified according to the US Fish and Wildlife Service classification system (Cowardin et al. 1979). That system is based on an evaluation of attributes such as vegetation class, hydrologic regime, salinity, and substrate. The wetlands were also classified according to the hydrogeomorphic system, which is based on an evaluation of attributes such as the position of the wetland within the surrounding landscape, the source and location of water just before it enters the wetland, and the pattern of water movement in the wetland (Brinson 1993).

Potential wetlands identified within the project area were preliminarily rated using *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014), hereafter referred to as the Ecology rating system. The Ecology rating system categorizes wetlands according to specific attributes such as rarity; sensitivity to disturbance; hydrologic, water quality, and habitat functions; and special characteristics (e.g., mature forested wetland, bog). The total score for all functions determines the wetland rating. The rating system consists of four categories, with Category I wetlands exhibiting outstanding functions and/or special characteristics, and Category IV wetlands exhibiting minimal attributes and functions. The rating categories are used to identify permitted uses in the wetland and its buffer, to determine the width of buffers needed to protect the wetland from adjacent development, and to determine mitigation requirements.

Streams are considered to be a type of fish and wildlife habitat conservation area, according to the City of Shoreline Code 20.80.260-300. A fish and wildlife conservation area is an area that supports regulated fish or wildlife species or habitats, typically identified by known point locations of specific species, habitat areas, or both.

Streams within the project area were classified in accordance with City of Shoreline Code 20.80.270 which specifies use of the Washington State Department of Natural Resources water typing system based on WAC 222-16-030. That system is based primarily on fish, wildlife, and human use, and consists of four stream types: Type S, F, Np, or Ns. Type S streams are those surface waters which are inventoried as "Shorelines of the State" under the Shoreline Management Master Program for the City of Shoreline, pursuant to RCW Chapter 90.58.030. Type F streams and waterbodies are those known to be used by fish, or that meet the physical criteria to be potentially used by fish. Fish streams may or may not have flowing water all year; they may be perennial or seasonal. Type Np streams have flow year round and may have spatially intermittent dry reaches downstream of perennial flow. Type Np streams do not meet the physical criteria of a Type F stream and have been proven not to contain fish. Type Ns streams do not have surface flow during at least some portion of the year, and do not meet the physical criteria of a Type F stream.

CULTURAL RESOURCES

A cultural resources assessment was prepared for this project to determine if there are historical or archaeological resources within the project area that could be affected by any of the alternatives (CRC 2015). The assessment was based on published information sources, records on file with the Washington State Department of Archaeological and Historic Preservation (DAHP), field reconnaissance, and contacts with several Native American tribes in the area.

PUBLIC INPUT

The City has sought public input on this project dating back to the feasibility study of lake management alternatives (AltaTerra 2014). During the course of the alternatives analysis described in this report, five property owners along the west side of the lake were interviewed individually to gain their views on specific aspects of a potential dam and lake removal/modification project, and two additional meetings were subsequently held. The interviews were conducted in August and September 2015. A meeting was convened on October 20, 2015, with the owners of four of the properties along the west side of the lake to further discuss the project and obtain their input on the alternatives under consideration. On October 24, 2015, a meeting was convened in Shoreview Park to obtain input on the alternatives from the general public.

PERMITTING CONSIDERATIONS

Wetlands and streams in the project area are subject to a variety of federal and state regulations. Federal laws regulating wetlands include Sections 404 and 401 of the Clean Water Act (United States Code, Title 33, Chapter 1344 [33 USC 1344]). Washington State laws and programs designed to control the loss of wetland acreage include the State Environmental Policy Act (SEPA) and Section 401 of the Clean Water Act (a federal law that is implemented in Washington by the Department of Ecology (Ecology), as mandated by the Washington State Water Pollution Control Act). City of Shoreline Code section 20.80 specifies wetland and stream categories, required buffer widths, development standards, and mitigation requirements for critical areas in its jurisdiction.

A review of existing project site documentation was performed to assess permitting considerations likely to be associated with each of the alternatives under consideration. The City's knowledge of historical permitting procedures for dredging and maintenance in the Hidden Lake project area was also elicited via personal communications.

COST

The construction cost of each alternative was developed to a sufficient level of detail to understand cost differences between the alternatives and range of magnitude of the project cost. The cost estimates were based on earthwork volumes derived in Civil3D (computer-aided design software), cost data from past projects constructed in the region, and

professional judgment based upon Herrera's experience in design and construction of over 50 creek and river projects.

MAINTENANCE IMPLICATIONS

The maintenance requirements that the City could expect for each alternative were assessed qualitatively based on experience with creek projects throughout the region and with input from City staff who know the project site well.

ANALYSIS RESULTS

HYDROLOGY AND HYDRAULICS

A summary of the hydrologic and hydraulic analyses is provided in this section. More detailed information can be found in Herrera (2016). Hydraulic model results for existing conditions and the three alternatives are shown in Figures 5 through 7. The hydraulic modeling revealed three key findings:

1. The lake has limited flood storage during the 100-year flood event, which is not an issue because the outlet structure and associated piping is low enough and large enough to convey a significant amount of flow. The limited flood attenuation in the lake during higher flood flows under existing conditions means that the downstream flood hydrograph peak would not change (in terms of flow magnitude and timing) for any of the alternatives (Herrera 2016). In fact, a slight decrease in the downstream peak flow is predicted for Alternative 3 and a significant decrease is predicted for Alternative 2 due to the difference between “dead” storage (lake volume occupied by water before a flood wave comes through) in the lake under existing conditions compared to the live flood storage in the excavated channel and floodplain for Alternatives 2 and 3.
2. The lake outlet manhole structure and associated piping has sufficient capacity during moderate floods such that the model predicts minor lake elevation changes at increasing flow rates, and no change in the hydrograph downstream of NW Innis Arden Way with respect to peak flow or flood duration.
3. Model results for all three alternatives demonstrated a significant decrease in water surface elevations in the project area and extending upstream of the lake. This is because water surface elevations under existing conditions are governed by the geometry and elevation of the dam crest at the existing outlet of the lake, and lowering or removing the dam would result in a creek water surface elevation profile through the existing lake bed that is lower than the existing lake water surface, even during floods. Therefore, the model results indicate that none of the alternatives would have adverse flooding effects on park land or private property upstream of the dam.

While the project team has confidence in these findings based on the modeling done to date, as discussed in Herrera (2016), the creek hydrographs used as input to the hydraulic model are approximate, derived based upon several sources of information. If a streamflow gage were installed at a location approximately 400 to 600 feet upstream of the existing lake, the flow data collected at that gage could be used to refine the model findings discussed herein. That would be particularly useful if some large flow events were captured in the gage data before detailed project design is completed.

Findings of the hydraulic modeling for existing conditions and each alternative are summarized below.

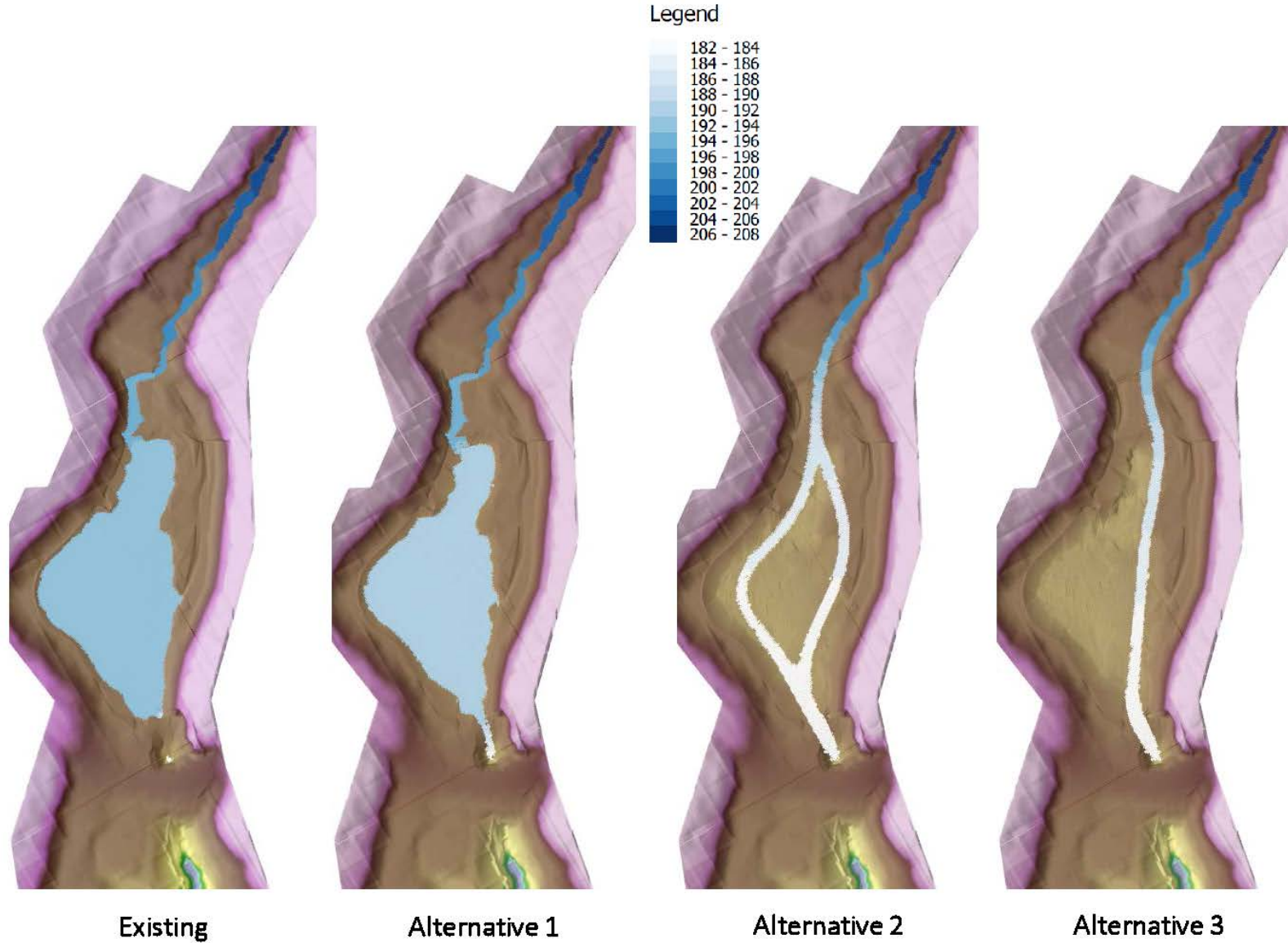


Figure 5. Modeled Boeing Creek Water Surface Elevations in the Project Area under Mean Annual Flow Conditions.

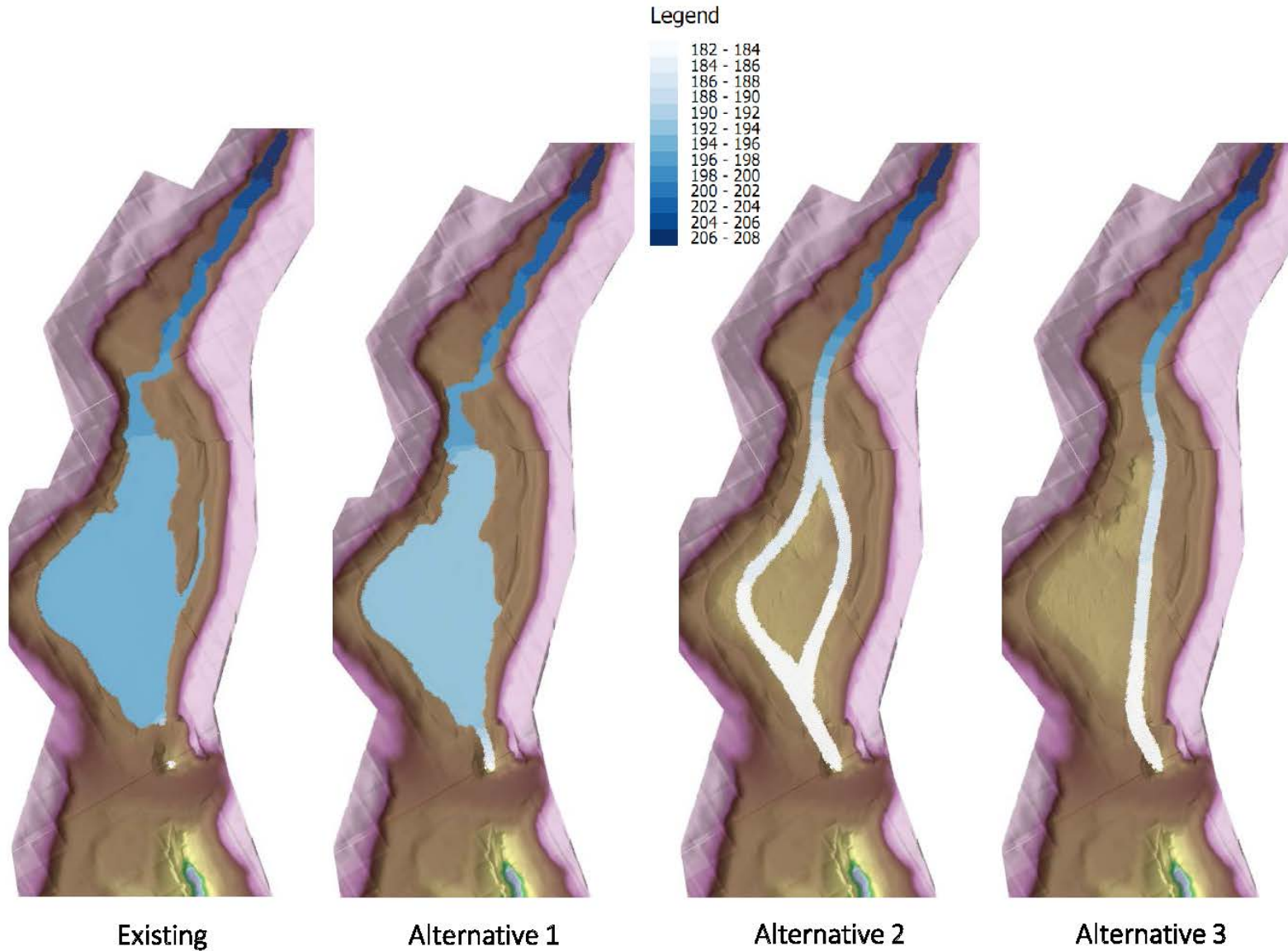


Figure 6. Modeled Boeing Creek Water Surface Elevations in the Project Area at the Peak of the 2-Year Recurrence Flood Flow.

