Hidden Lake Dam Removal

Alternatives Analysis Discussion
May 23, 2016

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Hidden Lake Dam Removal Introduction

- Project Description
- Project Team
- Overview
  - Background
  - Alternatives Analysis Summary
  - Staff Recommendation
  - Discussion

Background

Brief history of Hidden Lake and dam

- Early 20th century private fishing pond origin
- 1996 re-established by King County
- Sedimentation issues
- 2014 Feasibility Study
- Dam Removal Project Alternatives Analysis

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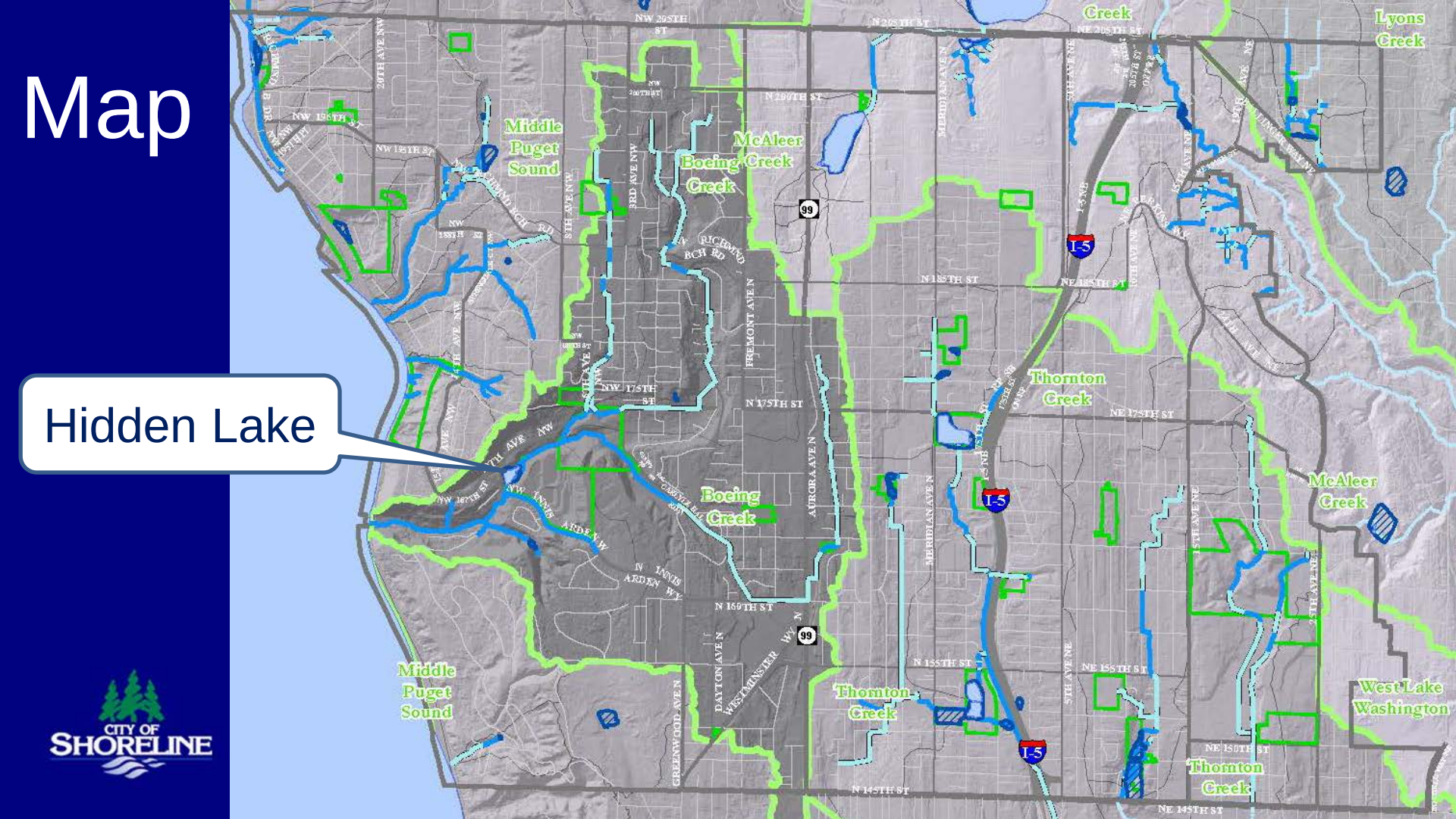
Map