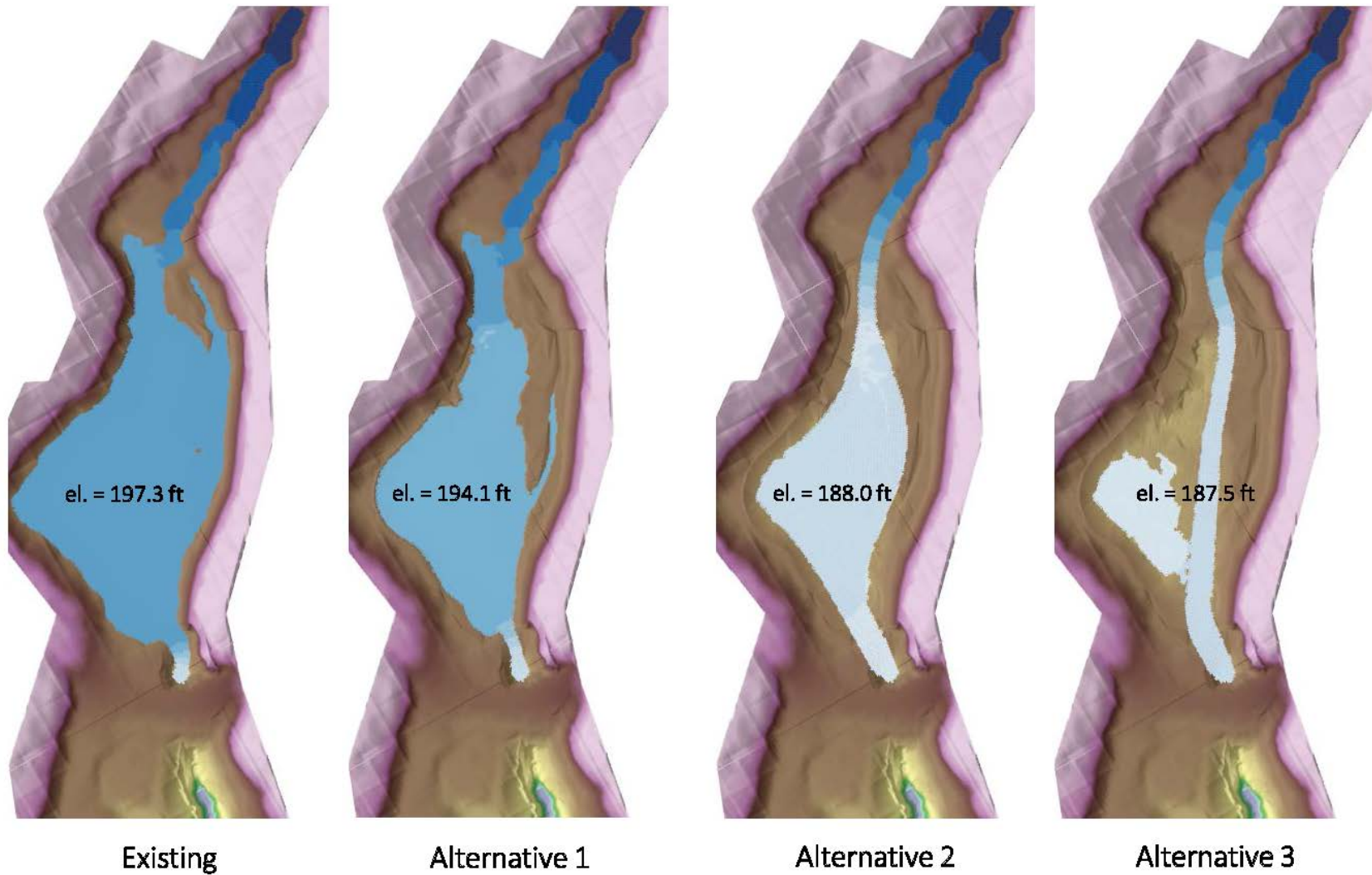


Figure 7. Modeled Boeing Creek Water Surface Elevations in the Project Area at the Peak of the 100-Year Recurrence Flood Flow.

Existing Conditions

The model results indicate that the lake outflow system is capable of conveying the entire 2-year flood event (with minor attenuation of the peak flow rate occurring in the lake), but the lake outflow system is overwhelmed in the 100-year flood event. Significant overtopping of the dam is simulated for the 100-year flood event. The lake may provide some flood flow storage and peak flow attenuation for flows greater than the 2-year flood.

Alternative 1

The Alternative 1 model results show that lowering the lake outlet elevation by 3 to 4 feet would lower the water surface elevation profile upstream of the dam by the equivalent amount. Widespread inundation would still occur similar to the existing lake, analogous to simply lowering the lake water surface elevation by 3 to 4 feet. However, that depth of inundation would lessen over time as the lake fills with sediment.

Lowering the lake outlet would result in increased flow velocities in the creek at the upstream entrance to the lake and at the dam spillway. In the 100-year flood event, the velocity in these areas was simulated to be in the range of 5 to 9 feet per second (fps), which is fast enough to initiate erosion of bare ground and ground cover vegetation. The high velocity flow over the dam during floods dictates that the spillway be designed to resist erosion, which is why Alternative 1 assumes a reinforced concrete spillway. The increased flow velocities in the creek near the entrance to the lake would be similar to existing flow velocities upstream and downstream of the project area. Thus, the new creek channel that would form in the existing lake bed under Alternative 1 would be able to function similar to the existing upstream and downstream channel sections.

At the entrance to the culverts under NW Innis Arden Way, the model results suggest flow velocities would increase and the direction of concentrated velocity would change. If Alternative 1 is selected for implementation, this issue should be evaluated further to assess scour and other erosion risks at the culverts, and corresponding mitigation measures to prevent culvert damage.

Alternative 1 would trigger slower flow velocities through the existing lake area compared to Alternatives 2 and 3. Therefore, sediment deposition would be expected in the remaining lake area until an equilibrium is reached and a channel is naturally cut through the existing lake bed.

A slight increase in the peak flow rate downstream of the dam was simulated for Alternative 1 for the 100-year flood, but this change is likely within the limitations and expected variability (“noise”) of the model. Minimal peak flow attenuation occurs in the lake during higher flood flows in the existing condition, as evidenced in the 100-year flood model results. This means that reduction or elimination of the lake storage volume will not notably affect peak flows downstream of NW Innis Arden Way.

Increased flow velocities at the upstream end of the lake were noted in the model results for Alternative 1. Higher velocities could induce channel bed erosion. Headcutting (lowering of the channel bed propagating in the upstream direction) could be an issue in that area until

the appropriate coarse sediment that is resistant to erosion can be delivered as described in the *Geomorphology* section below. Alternatively, bed grade control measures could be constructed in the vulnerable, upstream section of the channel to prevent headcutting.

Alternative 2

The Alternative 2 model results show inundation on the newly created floodplain roughly 2 feet deep with in-channel flow depths up to 6 feet in the 100-year flood event. The 2-year model results suggest that floodwaters would generally be contained in the new creek channel(s), whereas part of the intent of this alternative is to create frequently activated floodplain areas. Therefore, if Alternative 2 is selected for implementation, the floodplain elevation should be lowered more in design compared to what was modeled. The “dead” water storage in the lake area (water storage volume that is occupied before flood flow passes through the lake) would be eliminated and replaced with “live” storage in the active floodplain areas during moderate to extreme flood events. This effect would be greatest under Alternative 2, compared to the other alternatives, because it would create the largest amount of floodplain. The live storage would attenuate peak flow rates to some extent downstream of NW Innis Arden Way.

The model simulates maximum flow velocities on the order of 8 to 9 fps in the roughened channel area entering the existing lake footprint, and 1 to 6 fps in the channels through the existing lake area during the 100-year flood event. The variable velocity gradients in the floodplain area predicted for Alternative 2 also suggest an increase in hydraulic complexity that could increase sediment transport and overbank sediment deposition, and also diversify aquatic habitat. Given the lack of coarse sediment in the lake bed to resist erosion, coarse streambed gravels and cobble material would need to be imported to build a stable channel bed that would withstand high shear stresses when flood flows generate high velocities.

As with Alternative 1, the model results for Alternative 2 suggest flow velocities would increase and the direction of concentrated velocity would change approaching the upstream entrance to the culverts beneath NW Innis Arden Way. If Alternative 2 is selected for implementation, this issue should be evaluated further to assess scour and other erosion risks at the culverts, and corresponding mitigation measures to prevent culvert damage.

A slight decrease in the peak flow rate is predicted downstream of NW Innis Arden Way in the 100-year flood event, but not to an extent that would notably affect flooding of land along the creek banks or erosion of the banks by turbulent water.

Alternative 3

The Alternative 3 model results show limited floodplain activation on the left (south) bank with in-channel flow depths of about 6 feet at the peak of the 100-year flood, suggesting limited floodplain inundation and less potential off-channel habitat gain compared to Alternative 2. Similar but slightly lesser peak flow velocities were simulated for Alternative 3 in the 100-year flood event, compared to Alternative 2, in the steeper channel sections. Regardless, the design of the new and modified channel bed and banks would need to include durable elements that resist erosion during flood flows. Alternative 3 would result in slightly reduced peak flow downstream of NW Innis Arden Way in the 100-year flood event, but less of

a reduction than Alternative 2 because Alternative 3 would create less floodplain area to temporarily store floodwater upstream of the road.

Alternative 3 requires special consideration for channel bank design to maintain a predictable channel alignment because the current lake bed near the upstream end of the site is low enough that the new channel could shift location without durable confinement. The simulated flow depths and velocities in the creek channel where it enters the existing lake indicate that the right (west) bank of the modified channel could be vulnerable to erosion and flow overtopping it. This concern could be offset by inclusion of stout bank protection measures in that area, such as a wood crib structure or large rock to armor the bank and resist erosion.

GEOTECHNICAL INFORMATION

The two new borings advanced through the dam in September 2015 encountered fill overlying native glacial deposits or recent alluvium. A summary of soil characteristics in each boring follows.

- In boring B-1, located due south of the lake outlet structure on the downstream side of the dam crest, fill was encountered to a depth of about 10 feet, which consisted of variable soils including medium dense sand, silty sand with gravel, and medium stiff lean clay and sandy clay. The fill appears to be the material placed for construction of the dam. Below a depth of 10 feet, the boring encountered glacial deposits consisting of hard lean clay and very stiff to hard silt. Groundwater was encountered at a depth of approximately 9 feet.
- In boring B-2, on the west side of the dam, fill was encountered to a depth of about 10 feet and consisted of medium stiff to stiff sandy clay. The fill overlies recent alluvium, which was likely deposited in the historical drainage channel of Boeing Creek. The recent alluvium consisted of very loose silty sand to a depth of 17 feet over medium stiff fat clay to the bottom of the boring at 31.5 feet below ground surface. Groundwater was encountered at a depth of about 9 feet.

The soils encountered in the new borings are similar to those found in geotechnical borings reported in Shannon & Wilson (1995). Implications of the geotechnical findings for the alternatives are summarized below.

Alternative 1

Under Alternative 1, any soil removed from the dam would be hauled off site. The hauled soil would be suitable for backfill at another site. However, the soils are very moisture-sensitive due to the large amount of silt and clay content, so they will be difficult to place and properly compact if they become wet. Therefore, excavation, placement, and compaction of the excavated soil should be done during drier weather.

Alternative 1 would entail excavating an estimated 440 cubic yards of dam fill, and placement of less than 20 cubic yards of earth fill on the periphery of the new spillway.

Alternative 2

If desired, the materials comprising the dam fill could be reused on site for other purposes as part of constructing Alternative 2, such as creating mounds in the floodplain for diversifying growth conditions for vegetation plantings. For any dam fill that is hauled off site, considerations for that material are the same as described for Alternative 1.

As configured for purposes of this analysis, Alternative 2 would entail excavating an estimated 12,850 cubic yards of dam fill and (mostly) lake bed sediments, and placement of approximately 170 cubic yards of fill for the banks in some locations along the new stream channel.

Alternative 3

Alternative 3 has less potential for reuse of dam fill material on site compared to Alternative 2. For any dam fill that is hauled off site, considerations for that material are the same as described for Alternative 1.

As configured for purposes of this analysis, Alternative 3 would entail excavating an estimated 6,800 cubic yards of dam fill and (mostly) lake bed sediments, and placement of approximately 30 cubic yards of fill for the banks in some locations along the new stream channel. These volumes do not include excavation of the embankment beneath NW Innis Arden Way to remove and replace the culverts (which would result in net excess of soil to haul off site or reuse on site). They also do not include excavation or fill related to work in the channel downstream of NW Innis Arden Way that was not evaluated in detail.

GEOMORPHOLOGY

Current geologic and geomorphic conditions are well described in the Hidden Lake feasibility study (AltaTerra 2014) and earlier planning documents (King County 1995). As described in those works, the surficial geology of the area is typical of the Puget Lowland, being composed of a thick (200 feet) deposit of outwash sand, overlying a relatively thin unit of lacustrine silt and clay, on top of glacially overrun pre-Fraser glacial sediments. The outwash sand deposit generates relatively large landslides in the creek corridor immediately upstream of the lake and smaller slope sloughing downstream of NW Innis Arden Way. It contributes large volumes of sediment to the creek, much of which is fine grained (i.e., sand). The instability of the outwash sand upstream of the lake has been exacerbated by human disturbance and hydrologic changes due to development, as documented in AltaTerra (2014).

The geomorphology of Boeing Creek is reflective of this geologic pattern, with a relative decrease in channel slope through the easily erodible outwash sediments at the lake's current location. However, contrary to King County (1995), research performed for this analysis suggests that, if there had been a natural lake prior to the construction of the original Hidden Lake dam in the 1920s, it was quite small, because no lake is shown on the earliest maps of the area (GLO 1859). Approximately 800 feet downstream of NW Innis Arden Way is a 9-foot-tall dam made of sheet-pile, which was formerly used by the Seattle Golf Club for irrigation water supply. The creek channel is completely full of sediment just upstream of that dam, so

the dam no longer actively impounds sediment throughput, although it likely protects against erosion of private property along the right bank (facing downstream).

Downstream of Hidden Lake, the creek is deeply incised into the more competent and less erodible pre-Fraser sediments. In several locations in that reach, erosion has occurred down to well consolidated, pre-Fraser sediments (Figure 8). The channel slope is moderate through this reach down to the creek mouth at the Puget Sound shoreline.



Figure 8. Exposed Pre-Fraser Sediments in the Bed of Boeing Creek Downstream of the Seattle Golf Club Diversion Dam.

All three alternatives under consideration would increase sediment delivery, over time, to the Boeing Creek channel downstream of Hidden Lake. The character and volume of that sediment will vary depending on the alternative, as described in the *Sediment Transport* section below.

Currently, there are unstable slopes in many locations along Boeing Creek, both upstream and downstream of the lake. Examples include an area upstream of the lake in Boeing Creek Park caused by erosion from high storm flows, and an area downstream of the Seattle Golf Club diversion dam caused by channel incision that is a direct effect of sediment starvation due to sediment impoundment within Hidden Lake. Because the hydrology of the Boeing Creek basin

as a whole will not change significantly as a result of any of the three alternatives, such geomorphic patterns are expected to continue into the future.

The mode of ravine slope failure downstream of the Seattle Golf Club diversion dam may be changed by increased sediment delivery downstream of Hidden Lake, which would occur under any of the three alternatives. These downstream areas are currently at risk to slope failure because the creek channel continues to incise, heightening already tall, near vertical banks. The most affected areas have incised several feet within the last few decades. With increased sediment supply, the channel incision will slow and may even stop. However, the delivery of additional sediment, particularly bedload (consisting of gravel with minor amounts of coarse sand), will initiate deposition and ultimately lead to lateral channel migration in areas where the local slope is relatively low (less than a few percent). Channel migration could trigger bank instability and may initiate landslides. Most changes would likely occur downstream of the Seattle Golf Club diversion dam, particularly immediately downstream of the dam, because the channel profile in the reach between NW Innis Arden Way and the diversion dam is too steep to initiate sediment deposition and, thereafter, channel migration. Because the Boeing Creek channel is far from residences and other development downstream of the Seattle Golf Club diversion dam, such anticipated changes induced by any of the Hidden Lake alternatives are not expected to pose significant risk of slope failure affecting adjacent private development.

Sediment Transport

Basin Sediment Delivery Estimates

Sediment transport estimates developed over 20 years ago during design of King County's Hidden Lake Restoration Project (King County 1995) were significantly lower than the actual amount of sediment that was supplied to the lake after that project was completed. The City's lake dredging records indicate an average of 1,100 cubic yards of sediment deposition in Hidden Lake per year between 2002 and 2013 (AltaTerra 2014). The grain size character of the dredged sediment has been predominantly sand.

Using a modern sediment production model (Syvitski et al. 2003, Syvitski et al. 2005), total sediment load in the Boeing Creek basin is estimated to be approximately 2,500 cubic yards per year (Herrera 2016). This means that roughly half of the sediment entering Boeing Creek flow each year has been retained in Hidden Lake. The material that passes through the lake is wash load, the finest portion of suspended load. It is expected that finer-grained material, including some sand, remains in suspension during turbulent and higher-velocity flood flows, and passes through the lake in the existing condition.

Bedload transport volumes are much smaller. Based upon the relationship of bedload with suspended load, the Syvitski model yields a calculation of approximately 300 cubic yards per year of bedload in Boeing Creek. This volume is corroborated by AltaTerra (2014), which found creek channel widening (due to erosion from storm events after a former dam failed in one of the two primary tributaries upstream of the lake) equating to approximately 100 cubic yards of eroded creek bank soil per year. Currently, no bedload reaches the Hidden Lake outlet. The only bedload (primarily gravel) downstream of the dam has been scavenged by the creek as it has incised into older historical creek deposits in the middle of the ravine downstream of NW Innis Arden Way.

King County's documentation supporting the Hidden Lake Restoration Project (King County 1995) reveals that a justification for the environmental benefits of the project was reducing fine sediment deposition that hindered coho salmon spawning productivity in lower reaches of Boeing Creek. The fine sediment of most concern to coho salmon spawning gravels (i.e., fine sand, silt and clay) may pass through Hidden Lake in the current condition, and material of that size is increasingly being removed upstream of Hidden Lake via stormwater management practices that were not in place in the early 1990s. Although basin sediment supply and hydrologic extremes are still pronounced compared to predevelopment conditions in the basin, the effects of Hidden Lake on coho spawning habitat in lower Boeing Creek are less now than were stated more than 20 years ago (King County 1995).

Each of the three alternatives would deliver additional sediment to lower Boeing Creek downstream of NW Innis Arden Way, but in different ways. The following subsections describe the anticipated differences among the alternatives.

Alternative 1

Based upon the sediment volumes excavated in the lake reconstruction effort in the 1990s, it is expected that it will take between 5 and 10 years for the lake to be filled with sediment unless an extremely rare flood event occurs sooner. It would take longer than that for a well-developed, stable channel to re-establish in the lake bed under Alternative 1. Once a channel is re-established under Alternative 1, the former lake reach of the creek would continue to store significant quantities of sediment. The creek would mostly pass only suspended load until an equilibrium is reached wherein the creek's floodplain in the lake reach no longer has capacity to store sediment and bedload also passes farther downstream. In the interim until equilibrium channel conditions occur naturally, the landscape of the existing lake would exhibit many isolated, ephemeral pools and, possibly, many braided channels.

With Alternative 1, there is also a risk of a headcut developing and propagating upstream of the lake, as noted previously. The headcut risk would persist until a well-defined channel reforms and the creek profile stabilizes through the lake area. Some suspended sediment load would likely be stored for a longer period (for at least 20 years) in the lake reach as the floodplain aggrades. However, immediately following construction, much of the suspended sediment would be remobilized until a stable channel can form through the existing lake footprint.

Alternative 2

Of the three alternatives, Alternative 2 most closely mimics known predevelopment geomorphic conditions in the lake reach above NW Innis Arden Way. Because a channel would be constructed that connects the existing lake inlet to the culverts at NW Innis Arden Way, bedload transport through the lake reach would be enabled immediately after construction. Therefore, channel degradation downstream of the lake likely would be reduced, while sand supply to the nearshore areas of Puget Sound at the creek mouth would increase. Alternative 2 would also result in storage of some suspended sediment load in floodplain areas, particularly in the upstream portion of the existing lake where the channel slope would be flatter than in the downstream portion of the lake and dam area, when flows greater than a 2-year recurrence flood event activate floodplain areas.

Because the constructed channel gradient would be relatively steep at 4 percent or greater in parts of the site, significant engineering controls such as constructed boulder riffles and bank revetments would be required to prevent unwanted channel deformation. Such features are assumed in the conceptual design of this alternative.

Alternative 3

Like Alternative 2, Alternative 3 would immediately convey all bedload, as well as suspended sediment load, through the existing lake area to downstream reaches of Boeing Creek. Unlike Alternative 2, there would be essentially no capacity for storage of sediment in floodplain areas within the existing lake footprint. Most or all of the estimated 2,500 cubic yards of sediment supplied to the lake per year (Herrera 2016) would be transported downstream of NW Innis Arden Way. This additional sediment volume would likely trigger channel migration, particularly downstream of the Seattle Golf Club diversion dam, as described previously. Alternative 3 would result in the greatest benefits associated with sediment delivery in nearshore areas of Puget Sound within a few years of project construction, which would likely increase its salmon recovery grant funding potential because increased sediment supply to nearshore areas of Puget Sound is a goal of recovery planning for endangered Puget Sound Chinook salmon.

As with Alternative 2, the constructed channel gradient would be relatively steep in parts of the site, requiring significant engineering controls such as constructed boulder riffles and bank revetments to prevent unwanted channel deformation. Such features are assumed in the conceptual design of this alternative.

Large Woody Debris

Large woody debris is important in a healthy riverine and estuarine ecosystem. However, the production of large woody debris upstream of Hidden Lake in the Boeing Creek basin is extremely limited due to land development and stormwater control facilities. Within the Boeing Creek Park and Hidden Lake reaches of the creek, the supply of large woody debris is also limited, though less so, because of past disturbance and relative immaturity of the woody vegetation. Therefore, the supply of large woody debris is such that, even prior to the lake being re-established in the 1990s, the culverts under NW Innis Arden Way rarely clogged with large woody debris (King County 1995). More recent woody debris accumulation at the lake outlet manhole structure appears to be the result of beaver activity, as described in the following section.

Downstream of the Seattle Golf Club diversion dam, a significant amount of large woody debris is supplied to the creek (Figure 9). Most of the debris has been delivered in conjunction with past landslides, but ongoing landsliding indicates that the supply will be sufficient in the future for producing high quality instream habitat conditions in the downstream reach, despite the wood supply limitations from upstream.



Figure 9. Photograph of Large Woody Debris in Boeing Creek Downstream of the Seattle Golf Club Diversion Dam.

Beaver Activity

Beaver are present in the Hidden Lake area (Eric Gilmore, personal communication, November 29, 2015). Each of the three alternatives under consideration could result in modified beaver activity and associated effects on the geomorphic character of Boeing Creek within and downstream of the current Hidden Lake wetted area. Alternatives 1 and 2 could invite greater beaver activity in the current footprint of Hidden Lake because they would allow for ponding of water in floodplain areas and slower flow velocities. Alternative 3 would discourage beaver from using the current lake area because the steeper channel gradient would not be conducive to dam and lodge building by beaver. In general, where beaver dams persist, the increased woody debris in the stream provides beneficial habitat for fish and other aquatic species by diversifying the habitat types and hydraulic conditions (Malison et al. 2015).

HABITAT CHARACTERISTICS

Historical and Existing Wetlands

The earliest documentation of wetland conditions in the project area was obtained from the Hidden Lake Restoration Project report (King County 1995), which characterizes and classifies the wetlands as they existed at Hidden Lake in 1995, prior to the lake being completely dredged in 1997. Wetland classification was based on King County Code criteria from 1995. Three wetlands, called Wetlands A, B, and C, were identified along the edges of Boeing Creek within the present-day lake footprint (see figure in Appendix B). Wetland A was a Class III, riverine, palustrine, scrub-shrub wetland along the southwestern edge of Boeing Creek. Wetland B was a Class III, slope, palustrine, emergent and scrub-shrub wetland located along a steep bank on the southeast side of Boeing Creek. Wetland C was a Class II, riverine, palustrine, forested wetland located on both sides of Boeing Creek and throughout most of the floodplain.

To characterize present day conditions, Herrera consulted existing documentation and conducted a site reconnaissance. The National Wetlands Inventory (USFWS 2015), City of Shoreline wetland inventory (Shoreline 2015), and WDFW Priority Species and Habitat database (WDFW 2015b) indicate one wetland within the project area, which includes Hidden Lake and the vegetated areas around the open water. That wetland is classified as a depressional, palustrine, scrub-shrub, and seasonally flooded, diked/impounded wetland. The wetland is fed by water entering the depression from Boeing Creek and controlled by both the dam and an outfall structure that controls the water storage within the lake. Herrera's site reconnaissance confirmed the mapped conditions, identified additional forested and emergent wetland communities surrounding the lake, and identified a potential riverine, palustrine, scrub-shrub wetland at the north end of Hidden Lake along Boeing Creek. Additionally, Herrera noted potential slope wetlands along the southeastern portion of the lake, likely created by groundwater expressing from the steep slopes along City-owned park property.

The Watershed Company rated Hidden Lake as a Category III wetland (Hruby 2004; AltaTerra 2014). It is expected to remain a Category III wetland under the revised Ecology rating system (Hruby 2014) and will be confirmed during subsequent critical areas analysis as dam removal planning proceeds. Hidden Lake and the adjacent palustrine forested, scrub-shrub, and emergent wetlands are estimated to cover approximately 2 acres (Tetra Tech 2004; AltaTerra 2014). In its current condition, Hidden Lake provides water quality functions as the dam is a constricted outlet and the lake receives stormwater runoff from the contributing urbanized basin. It provides minor hydrologic functions as it stores water during storm events; and it provides habitat functions with an interspersed of habitats for fish and wildlife.

Boeing Creek

The Boeing Creek Basin Plan (Windward 2013) documents historical fish presence in Boeing Creek, fish species observed recently upstream and downstream of Hidden Lake, and fish passage barriers from Hidden Lake to the creek mouth at Puget Sound. Among the species that historically used and currently use the creek, coho salmon and cutthroat trout are considered to be target species of interest in the context of enhancing or restoring habitat

favorable to them in the alternatives discussed in this report. Chinook and chum salmon have also been found in the lower reach of the creek close to the mouth. Potential effects of the alternatives on those salmon species are important to consider. As discussed previously, the King County project that restored Hidden Lake to its current form in the mid-1990s used removal of fine sediments (trapped by the lake) and resultant benefits to salmon spawning in lower reaches of the creek as justification for the environmental benefits of the project.

Forage fish habitat has been lost extensively throughout Puget Sound because of shoreline armoring (Penttila 2007). Nearshore sediment starvation associated with shoreline armoring is particularly pronounced near the Boeing Creek mouth due to the near continuous riprap revetment associated with the BNSF rail line between Seattle and Everett. Forage fish are crucial to the food web that supports many marine species in Puget Sound (Penttila 2007). Herrera (2013) documented that potential intertidal forage fish (i.e., surf smelt and sand lance) spawning habitat is much greater than documented spawning in the nearshore reach that would be affected under any of the alternatives discussed in this report. Because documented forage fish spawning habitat is primarily near stream outlets, as they are the only areas that have the necessary sediment (WDFW 2015a), forage fish spawning habitat would likely be greatly expanded near the creek mouth if more sediment is allowed to move through the lake reach of Boeing Creek. The habitat expansion would be proportional to the amount of sediment passed through the lake reach, which varies amongst the alternatives, as described previously.