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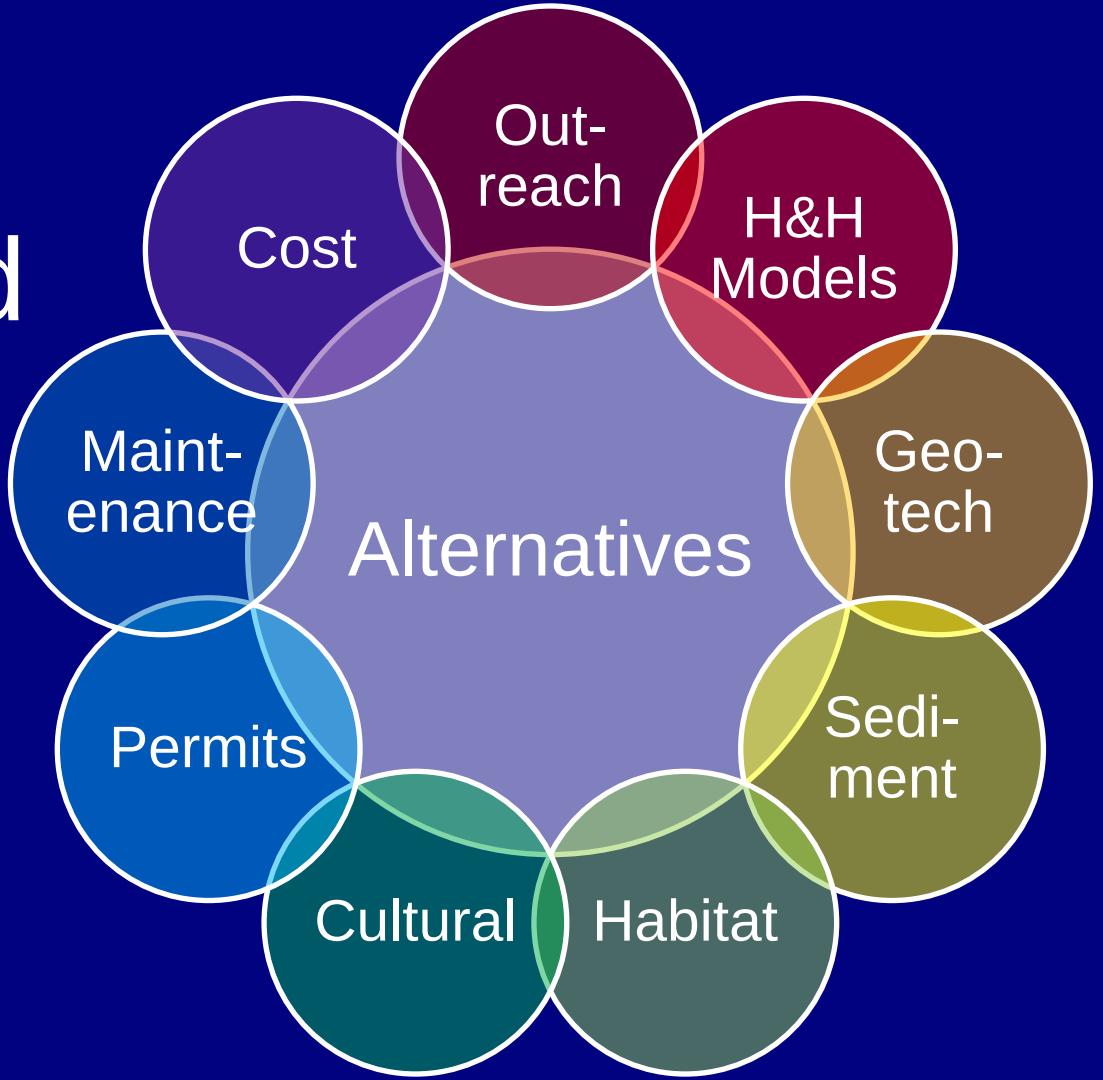
Hidden Lake Current Status

- Last sediment removal in 2013
- Lake expected to fill with sediment by 2020 to 2025
- “No action” not viable due to flood risk

Alternatives Analysis

- Distinct differences
- Criteria for comparison
- Useful for:
  - Outreach
  - Staff recommendation