Effects of Alternatives on Habitats

Alternative 1

Hidden Lake provides open water habitat for fish, such as cutthroat trout, and waterfowl species. Under Alternative 1, the amount of open water habitat would decrease immediately as the lake level is lowered upon constructing the new dam spillway, and would decrease further over time as sediment fills the lake bed and Boeing Creek re-establishes a channel and vegetated wetlands in the floodplain, leading to formation of a higher functioning wetland and stream area. However, due to the urban nature of the Boeing Creek basin and the seed bank within the sediment settling in the lake bed, there is a high likelihood that nonnative and invasive species (i.e., weeds), such as reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*), would occupy the new floodplain areas and invade wetlands. While wetlands dominated by reed canarygrass perform water quality and hydrologic functions, the habitat value provided is low compared to an interspersed of native vegetation communities. Therefore, post-construction vegetation monitoring and management would yield a better ecological outcome under Alternative 1, including weed control measures and supplemental planting of native species. (Note that the cost estimate for this alternative (see Appendix C) accounts for these measures.) Overall, the habitat created under Alternative 1 would function higher than existing conditions.

Alternative 2

Alternative 2 is a controlled version of Alternative 1 in which the open water habitat in Hidden Lake would be manually converted to a complex wetland and stream area. Groundwater discharge into the new channel would occur a few feet above the constructed

channel bed in much of the site, which would provide a downstream habitat benefit of increased base flow due to shallow groundwater and surface water mixing, or hyporheic exchange, in the project area. Wetlands would be planted with native vegetation throughout the floodplain on both private and City-owned park property, and would be maintained to control the presence of invasive species. The combined wetland and stream habitat provided in Alternative 2 would be expected to function higher than that provided under Alternative 1 or 3.

Alternative 3

Alternative 3 would provide a high functioning stream habitat through the reach on City park property, but, because of the steep and deeper nature of the constructed channel, little to no wetland habitat could be re-established adjacent to the channel. The floodplain west of the constructed channel could be allowed to establish vegetation naturally, with potential for nonnative, invasive species establishing throughout that area. As with Alternative 1, proactive planting of the existing lake footprint west of the new creek channel and post-construction vegetation monitoring and weed management would yield a better ecological outcome. (Note that the cost estimate for Alternative 3 [see Appendix C] does not account for these measures because it assumes several private property owners would not be willing to have planting work done on their land.) Similar to Alternative 2, groundwater discharge into the new channel would occur a few feet above the constructed channel bed through much of the site, which would provide a downstream habitat benefit of increased base flow due to groundwater and hyporheic exchange in the project area. The hyporheic exchange under Alternative 3 would provide less benefit than that under Alternative 2 because there would be an overall lesser area of stream channel in which that process occurs.

CULTURAL RESOURCES

The cultural resources assessment (CRC 2015) found that "... given the steep topography of the area, dynamic erosional and depositional environment, historical logging, modern land development, and Hidden Lake and Boeing Creek environmental restoration activities the potential for encountering significant, intact archaeology is extremely low." Therefore, for the current phase of project planning, cultural resources do not have any bearing on the alternatives analysis.

PUBLIC INPUT

Input received from lakeside residents and the general public to date was used to shape the distinct features of the three alternatives presented in this report. Specific feedback obtained from the public is summarized below.

Private Property Owners

Lakeside residents voiced several concerns and opinions about the project and on the three alternatives, including:

- Concern about privacy and potential for trespassing, with elimination of the lake allowing park users or others to walk across the restored creek onto their land
- Concern for the loss of the lake and the unique habitats and aesthetic value it provides
- Concern about potentially reduced property values
- Potential for inadvertent impacts on mature trees west of the lake shoreline
- Potentially high cost of the project to the City and its taxpayers
- Potential for marshy conditions to develop in the existing lake bed that would attract mosquitoes and make it difficult to walk on the eastern edge of their property, which indicates less support for Alternative 2 as described herein
- Desire for ecological benefits to be achieved if the lake is converted to a different landform, which indicates less desire for Alternative 1 as described herein

General Public

Input received during the course of this alternatives analysis from the general public focused on the following topics:

- Effects of the project on the character of Boeing Creek downstream of Hidden Lake, and whether implementing the project means the City would pursue removing the Seattle Golf Club diversion dam
- A desire for improved trail(s) along the southeast side of the restored Boeing Creek channel in the existing lake bed
- Concern for the loss of a place that is popular for taking dogs to swim
- The unique ecological value that is contained within Shoreview/Boeing Creek Park and how the project could enhance that value; in relation to this, interest in placing informational signage about the ecological effects of the project

PERMITTING CONSIDERATIONS

Wetland and stream regulations imposed by state and federal agencies and the City of Shoreline will apply to any future activities planned for the project. Filling and other alteration of wetlands and streams is regulated under the federal Clean Water Act, the state Hydraulic Code, the State Environmental Policy Act (SEPA), and the City of Shoreline Critical Areas Code. The City of Shoreline Code also establishes required buffer widths for wetlands and streams. Federal, state, and City regulations require mitigation for impacts on wetlands and streams, and the City also regulates impacts on the buffers of wetlands and streams.

Clean Water Act Sections 404 and 401

Section 404 of the federal Clean Water Act regulates the placement or removal of soil or other fill, grading, or alteration (hydrologic or vegetative) in waters of the United States, including wetlands (33 USC 1344). The US Army Corps of Engineers (USACE) administers the permitting program under the act. The permits include nationwide (general) permits for specific types of projects (e.g., maintenance) involving small areas of fill, grading, or alteration. Individual permits are required for projects not covered under nationwide permits, including those with large areas of disturbance and/or quantity of fill. The USACE does not regulate wetland buffers.

Section 401 of the Clean Water Act requires that proposed dredge (removal) and fill activities permitted under Section 404 be reviewed and certified to ensure that such activities meet state water quality standards (i.e., Section 401 Water Quality Certification). In Washington State, this certification is administered by Ecology and applies to all Section 404 permits. The Section 401 Water Quality Certification is achieved for projects through the Section 404 nationwide permitting process subject to conditions of the nationwide permit. An Individual Section 401 Water Quality Certification and associated review is required if nationwide permit conditions are not met (e.g., greater than a half-acre of wetland disturbance) and typically in instances where an Individual Section 404 permit is required.

State Hydraulic Code

The Washington Department of Fish and Wildlife (WDFW) administers the Hydraulic Project Approval (HPA) program under the state Hydraulic Code, which was specifically designed to protect fish life. An HPA permit is required for projects that will use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state.

State Environmental Policy Act

The SEPA review process provides a way to identify possible environmental impacts that may result from government decisions. Information provided during the process helps agency decision makers, applicants, and the public understand how a proposal will affect the environment including, but not limited to, aquatic resources (e.g., lakes, wetlands), shorelines, earth, plants, and animals. Under SEPA, the City of Shoreline is the lead agency for the proposed project and is responsible for identifying and evaluating potential adverse environmental impacts.

City of Shoreline Critical Areas Code

The City of Shoreline passed a new Critical Areas Ordinance on December 7, 2015, which includes revisions to critical areas regulations contained in the City's Development Code (Chapter 20.80). Information pertaining to critical areas that is presented in this report is based on the revised code, which became effective in early 2016.

Wetlands

The City of Shoreline Code (20.80.320) requires that wetlands be classified according to the Ecology rating system (Hruby 2014). Buffers are required around each wetland in order to protect the wetland's functions and values. For each classification of wetland (Categories I through IV), the code specifies a base buffer width. This width is then adjusted according to habitat function level.

Hidden Lake is estimated to be a Category III wetland with a habitat score of 6 to 7 points, thus, the buffer would be 165 feet (City of Shoreline Code Table 20.80.330(A)(1)). The buffer width will be confirmed after the wetland is delineated and rated. In addition, a 15-foot building or impervious surface setback line is required from the edge of the wetland buffers.

Streams

Streams are classified under the Fish and Wildlife Habitat Conservation Area section of the City of Shoreline Code (20.80.270(B)(5)). Boeing Creek within the project area is likely to be classified as a Type F stream because it provides accessible fish habitat and/or because the project would allow fish access. Streams of this rating are required to have a 75-foot-wide buffer if only non-anadromous fish are present and a 115-foot-wide buffer if anadromous fish are present. The buffer is measured from the ordinary high water mark on each side of the stream (City of Shoreline Code Table 20.80.280(1)). In addition, a 15-foot building or impervious surface setback line is required from the edge of the stream buffers.

PERMITTING COMPLEXITY OF ALTERNATIVES

Project activities undertaken for any of the three alternatives include clearing and grading and working within critical areas or critical area buffers, which will require several potential permits from federal and state regulatory agencies and the City of Shoreline. Each alternative would require, at a minimum, a Clean Water Act Section 404 permit from USACE, an HPA from WDFW, a SEPA threshold determination from the City of Shoreline, a critical areas special use permit from the City of Shoreline, and onsite restoration of temporary impacts.

Several factors make permitting less complex for all three alternatives, including the lack of presence of species listed under the federal Endangered Species Act and an anticipated determination of non-significance (DNS) or mitigated DNS on environmental elements analyzed under SEPA. The complexity of permitting for each alternative differs in the way each project would comply with Clean Water Act Section 404, City of Shoreline code, and the mitigation that may be required for impacts on wetlands and buffers.

Alternative 1

Alternative 1 would likely be covered under USACE Nationwide Permit 27 for aquatic habitat restoration, establishment, and enhancement activities. Removal or abandonment of the outlet structure combined with cessation of lake dredging would promote re-establishment of stream and wetland habitat and naturally occurring riverine wetland processes that result in a net increase in aquatic resource functions and services.

The invert elevation of the artificial outlet located at the downstream end of Hidden Lake currently regulates the hydrologic connectivity of the vegetated wetlands along the perimeter of the lake. The concrete spillway that would be constructed as part of Alternative 1 would replace the function of the outlet structure, which would be abandoned in place. A lower invert elevation associated with the concrete spillway would lower the water table of the lake, which could drain portions of existing wetlands at the perimeter of the lake, thereby converting them to uplands. However, according to longstanding practice and the currently proposed rule defining Waters of the US under the Clean Water Act, those wetlands may not be regulated (i.e., jurisdictional) because they are supported by water that is impounded by artificial means (Federal Register 2014-07142). Furthermore, according to City of Shoreline Code 20.80.310, wetlands do not include those artificial wetlands intentionally created from non-wetland sites. Existing wetlands along the southeast edge of the lake with hydrology supported by seeps are not expected to be affected by Alternative 1.

However, regardless of wetland jurisdiction, as sediment fills in the lake and vegetation colonizes, Alternative 1 is anticipated to result in re-establishment of wetlands, contributing to an overall increase in wetland area that is equivalent to or greater than the area of wetlands delineated prior to restoration of the lake in the mid-1990s. As a result, in accordance with federal and state regulations, and City of Shoreline code, Alternative 1 would result in no net loss of wetland functions and area; therefore, additional compensatory mitigation would not likely be required.

Alternative 2

Similar to Alternative 1, Alternative 2 would also likely be covered under USACE Nationwide Permit 27 for aquatic habitat restoration, establishment, and enhancement activities. In addition to removal or abandonment of the lake outlet structure, project activities include re-establishment of stream and wetland conditions that would result in net increases in aquatic resource functions and services.

Alternative 2 would involve creating low gradient channels with low-lying banks through the existing lake footprint with a high groundwater table that supports re-establishment of saturated wetland conditions during low flows and occasional overbank flooding of wetlands during high flows. Similar to Alternative 1, Alternative 2 is anticipated to result in re-establishment of wetlands that contributes to an overall increase in wetland area that is equivalent to or greater than the area of wetlands delineated prior to restoration of the lake in the mid-1990s. As a result, in accordance with federal and state regulations, and City of Shoreline code, Alternative 2 would result in no net loss of wetland functions and area; therefore, additional compensatory mitigation would not likely be required.

Alternative 3

Compared to Alternatives 1 and 2, Alternative 3 could be more difficult to obtain coverage under USACE Nationwide Permit 27, in which case an Individual 404 Permit may be necessary. USACE Nationwide Permit 27 requires projects to provide an overall lift in wetland and stream functions. Alternative 3 would likely result in an overall decrease in wetland area and functions, while Alternatives 1 and 2 would provide the same or more ecological functions than under existing conditions.

Alternative 3 would increase aquatic resource functions associated with enabling fish passage upstream of NW Innis Arden Way and restoring Boeing Creek throughout the footprint of the existing lake. However, due to the depth of the re-established channel, a lower groundwater table is less likely to support re-establishment of adjacent wetlands, which require saturated soil conditions. In addition, removing or abandoning the existing lake outlet structures and deepening the channel profile beneath NW Innis Arden Way could have a larger effect of draining existing wetlands than Alternatives 1 and 2. (Existing wetlands along the southeast edge of the lake with hydrology supported by seeps would not likely be affected.) Therefore, Alternative 3 would likely result in an overall decrease in wetland area and functions when compared to existing conditions and conditions prior to restoration of the lake in the mid-1990s. As a result, in accordance with federal and state regulations, and City of Shoreline code, Alternative 3 could require compensatory mitigation for wetland impacts. The design of Alternative 3 does not include constructing wetlands on site; therefore, offsite mitigation may be required for project impacts on wetlands and buffers. (Note that the cost estimate for this alternative [see Appendix C] does not account for offsite wetland mitigation.)

To support coverage under USACE Nationwide Permit 27 and eliminate the need to provide compensatory mitigation, the grading plan for Alternative 3 could be revised to include additional excavation of low-lying bench habitat along the west side of the channel that supports wetland re-establishment and, therefore, result in no net loss of wetland area and functions when compared to existing conditions. Doing so would extend the construction area into private properties on the west side of the site.

COST

Estimated costs for each alternative are tabulated in Appendix C. The estimates are planning-level estimates suitable for comparing the alternatives to each other and for planning approximate project design, permitting, and construction costs. Regardless of the alternative selected by the City, cost estimates would be refined as more is learned about the specific configuration of the proposed project and regulatory agencies provide input on wetland mitigation requirements.

MAINTENANCE IMPLICATIONS

Alternative 1

Alternative 1 would require a minor amount of maintenance attention from the City. However, this maintenance would be critical to prevent damage to the fill prism supporting NW Innis Arden Way during flood events. Maintenance activities would be focused on keeping the Hidden Lake dam spillway clear of debris, plus occasional inspections of the culverts beneath NW Innis Arden Way. The level of maintenance activity under Alternative 1 would be comparable to current maintenance at the site, excluding sediment dredging. To support permitting of this alternative, it may also be necessary to monitor and maintain areas where vegetation re-establishes within the prior lake footprint to prevent the spread of weeds.

Alternatives 2 and 3

Alternatives 2 and 3 would require greater maintenance attention from the City than Alternative 1. Additional maintenance associated with these two alternatives would be related to expected permit requirements to ensure planted vegetation survival, to control invasive weed growth in the existing lake footprint, and to ensure that the constructed stream channel is functioning as intended. The inspection and maintenance needs for these three purposes would generally be focused within the first 5 to 10 years following construction. Thereafter, maintenance needs would likely be minimal.

COMPARISON OF ALTERNATIVES

Several evaluation criteria were used to compare the alternatives. They are listed in Table 1. The results of this comparison are informative for considering how a preferred alternative could involve a combination of features and be a hybrid of the distinct alternatives presented in this report.

Criteria	Alternative 1	Alternative 2	Alternative 3
Cost	\$680,000	\$2,350,000 ^a	\$5,200,000 ^b
Required Participation of Several Adjacent Private Property Owners	No	Yes	No
Park Uses and Values	Low	High	High
Wetland Mitigation Likely Required	No	No	Yes
Enables Fish Passage	No	No ^c	Yes
Other Habitat Benefits in the Project Area (e.g., waterfowl, forest, wetlands, amphibians, beaver)	Low	High	Medium
Habitat Benefits Due to Suspended Sediment Loading Near Mouth of the Creek	Low	Medium	High
Downstream Gravel Supply	Low (eventual)	High (immediate)	High (immediate)
Predictability of Native Plant Establishment in Project Area	Low	High	Medium
Maintenance Needs for Safe Conveyance of Flood Flows and Sediment	High	Medium	Low
Relative Grant Funding Attractiveness	Low	Medium ^d	High
Permitting Complexity	Medium	Medium	High

^a If the culverts beneath NW Innis Arden Way were replaced as part of this alternative to allow fish passage, the total cost would increase to approximately \$5,550,000.

^b The new box culvert or bridge beneath NW Innis Arden Way would require temporary closure of roadway traffic to excavate into the deep earth fill prism underlying the existing roadway. The deep excavation and associated traffic control requirements are significant cost components of Alternative 3.

^c Fish passage could be achieved with Alternative 2 if the culverts beneath NW Innis Arden Way were replaced as under Alternative 3.

^d Grant funding attractiveness would be rated high for Alternative 2 if fish passage improvements were included in it.

REFERENCES

- AltaTerra. 2014. Hidden Lake Management Plan Feasibility Study. Prepared for City of Shoreline by AltaTerra Consulting LLC, Seattle, Washington.
- Barnard, R.J., J. Johnson, P. Brooks, K.M. Bates, B. Heiner, J.P. Klavas, D.C. Ponder, P.D. Smith, and P.D. Powers. 2013. Water Crossings Design Guidelines, Washington Department of Fish and Wildlife, Olympia, Washington.
<<http://wdfw.wa.gov/hab/ahg/culverts.htm>>.
- Brinson, M.M. 1993. A Hydrogeomorphic Classification for Wetlands. Technical Report WRP-DE-4. US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. August 1993.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Publication FWS/OBS-79/31. US Department of the Interior, Fish and Wildlife Service, Office of Biological Services.
- CRC. 2015. Cultural Resources Assessment for the Hidden Lake Dam Removal Project. Prepared for Herrera Environmental Consultants, Inc. by Cultural Resource Consultants, Inc., Bainbridge Island, Washington.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. US Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi. January 1987.
- Environmental Laboratory. 2010. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region. Technical Report TR-08-13. US Army Corps of Engineers, Engineer Research and Development Center, Wetlands Regulatory Assistance Program, Vicksburg, Mississippi.
- GLO. 1859. Township No. 26 North, Range No. 3 East Willamette Meridian. General Land Office.
- Herrera. 2013. Data Compilation Report for the WRIA 8 Beach Nourishment Project: Task 1 Memorandum. Prepared for King County Water and Land Resources Division and Snohomish County Surface Water Management Division by Herrera Environmental Consultants, Inc., Seattle Washington. March 5, 2013.
- Herrera. 2016. Hidden Lake Dam Removal Project Hydrologic, Hydraulic, and Sediment Transport Analyses. Prepared for City of Shoreline by Herrera Environmental Consultants, Inc., Seattle, Washington.
- Hruby, T. 2004. Washington State Wetland Rating System for Western Washington—Revised. Washington State Department of Ecology Publication 04-06-025. August 2004.

- Hruby, T. 2014. Washington State Wetland Rating System for Western Washington: 2014 Update. Washington State Department of Ecology, Olympia, Washington. Publication #14-06-029. October 2014.
- King County. 1995. Hidden Lake Restoration Project. King County Surface Water Management Division. July 11, 1995.
- King County, 2015a. King County Hydrologic Information Center Gage Metadata 04j - Boeing Creek off Beach DR Stream Gauge.
<http://green2.kingcounty.gov/hydrology/GaugeMetaData.aspx?G_ID=3>.
- King County, 2015b. King County Hydrologic Information Center Gage Metadata 04a - Boeing Creek below NW 175th St. Stream Gauge.
<http://green2.kingcounty.gov/hydrology/GaugeMetaData.aspx?G_ID=73>.
- King County, 2015c. King County Hydrologic Information Center Gage Metadata 04e - Boeing Creek below Boeing Dam Stream Gauge.
<http://green2.kingcounty.gov/hydrology/GaugeMetaData.aspx?G_ID=77>.
- Malison, R.L., L.A. Eby, and J.A. Stanford. 2015. Juvenile salmonid growth, survival, and production in a large river floodplain modified by beavers (*Castor canadensis*). Canadian Journal of Fisheries and Aquatic Sciences 72(11):1639-1651.
- Penttila, D. 2007. Marine Forage Fishes in Puget Sound. Puget Sound Nearshore Partnership Report No. 2007-03. Published by Seattle District, US Army Corps of Engineers, Seattle, Washington.
- Shannon & Wilson. 1995. Geotechnical Engineering Report: Hidden Lake Restoration Project, King County, Washington. Prepared for R.W. Beck by Shannon & Wilson, Inc., Seattle, Washington.
- Shoreline, City of. 2015. Wetland Inventory Map. City of Shoreline Online GIS. Accessed August 12, 2015. <<http://www.cityofshoreline.com/government/departments/public-works/gis>>.
- Syvitski, J.P.M., A.J. Kettner, S.D. Peckham, and S.J. Kao. 2005. Predicting the Flux of Sediment to the Coastal Zone: Application to the Lanyang Watershed, Northern Taiwan. Journal of Coastal Research 21(3):580-587.
- Syvitski, J.P.M., S.D. Peckham, R. Hilberman, and T. Mulder. 2003. Predicting the Terrestrial Flux of Sediment to the Global Ocean: A Planetary Perspective. Sedimentary Geology 162(1-2):5-24.
- Tetra Tech. 2004. Boeing Creek Basin Characterization Report. Prepared for City of Shoreline by Tetra Tech/KCM, Inc.
- USFWS. 2015. National Wetlands Inventory wetlands maps. Accessed December 1, 2015. <<http://www.fws.gov/wetlands/index.html>>.
- Windward. 2013. Boeing Creek Basin Plan. Prepared for City of Shoreline by Windward Environmental, Inc., Osborn Consulting Group, and The Watershed Company. March 2013.

WDFW. 2015a. SalmonScape mapping system. Washington Department of Fish and Wildlife. Accessed December 2, 2015. <<http://wdfw.wa.gov/mapping/salmonscape/index.html>>.

WDFW. 2015b. Priority Species and Habitat Database. Provided by Washington Department of Fish and Wildlife. November 30, 2015.