Analyses Conducted



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Outreach

August 2015 – Interview lakeside residents

October 20, 2015 – Meet with lakeside residents

October 24, 2015 – Public meeting at Shoreview Park

January 28, 2016 – Parks Board meeting

March 25, 2015 – Alternatives Analysis posted on webpage

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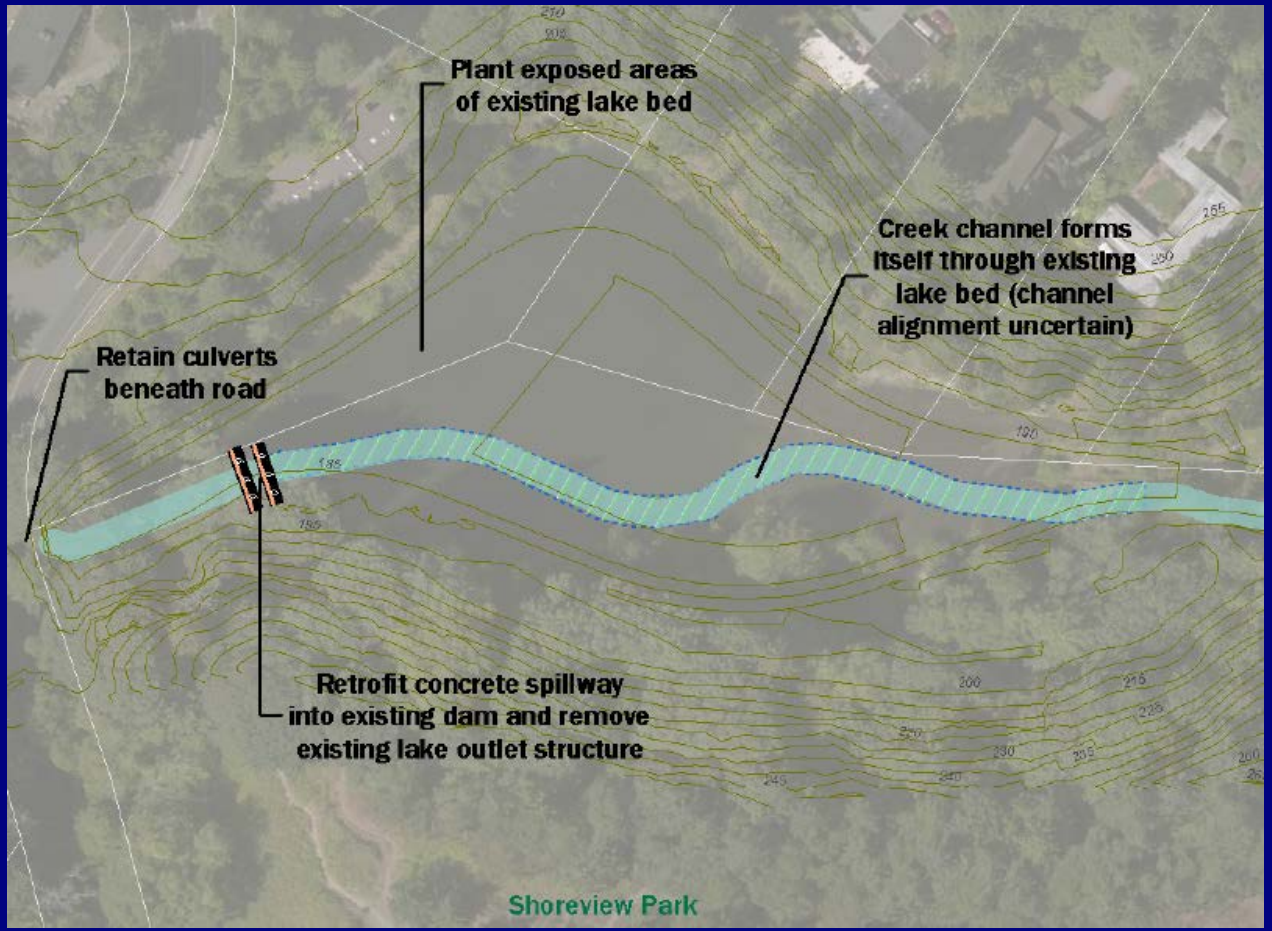
Alternative 1 – Minimal

Creek cutting through sediment deposits in lake

Vegetation growing on sediment deposits in 1993

- Dam not removed
- Spillway modifications to direct all flows over dam
- Protects NW Innis Arden Way
- Smaller lake initially
- Eventually lake fills and channel(s) evolve in lake bed
- Potential for invasive weeds
- No fish passage improvement
- Lowest cost

Alternative 1



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Alternative 2 – Wetland Floodplain

- Dam and lake removed
- Creek channels on public and private property
- Native vegetation planted in lake bed
- Possible park upgrades
- Fish passage barriers removed: 25%
- Higher cost