APPENDIX A

Geotechnical Exploration Information

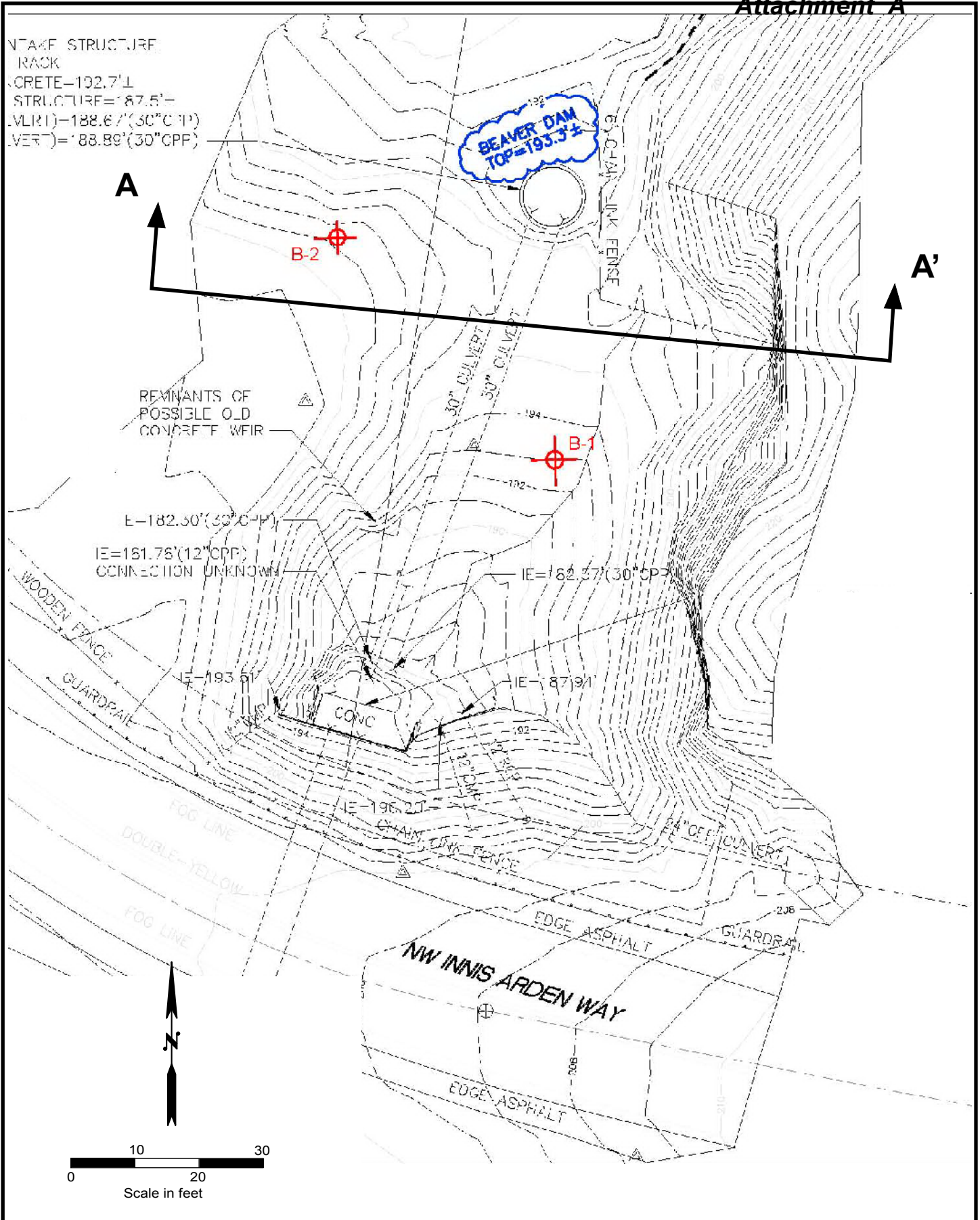


FIGURE 1
Site Plan

October 2015



PERRONE CONSULTING, INC., P.S.
Project No. 15126

8a-78

Hidden Lake Dam Removal
for Herrera Environmental Consultants

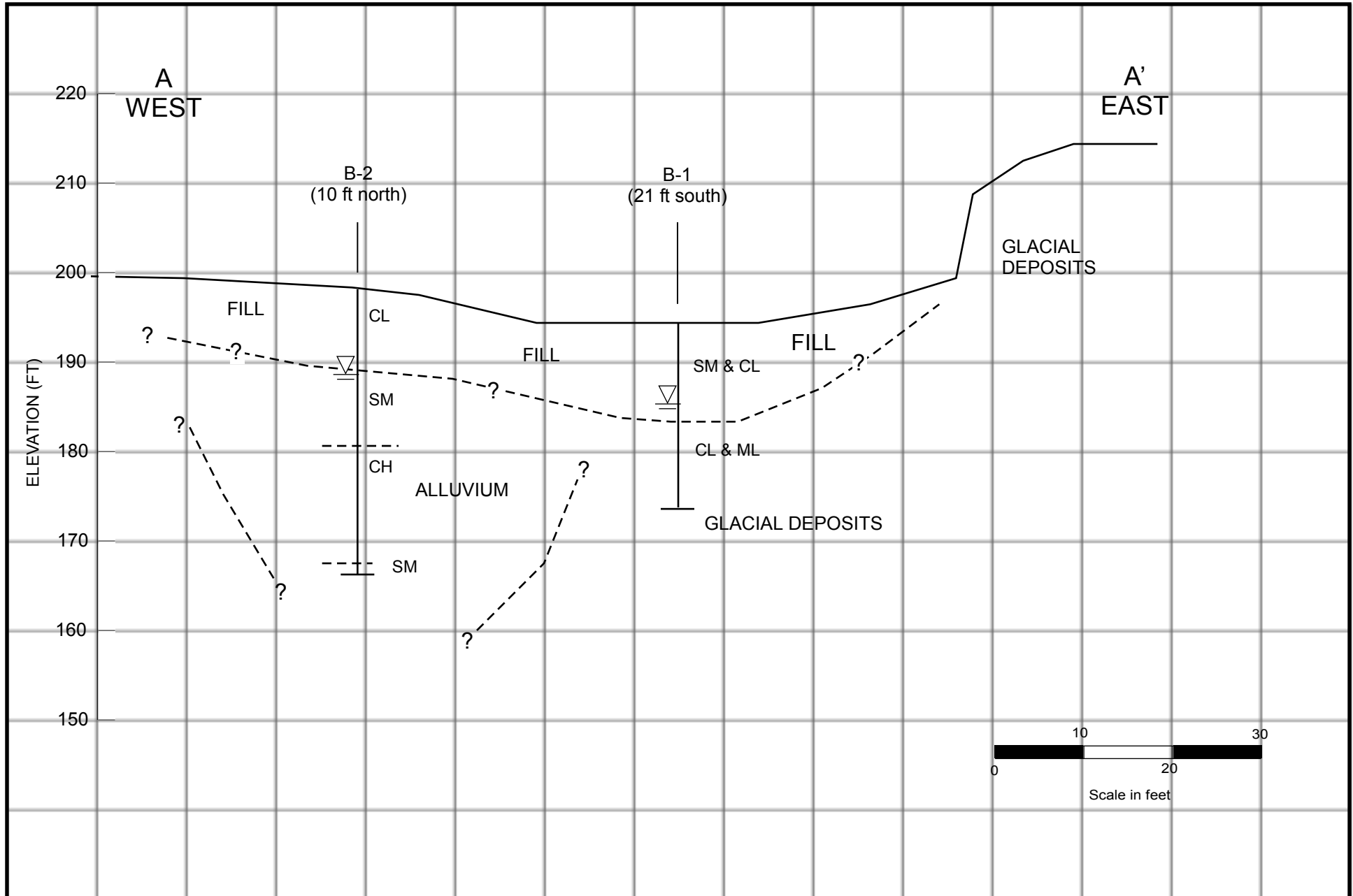


FIGURE 2

Subsurface Profile Section A-A'

October 2015



PERRONE CONSULTING, INC.

11220 Fieldstone Lane NE
Bainbridge Island, WA 98110
Telephone: (206) 778-8074

Key to Log of Boring

Sheet 1 of 1

**Project: Hidden Lake Dam Removal
Shoreline, Washington**

UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL CHART

MAJOR DIVISIONS		SYMBOLS	DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS LITTLE OR NO FINES	GW Well-graded gravels, gravel-sand mixtures, little or no fines
		LITTLE OR NO FINES	GP Poorly graded gravels, gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES	GM Silty gravels, gravel-sand-silt mixtures
	SAND AND SANDY SOILS	CLEAN SANDS LITTLE OR NO FINES	SW Well-graded sands, gravelly sands, little or no fines
		LITTLE OR NO FINES	SP Poorly graded sands, gravelly sands, little or no fines
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES	SM Silty sands, sand-silt mixtures
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML Inorganic silts, very fine sands, rock flour, silty/clayey fine sands or clayey silts of slight plasticity
		LIQUID LIMIT LESS THAN 50	CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		LIQUID LIMIT LESS THAN 50	OL Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silt
		LIQUID LIMIT GREATER THAN 50	CH Inorganic clays of high plasticity, fat clays
		LIQUID LIMIT GREATER THAN 50	OH Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat, humus, swamp soils with high organic content

NOTE: DUAL SYMBOLS USED FOR BORDERLINE CLASSIFICATIONS

Abbreviations

AL	Atterberg Limits
C	Consolidation
DS	Direct Shear
HA	Hydrometer Analysis
LL	Liquid Limit
LV	Laboratory Vane Shear
N	Number of hammer blows for last 12 inches driven
OVA	Organic Vapor Analyzer
Pc	Constant Head Permeability
Pf	Falling Head Permeability
PI	Plasticity Index
PP	Pocket Penetrometer
SA	Sieve Analysis
SG	Specific Gravity
TV	Torvane Shear
TX	Triaxial Shear

Sampler Symbols

	2-inch-O.D. Split Spoon Sampler Driven with 140-lb Hammer and 30-inch Drop (SPT)
	3-inch-O.D. Split Spoon Sampler with Brass Rings Driven with 140-lb Hammer and 30-inch Drop
	2-inch-O.D. Split Spoon Sampler Driven with 140-lb Hammer and 18-inch Drop
	Grab Sample
	3-inch-O.D. Shelby Tube Sampler

Piezometer Symbols

	Pipe in cement grout		Pipe in filter pack
	Pipe in bentonite-cement		Slotted pipe in filter pack
	Pipe in bentonite seal		Vibrating wire piezometer

Groundwater Level Symbols

	Water level at time of drilling (ATD)
	Water level measured in piezometer

General Notes

- Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions at other locations or times.
- Soil descriptions are recorded in the following order: SOIL CLASSIFICATION (USCS Symbol), relative density or consistency, color, moisture, plasticity or gradation, angularity, minor constituents, additional comments (organics, odor, etc.) [GEOLOGIC UNIT].

Blow Count / Density and Consistency Relationship

Coarse-Grained Soils		Fine-Grained Soils	
Relative Density	N, SPT Blows / Foot	Relative Consistency	N, SPT Blows / Foot
Very loose	0 - 4	Very soft	<2
Loose	5 - 10	Soft	2 - 4
Medium dense	11 - 30	Medium stiff	5 - 8
Dense	31 - 50	Stiff	9 - 15
Very dense	>50	Very Stiff	16 - 30
		Hard	>30

Minor Descriptors

Trace clay, silt, sand, gravel	<5%	Dry	Absence of moisture, dusty
Few clay, silt, sand, gravel	5 - 10%	Moist	Damp but no visible water
Little clay, silt, sand, gravel	15 - 25%	Wet	Visible free water, from below the water table
Some clay, silt, sand, gravel	30 - 45%		

Moisture Content

Report: VP SOIL LOG KEY; File: HIDDENLAKE.GPJ; PCI #15126; 10/3/15



PERRONE CONSULTING, INC.

11220 Fieldstone Lane NE
Bainbridge Island, WA 98110
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Log of Boring B-1

Sheet 1 of 1

Project: Hidden Lake Dam Removal Shoreline, Washington

Borehole Location: **41 feet due south of dam outlet structure**
Drilling Contractor: **Geologic Drill Exploration, Inc.**
Drilling Method: **Hollow-Stem Auger**
Drill Rig Type: **Diedrich D-50 with 7-inch-OD auger**

Date(s) Drilled: **September 1, 2015**
Logged By: **V. J. Perrone**
Total Depth of Borehole: **19.0 feet**
Surface Elevation / Datum: **193 ft / NAVD88**

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Lab Tests	Moisture Content, %	Dry Unit Weight, pcf	REMARKS
		Type Number	Blows per 6 inches (N)	Recovery, %						
0					Organic forest duff					
					COBBLES to 6 inches, angular [FILL]					
					POORLY GRADED SAND WITH SILT (SP-SM), brownish gray, moist, fine to medium sand, few fines [FILL]					
190	1	1	8-12-14 (26)	44	LEAN CLAY (CL), very stiff, gray, moist [FILL]					
5	2	2	6-8-8 (16)	33	SILTY SAND WITH GRAVEL (SM), medium dense, gray, moist, fine to coarse sand, some angular gravel, little fines [FILL]					
185	3	3	9-8-10 (18)	17	SANDY LEAN CLAY WITH GRAVEL (CL), very stiff, gray, moist, little fine to coarse sand, little angular gravel [FILL]					
10	3A	3A		33	↳ Becomes brown, wet, increased gravel					Redrive 7.5-10 ft with D&M sampler; piece of wire in sample. Drive another D&M 10-11 ft for more sample; recover 12 inches of pea gravel (slough?).
	4	4	6-12-14 (26)	67	LEAN CLAY (CL), hard, gray, moist [GLACIAL DEPOSIT]					PP>4.5 tsf
180	5	5	10-13-17 (30)	67	SILT (ML), very stiff to hard, gray, moist, nonplastic, massive [GLACIAL DEPOSIT]					
15										
175	6	6	10-14-18 (32)	100	LEAN CLAY (CL), hard, gray, moist [GLACIAL DEPOSIT]					PP>4.5 tsf
20					Bottom of boring at depth of 19.0 feet Groundwater level at 9.1 feet in open hole after drilling. Borehole backfilled with bentonite chips.					
170										
25										
165										
30										

Report: VP SOIL LOG; File: HIDDENLAKE.GPJ; PCI#15126; 10/3/15



PERRONE CONSULTING, INC.

11220 Fieldstone Lane NE
 Bainbridge Island, WA 98110
 Telephone: (206) 778-8074

Log of Boring B-2

Sheet 1 of 2

Project: Hidden Lake Dam Removal Shoreline, Washington

Borehole Location: **7 feet south, 33 feet west of dam outlet structure**
 Drilling Contractor: **Geologic Drill Exploration, Inc.**
 Drilling Method: **Hollow-Stem Auger**
 Drill Rig Type: **Diedrich D-50 with 7-inch-OD auger**

Date(s) Drilled: **September 1, 2015**
 Logged By: **V. J. Perrone**
 Total Depth of Borehole: **31.5 feet**
 Surface Elevation / Datum: **198 ft / NAVD88**

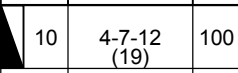
Elevation, feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Lab Tests	Moisture Content, %	Dry Unit Weight, pcf	REMARKS
		Type Number	Blows per 6 inches (N)	Recovery, %						
0					Organic forest duff SILTY SAND WITH GRAVEL (SM) [FILL]				Near-surface soil logged from cuttings.	
195	1	4-3-3 (6)	100		SANDY LEAN CLAY (CL), medium stiff, brownish gray, moist, low to medium plasticity, little fine to coarse sand, few gravel [FILL]					
	5	4-5-5 (10)	100		↓ Becomes stiff, with trace organic pieces					
190	3	4-5-6 (11)	100							
	10	2-1-1 (2)	100		SILTY SAND (SM), very loose, gray, wet, fine sand, some fines [ALLUVIUM]					
	5	3-2-3 (5)	56		↓ Becomes loose, fine to medium sand, little fines					
	15	5-4-4 (8)	78		← Tree root in tip of sampler					
180	7	1-2-4 (6)	67		FAT CLAY WITH SAND (CH), very stiff, gray, moist, little sand and gravel [ALLUVIUM]				PP=2.5 tsf	
	20	1-2-2 (4)	100		↓ Becomes medium stiff to stiff, no gravel				PP=0.75 tsf PP=1.5 tsf	
175										
	25	2-4-1 (5)	89		↓ Becomes soft ← Wood in sampler shoe				PP=0.25 tsf	
170										
30					↓ Becomes stiff					

Report: VP SOIL LOG; File: HIDDENLAKE.GPJ; PCI#15126; 10/3/15

**Project: Hidden Lake Dam Removal
Shoreline, Washington**

Log of Boring B-2

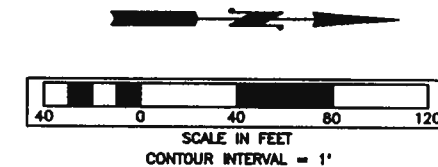
Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Lab Tests	Moisture Content, %	Dry Unit Weight, pcf	REMARKS
		Type Number	Blows per 6 inches (N)	Recovery, %						
30		10	4-7-12 (19)	100		FAT CLAY WITH SAND (CH) [ALLUVIUM] (continued) SILTY SAND (SM), medium dense, gray, moist, fine sand [ALLUVIUM]				PP=1.5 tsf
165						Bottom of boring at depth of 31.5 feet Groundwater not encountered at time of drilling. Borehole backfilled with bentonite chips.				
35										
160										
40										
155										
45										
150										
50										
145										
55										
140										
60										
135										
65										

Report: VP SOIL LOG; File: HIDDENLAKE.GPJ; PCI#15126; 10/3/15

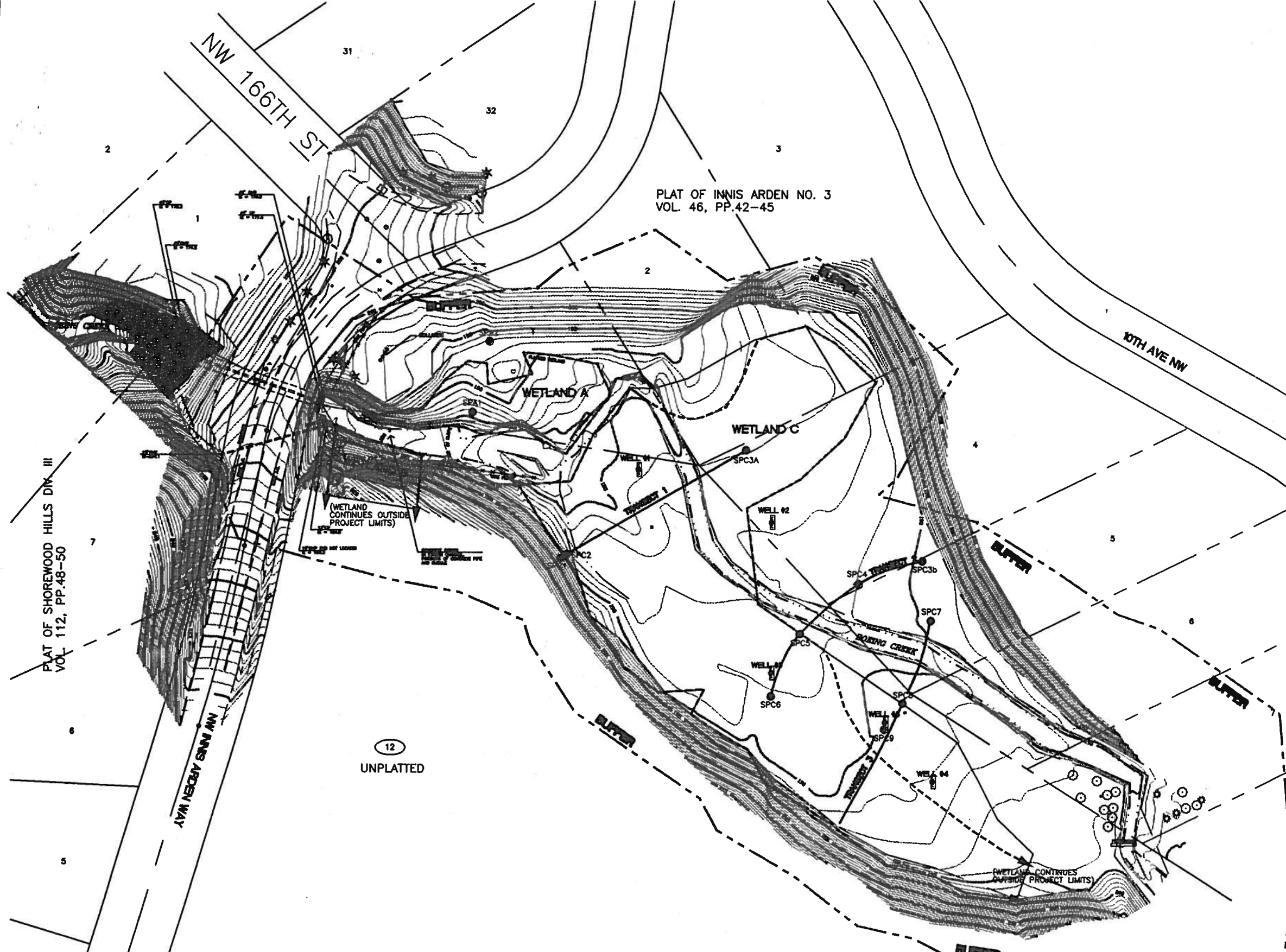
APPENDIX B

Wetlands Delineated by King County for Hidden Lake Restoration Project



LEGEND

WETLAND BOUNDARY	---
WETLAND BUFFER	- - - -
STREAM ORDINARY	— · — · —
HIGH WATER MARK (OHWM)	— · —
TRANSECT	—
SOIL PIT	⊙
GROUND WATER MONITORING WELL	⊕



PLAT OF SHOREWOOD HILLS DIV. III
VOL. 112, PP. 48-50

PLAT OF INNIS ARDEN NO. 3
VOL. 46, PP. 42-45

12
UNPLATTED


 KING COUNTY DEPARTMENT OF PUBLIC WORKS
Paul Tonoko, Director
SURFACE WATER MANAGEMENT DIVISION

FIGURE 5
PROJECT PLAN AND SENSITIVE AREAS

HIDDEN LAKE
KING COUNTY, WASHINGTON

APPENDIX C

Planning-Level Cost Estimates

Engineering Cost Estimate for Conceptual Design - Alternative 1

Project: Hidden Lake Dam Removal
 Herrera Project #: 15-05984-000
 Client: City of Shoreline

Date Modified: 12/9/2015
 Spreadsheet by: M. Beggs
 Checked by: I. Mostrenko, M. Ewbank
 Latest Date Checked: 1/6/2016

Alternative 1

Bid Item #	Spec Section	Item Description	Quantity	Unit	Unit Cost	Price	Total Price	Comments
		Mobilization	1	LS	\$ 20,300.00		\$ 20,300.00	8% of construction subtotal (Div 2 - Div 8 work items)
		Temporary Erosion and Sediment Control	1	LS	\$ 21,700.00		\$ 21,700.00	Assumes 10% of all other items except water management
		Water Management	1	LS	\$ 14,600.00		\$ 14,600.00	Assumes only pumping prior to construction, \$3000/month pump and hose rental, \$10/hour operation (2.8 gals/hour), assumes 6-inch pump continuously operating for 15 days, +20% for logistics and maintenance (From Port Susan). Assuming creek at low flow (0.2 cfs)
		Traffic Control	1	LS	\$ 8,000.00		\$ 8,000.00	comparable to McAleer Creek/Goheen project bids
		Stabilized Construction Entrance	1	EA	\$ 2,500.00		\$ 2,500.00	
		Demolition of Current Spillway	1	LS	\$ 8,700.00		\$ 8,700.00	
		Excavation and Disposal of Material	150	CY	\$ 50.00	\$ 7,500.00		See Volumes Spreadsheet (rough est from KC 96 plans)
		Topsoil Removal and Stockpile	100	CY	\$ 12.00	\$ 1,200.00		
		Remove/Abandon Existing Lake Outlet	1	LS	\$ 3,500.00		\$ 3,500.00	Remov manhole ~\$1.5k, fill pipes with CDF ~\$2k
		Site Clearing - Clearing and Grubbing and Stripping and Stockpiling of Topsoil	0.4	AC	\$ 14,300.00		\$ 5,800.00	Price from UBA. Rough est from CAD
		Common Excavation Including Haul	425	CY	\$ 35.00		\$ 14,900.00	Quantity from CAD. Includes control of water, removal, loading, hauling, and disposal, Assumes \$6 exc+\$27 haul and disposal+\$2 per cy for water management.
		New Spillway	1	LS	\$ 26,600.00		\$ 26,600.00	
		Concrete	74	CY	\$ 125.00	\$ 9,259.26		400 psi concrete with no add mixtures, slab is 1' thick on a slope that is 10:1 or less; Quote from Ron Anderson- Salmon Bay Sand and Gravel
		Rebar	2.7	TON	\$ 1,040.00	\$ 2,778.88		assume 2 mats of #4 rebar 12" on center, both directions; calculation as follows: (# of 20' rebar sticks for 2 mats)*(20ft/stick)*(0.668lb/ft #4 rebar)/(200lb/ton); cost from Far West steel
		Labor	4	DAY	\$ 2,500.00	\$ 10,000.00		Assumes a crew of 5 at \$50/hr; 1 day to form, 1 day to place rebar, 2 days to pour
		Equipment	2	DAY	\$ 2,250.00	\$ 4,500.00		\$255/ hour boom pump truck, 2 day pour @ 10 hour day; broom finish (no equipment needed); price estimated by Kyle
		Grade Control at Upstream End of Lake	1	LS	\$ 121,200.00		\$ 121,200.00	
		Excavation	1318	CY	\$ 20.00	\$ 26,351.11		
		Boulders	1044	TON	\$ 80.00	\$ 83,526.30		Assumes placement and stockpile included
		Cobbles	241	TON	\$ 35.00	\$ 8,432.94		Assumes placement and stockpile included
		Salvage Sediment	144	CY	\$ 20.00	\$ 2,884.44		Assumes placement and stockpile included
		Hydroseeding	0.4	AC	\$ 2,200.00	\$ 880.00	\$ 880.00	Assumes the same area as the planting area
		Planting	2.0	AC	\$ 12,000.00	\$ 24,000.00	\$ 24,000.00	Clearing area + lake area (outside 10' wide "channel" area) CAD 1.6 ac
		Bark, Hog Fuel or Wood Chip Mulch	20	CY	\$ 12.00		\$ 300.00	Includes temporary access routes (18ft x 100ft x 0.25ft) and incidental amount for staging area preparation as well as removal as needed

Construction Subtotal	\$	273,000
Tax (9.5%)	\$	26,000
Construction Total (roundup to 1000's)	\$	299,000
Contingency (50%)	\$	150,000
Construction Total with Contingency	\$	449,000
Permitting	\$	35,000
Design	\$	50,000
Construction Management & Administration (20% of Construction Cost)	\$	89,800
Post-construction Vegetation Monitoring and Supplemental Planting	\$	50,000
		start 5 years after construction complete, when lake bed likely getting full with sediment
GRAND TOTAL	\$	680,000

Engineering Cost Estimate for Conceptual Design - Alternative 2

Project: Hidden Lake Dam Removal
 Herrera Project #: 15-05984-000
 Client: City of Shoreline

Date Modified: 12/9/2015
 Spreadsheet by: M. Beggs
 Checked by: I. Mostrenko, M. Ewbank
 Latest Date Checked: 1/6/2016

Alternative 2

Bid Item #	Spec Section	Item Description	Quantity	Unit	Unit Cost	Price	Total Price	Comments
		Mobilization	1	LS	\$ 80,900.00		\$ 80,900.00	8% of construction subtotal (Div 2 - Div 8 work items)
		Temporary Erosion and Sediment Control	1	LS	\$ 27,300.00		\$ 27,300.00	Assumes 3% of all other items except water management
		Water Management (Incl. Streamflow Bypass)	1	LS	\$ 75,000.00		\$ 75,000.00	based on bid cost for Coal Creek culvert replacement in Bellevue
		Traffic Control	1	LS	\$ 30,000.00		\$ 30,000.00	rough estimate, needs input from City
		Stabilized Construction Entrance	1	EA	\$ 2,500.00		\$ 2,500.00	
		Demolition of Current Spillway	1	LS	\$ 8,700.00		\$ 8,700.00	
		Disposal of Material	150	CY	\$ 50.00	\$ 7,500.00		See Volumes Spreadsheet (rough est from KC 96 plans)
		Topsail Removal and Stockpile	100	CY	\$ 12.00	\$ 1,200.00		
		Demolition of Lake Outlet Conveyance	1	LS	\$ 3,500.00		\$ 3,500.00	Pull manhole ~\$1.5K and remove pipes ~\$2K
		Site Clearing - Clearing and Grubbing and Stripping and Stockpiling of Topsoil	1	AC	\$ 14,300.00		\$ 14,300.00	Price from UBA. 600 ft of RB road from daly's to top, 20 ft wide. ~0.4 ac near daly
		Common Excavation Including Haul	12700	CY	\$ 35.00		\$ 444,500.00	Quantity from CAD. Includes control of water, removal, loading, hauling, and disposal, Assumes \$6 exc+\$27 haul and disposal+\$2 per cy for water management.
		Roughened Channel	1	LS	\$ 120,000.00		\$ 120,000.00	roughened channel length=330 FT; width= 25FT; area=8250
		Import Riprap	1222	CY	\$ 77.00	\$ 94,111.11		Assumed 4 FT deep; price from Manashtash
		Import Streambed Cobble	306	CY	\$ 60.00	\$ 18,333.33		Assumes 1' deep over the roughened channel area
		Placement of Riprap	1222	CY	\$ 6.00	\$ 7,333.33		Price from Manashtash, 1 exc. 15 minute delivery r/t, place w/ 2 exc.s needed, 0.2 hour to place (2 Exc+op, laborer 0.2hr @ \$150/hr)
		Wood Revetment	1	LS	\$ 211,000.00		\$ 211,000.00	Length= 550 FT assumes same revetment as goheen scaled by 5, there are 2 channels so assume a length of 1100FT
		Type 1 log: 14-18" Dia. 10' with rootwad	44	EA	\$ 750.00	\$ 33,000.00		engineer's estimate (lan)
		Type 2 log: 14-18" Dia. 8-10' without rootwad	61	EA	\$ 300.00	\$ 18,300.00		engineer's estimate (lan)
		Type 3 log: 14-18" Dia. 15' without rootwad	50	EA	\$ 500.00	\$ 25,000.00		engineer's estimate (lan)
		Slash/Racking - salvage, haul, and placement	6	LS	\$ 300.00	\$ 1,800.00		Price fom Goheen (material only); salvaged from site clearing operation
		Light loose riprap	578	TON	\$ 60.00	\$ 34,680.00		Price fom Goheen (material only)
		Rebar Nails	220	EA	\$ 10.00	\$ 2,200.00		Price fom Goheen (material only); for pinning log structure together
		Installation	17	DAY	\$ 5,600.00	\$ 95,200.00		RSMeans 2010 - crew daily rate assuming 8 hr day (\$5600): foreman \$432.80, 1 laborer \$408.40, Operator \$514.40 each, 1.5cy excavator \$1118.70, 1cy excavator \$881.76 chainsaw \$36.75, crawler carrier with operator \$1280. (Goheen)
		Floodplain and In-channel wood (Type 1 Logs)	26	EA	\$ 750.00		\$ 19,500.00	Assumes 1/6 of the amount of wood used in the revetment. Price is an engineer's estimate (lan)
		Hydroseeding	1	AC	\$ 2,200.00		\$ 2,200.00	Assumes the same area as the planting area. Midchannel island ~0.7 ac + grubbing area
		Planting	1	AC	\$ 12,000.00		\$ 12,000.00	
		Bark, Hog Fuel or Wood Chip Mulch	535	CY	\$ 12.00		\$ 6,500.00	Includes temporary access routes (18ft x 3200ft x 0.25ft) and incidental amount for staging area preparation as well as removal as needed
		Streambed Gravel	391	CY	\$ 60.00		\$ 23,500.00	Assumes streambed cobble is 1' thick placed along the length of the rock revetment. Assumes the channel is 21 ft. wide (from CAD)
		Trail Modifications	1	LS	\$ 10,000.00		\$ 10,000.00	Assumes trail realignment needed on park side near roughened channel, and near current lake edge

Construction Subtotal	\$ 1,091,400
Tax (9.5%)	\$ 103,700
Construction Total (roundup to 1000's)	\$ 1,196,000
Contingency (50%)	\$ 598,000
Construction Total with Contingency	\$ 1,794,000
Permitting	\$ 45,000
Design	\$ 150,000
Construction Management & Administration (20% of Construction Cost)	\$ 358,800
GRAND TOTAL	\$ 2,350,000

Optional Additive Cost : New Fish Passage Culvert/Bridge and Downstream Channel Improvements \$ 3,200,000

Engineering Cost Estimate for Conceptual Design - Alternative 3

Project: Hidden Lake Dam Removal
 Herrera Project #: 15-05984-000
 Client: City of Shoreline

Date Modified: 12/9/2015
 Spreadsheet by: M. Beggs
 Checked by: I. Mostrenko, M. Ewbank
 Latest Date Checked: 1/6/2016

Alternative 3

Bid Item #	Spec Section	Item Description	Quantity	Unit	Unit Cost	Price	Total Price	Comments
		Mobilization	1	LS	\$ 170,100.00		\$ 170,100.00	8% of construction subtotal (Div 2 - Div 8 work items)
		Temporary Erosion and Sediment Control	1	LS	\$ 40,300.00		\$ 40,300.00	Assumes 2% of all other items except water management
		Water Management (Incl. Streamflow Bypass)	1	LS	\$ 75,000.00		\$ 75,000.00	based on bid cost for Coal Creek culvert replacement in Bellevue
		Traffic Control	1	LS	\$ 30,000.00		\$ 30,000.00	rough estimate, needs City input
		Stabilized Construction Entrance	2	EA	\$ 2,500.00		\$ 5,000.00	
		Demolition of Current Spillway	1	LS	\$ 8,700.00		\$ 8,700.00	
		Disposal of Material	150	CY	\$ 50.00	\$ 7,500.00		See Volumes Spreadsheet (rough est from KC 96 plans)
		Topsoil Removal and Stockpile	100	CY	\$ 12.00	\$ 1,200.00		
		Demolition of Lake Outlet Conveyance	1	LS	\$ 3,500.00		\$ 3,500.00	Manhole ~+1.5k, pull or pack pipe 2k
		Site Clearing - Clearing and Grubbing and Stripping and Stockpiling of Topsoil	0.75	AC	\$ 14,300.00		\$ 10,725.00	Price from UBA. 400 ft of RB road from dalys to top, 20 ft wide. ~0.4 ac near daly
		Common Excavation Including Haul	6800	CY	\$ 35.00		\$ 238,000.00	Quantity from CAD. Includes control of water, removal, loading, hauling, and disposal. Assumes \$6 exc+\$27 haul and disposal+\$2 per cy for water management.
		Roughened Channel	1	LS	\$ 108,900.00		\$ 108,900.00	roughened channel length=300 FT; width= 25 FT; area=7500SF
		Import Riprap	1111	CY	\$ 77.00	\$ 85,555.56		Assumed 4 FT deep; price from Manashtash
		Import Streambed Cobble	278	CY	\$ 60.00	\$ 16,666.67		Assumes 1' deep over the roughened channel area
		Placement of Riprap	1111	CY	\$ 6.00	\$ 6,666.67		Price from Manashtash, 1 exc. 15 minute delivery r/t, place w/ 2 exc.s needed, 0.2 hour to place (2 Exc+op, laborer 0.2hr @ \$150/hr)
		Rock/wood Revetment	1	LS	\$ 57,000.00		\$ 57,000.00	
		Import Riprap	309	CY	\$ 77.00	\$ 23,818.67		Revetment length= 464 FT; depth= 3 FT; Height= 6 FT (SHOULD EVALUATE IN CAD); Price from Manastash
		Import Quarry Spalls	45	CY	\$ 45.00	\$ 2,025.00		Assumes 6 inches deep, cost is an engineer's estimate (Ian)
		Placement of Riprap	309	CY	\$ 6.00	\$ 1,856.00		Price from Manashtash, 1 exc. 15 minute delivery r/t, place w/ 2 exc.s needed, 0.2 hour to place (2 Exc+op, laborer 0.2hr @ \$150/hr)
		Type 1 log: 14-18" Dia. 10' with rootwad	39	EA	\$ 750.00	\$ 29,250.00		Assumes 1/4 of the amount of wood used in the Alt. 2 wood revetment. Cost is an engineer's estimate (Ian)
		Hydroseeding	0.75	AC	\$ 2,200.00		\$ 1,700.00	Assumes the same area as the planting area. Daly's 0.4 ac + the remaining lake area outside props
		Planting	0.75	AC	\$ 12,000.00		\$ 9,000.00	
		Bark, Hog Fuel or Wood Chip Mulch	535	CY	\$ 12.00		\$ 6,500.00	Includes temporary access routes (18ft x 3200ft x 0.25ft) and incidental amount for staging area preparation as well as removal as needed
		Streambed Gravel	361	CY	\$ 60.00		\$ 21,700.00	Assumes streambed cobble is 1' thick placed along the length of the rock revetment. Assumes the channel is 21 ft. wide (from CAD)
		Trail Modifications	1	LS	\$ 10,000.00		\$ 10,000.00	Assumes trail realignment needed on park side near roughened channel, and near current lake edge
		New Fish Passage Culvert (NW Innis Arden Way) and Channel Improvements Downstream of Road	1	LS	\$ 1,500,000.00		\$ 1,500,000.00	proportioned from Red Creek bridge and Coal Creek culvert project low bids

Construction Subtotal	\$ 2,296,200
Tax (9.5%)	\$ 218,200
Construction Total (roundup to 1000's)	\$ 2,515,000
Contingency (50%)	\$ 1,258,000
Construction Total with Contingency	\$ 3,773,000
Permitting	\$ 75,000
Design	\$ 400,000
Construction Management & Administration (20% of Construction Cost)	\$ 754,600
Post-construction Vegetation Monitoring and Supplemental Planting	\$ 110,000
GRAND TOTAL	\$ 5,200,000

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Discussion of Ordinance No. 745 - Amending Chapter 8.12 Rules for Use of City of Shoreline Park Facilities to the Shoreline Municipal Code, Specifically Section 8.12.500 Alcoholic Beverages, to Include the Kruckeberg Botanic Garden		
DEPARTMENT:	Parks, Recreation and Cultural Services		
PRESENTED BY:	Eric Friedli, PRCS Director		
ACTION:	<input type="checkbox"/> Ordinance	<input type="checkbox"/> Resolution	<input type="checkbox"/> Motion
	<input checked="" type="checkbox"/> Discussion	<input type="checkbox"/> Public Hearing	

PROBLEM/ISSUE STATEMENT:

In 2012 the City Council adopted Ordinance No. 647 that added the Terrace at Richmond Beach Saltwater Park and the Amphitheater at Cromwell Park to the list of park locations in the City where the sale and consumption of beer and wine is permitted with the approval of the Parks, Recreation and Cultural Services (PRCS) Director. In 2015, the Executive Director of the Kruckeberg Botanic Garden (KBG) Foundation requested permission to serve alcohol at a fund-raising event at the Garden. Her request was denied because it was not allowed under the current Shoreline Municipal Code (SMC), Section 8.12.500.

Upon review of the history of the PRCS Board and City Council process in 2012, staff determined that KBG is consistent with the criteria used in 2012 to select appropriate sites for permitting alcohol. KBG is easily contained and controlled and permitting alcohol would have limited impacts on other park patrons or surrounding neighbors. It is a desirable park for special events that include alcohol. Proposed Ordinance No. 745 would amend SMC 8.12.500 to add KBG to the list of park locations where beer and wine are permitted.

RESOURCE/FINANCIAL IMPACT:

No financial impacts are expected from this action.

RECOMMENDATION

No action is required by the City Council. This meeting will provide an opportunity for Council to ask specific questions and provide staff direction. Adoption of proposed Ordinance No. 745 is scheduled for June 6, 2016.

Approved By: City Manager *DT* City Attorney *MK*

BACKGROUND

Shoreline Municipal Code (SMC) Section 8.12.500 identifies the Shoreline park locations where alcohol is permitted. It also states what type of alcohol may be consumed in these locations. Specifically, it states:

8.12.500 Alcoholic beverages.

No person shall possess any alcoholic beverage or liquor in any city park area, including unopened beverage containers, except the sale and/or consumption of beer and wine is permissible in designated areas approved by the director at the following locations:

- A. Indoors at the Richmond Highland Recreation Center;
- B. The Terrace at Richmond Beach Saltwater Park;
- C. The Amphitheater at Cromwell Park.

All events that include sale or consumption of beer and wine must have an alcohol use permit issued by the department, comply at all times with occupancy limits designated for the permit areas, and conform to permit and other requirements of the Washington State Liquor Control Board and state law. [Ord. 647 § 1, 2012; Ord. 195 § 1, 1999]

Prior to 2012, the only City park facility where alcohol was permitted was indoors at the Richmond Highland Recreation Center. In 2012 the Council requested that the PRCS Board review the City's policy regarding alcohol use in the City's parks and facilities and consider the options for expanding the number of locations where alcohol is allowed for special events with a permit.

The PRCS Board engaged in a lengthy review and discussion around allowing alcohol in Shoreline's parks. In reviewing areas in the City's parks that are most conducive to permitting alcohol use for special events, staff considered areas that are:

- Easily contained and controlled,
- Would have limited impact on other park patrons or surrounding neighborhoods, and
- Areas that would be most desirable for special events involving alcohol.

For areas that were not as easily segregated by natural screening, staff considered the feasibility of requiring park renters to physically segregate areas where alcohol would be served with temporary fencing, similar to what is seen at beer/wine gardens.

The PRCS Board discussed this issue at four separate Board meetings in February, March, August and September, 2012. While the opinion of the Board was divided, there was majority approval to recommend Council approval of the use of alcohol at small-scale events at no more than three approved locations. A licensed server is required, and current policy limitations on occupancy and hours apply. The Board unanimously rejected the recommendation of alcohol at large-scale events that exceed the current policy on occupancy limits. The City Council approved the PRCS Board's recommendation in October 2012 and expanded the consumption of alcohol at the current three locations.

Since the change in 2012, there have been only 11 permits issued for alcohol at the three allowed park locations. Parks maintenance staff report that there have been no maintenance impacts, and there are no records of citizen complaints about these events. Most of the events have been weddings or family reunions. Celebrate Shoreline includes a beer and wine garden each year in August at Cromwell Park.

The number and amount of permit fees generated for events involving alcohol in City parks for the last three years is below:

- 2013 – Five (5) alcohol rentals generated \$1,679 in fees
- 2014 – Three (3) alcohol rentals generated \$1,337 in fees
- 2015 – Three (3) alcohol rentals generated \$1,100 in fees

DISCUSSION

In 2015, the Executive Director of the Kruckeberg Botanic Garden (KBG) Foundation requested permission to serve alcohol at a fund-raising event at the Garden. Her request was denied because it was not allowed under the current the current code. Staff reviewed the regulations of alcohol permits in city parks and the history of the PRCS Board and City Council process in 2012 and determined that KBG is consistent with the criteria used in 2012 to select appropriate sites for permitting alcohol. KBG is easily contained and controlled and permitting alcohol would have limited impacts on other park patrons or surrounding neighbors. It is a desirable park for special events that include alcohol. Proposed Ordinance No. 745, which is attached to this staff report as Attachment A, would amend SMC 8.12.500 to add KBG to the list of park locations where beer and wine are permitted.

PRCS Board Public Hearing and Recommendation

On April 28, 2016, the PRCS Board voted to recommend that the City Council approve proposed Ordinance No. 745, with four votes in favor and one abstention. The proposal was first introduced to the PRCS Board at its regular meeting on March 24, 2016, and the Board agreed to host a public hearing on this issue at its meeting on April 28, 2016. On March 28, 2016 letters were sent to each resident adjacent to and across the street from KBG informing them of the proposal and announcing the April 28th public hearing. On April 15th formal notice of the Public Hearing was issued.

Five written comments were received regarding the proposal and two people testified at the public hearing. The written comments are summarized as follows:

- Opposed, but is appropriate if it is allowed by permit only if approved by the Director
- Support
- Support, only for events sponsored by the KBG Foundation and if a tall fence is built between their property and KBG
- Opposed
- No formal position, but provided a list of questions that were answered by staff

The testimony included:

- The Executive Director of the KBG Foundation spoke in favor of the proposed ordinance

- An immediate neighbor supports the garden, is concerned about alcohol, and reported her neighbors are generally supportive.

RESOURCE/FINANCIAL IMPACT

No financial impacts are expected from this action.

RECOMMENDATION

No action is required by the City Council. This meeting will provide an opportunity for Council to ask specific questions and provide staff direction. Adoption of proposed Ordinance No. 745 is scheduled for June 6, 2016.

ATTACHMENTS

Attachment A: Proposed Ordinance No. 745

CITY OF SHORELINE, WASHINGTON

ORDINANCE NO. 745

AN ORDINANCE OF THE CITY OF SHORELINE, WASHINGTON, AMENDING CHAPTER 8.12 RULES FOR USE OF CITY OF SHORELINE PARK FACILITIES TO THE SHORELINE MUNICIPAL CODE, SPECIFICALLY SECTION 8.12.500 ALCOHOLIC BEVERAGES, TO INCLUDE THE KRUCKEBERG BOTANIC GARDEN.

WHEREAS, Shoreline Municipal Code (SMC) Chapter 8.12 established rules for the use of City of Shoreline Park Facilities; and

WHEREAS, the Kruckeberg Botanic Garden is a City park facility; and

WHEREAS, SMC 8.12.500 authorizes the sale and/or consumption of beer and wine in certain designated park facilities; and

WHEREAS, the Kruckeberg Botanic Garden Foundation has expressed a desire to serve beer and wine at special events at the Kruckeberg Botanic Garden; and

WHEREAS, the Kruckeberg Botanic Garden meets the criteria for parks that are most conducive to permitting alcohol at special events including easily contained and controlled, having limited impact on other park patrons or surrounding neighborhoods, and areas that would be most desirable for special events involving alcohol; and

WHEREAS, the Parks, Recreation and Cultural Services Board reviewed the proposal, gathered public input including holding a public hearing on April 28, 2016 and recommends approval of the proposal;

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SHORELINE, WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. SMC 8.12.500 Alcoholic beverages. A new section, section “D” of SMC 8.12.500 Alcoholic beverages, is hereby adopted to read as follows:

D. Kruckeberg Botanic Garden.

Section 2. Severability. If any portion of this chapter is found to be invalid or unenforceable for any reason, such finding shall not affect the validity or enforceability of any other chapter or any other section of this chapter.

Section 3. Publication and Effective Date. A summary of this Ordinance consisting of the title shall be published in the official newspaper. This Ordinance shall take effect five days after publication.

PASSED BY THE CITY COUNCIL ON JUNE 6, 2016

Mayor Christopher Roberts

ATTEST:

APPROVED AS TO FORM:

Jessica Simulcik-Smith
City Clerk

Margaret King
City Attorney

Date of Publication: _____, 2016

Effective Date: _____, 2016