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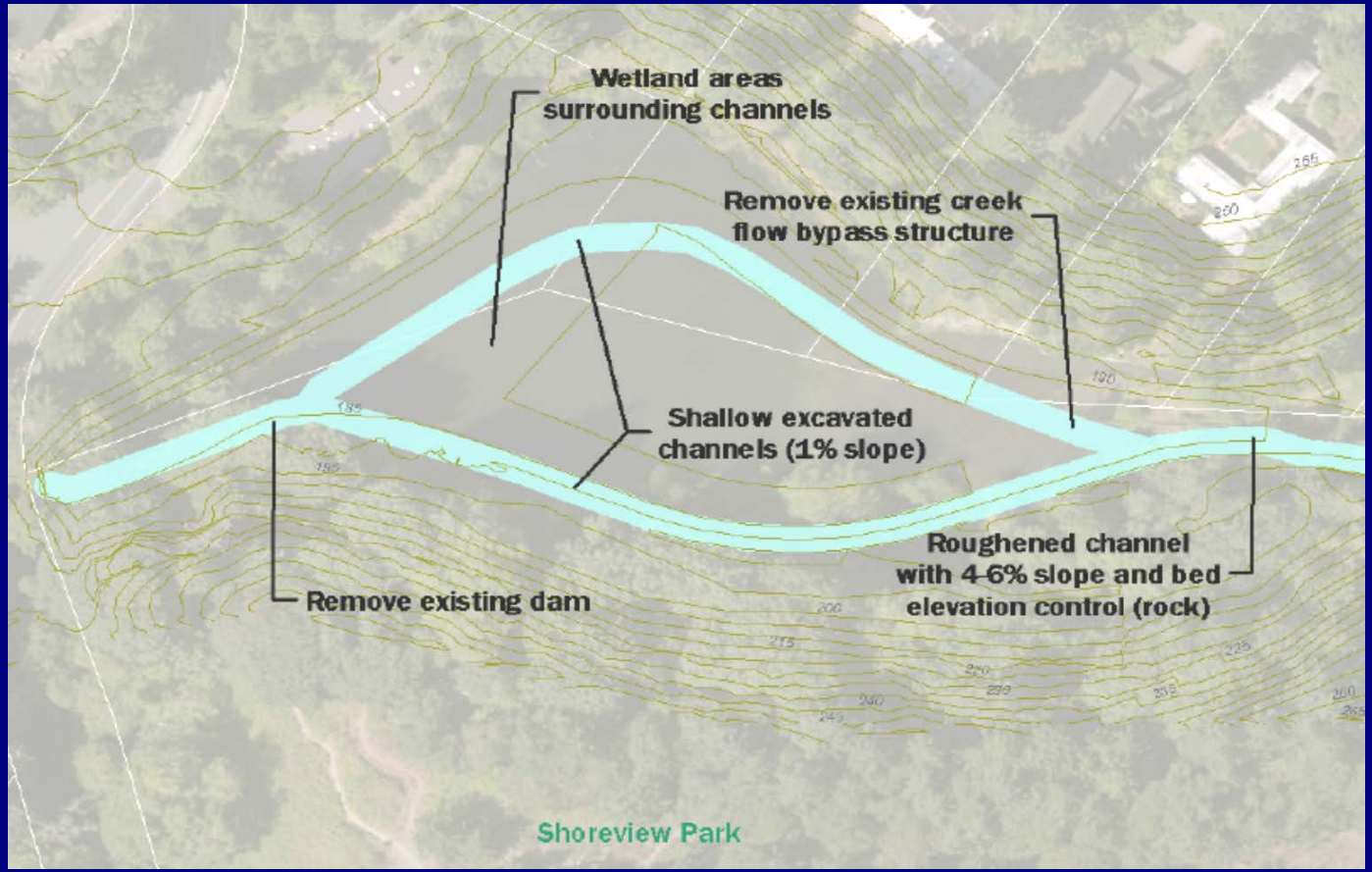
Alternative 2



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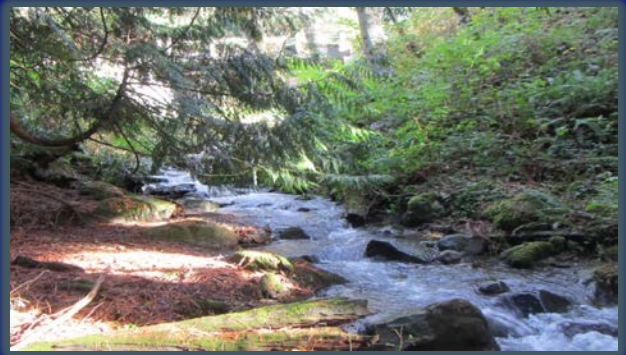
Alternative 3 – Forested Channel



- Dam and lake removed
- Single channel on public property
- Innis Arden Way culverts replaced and other downstream restoration

- Fish passage barriers removed: 75%
- Native vegetation planted
- Possible park upgrades
- Highest cost

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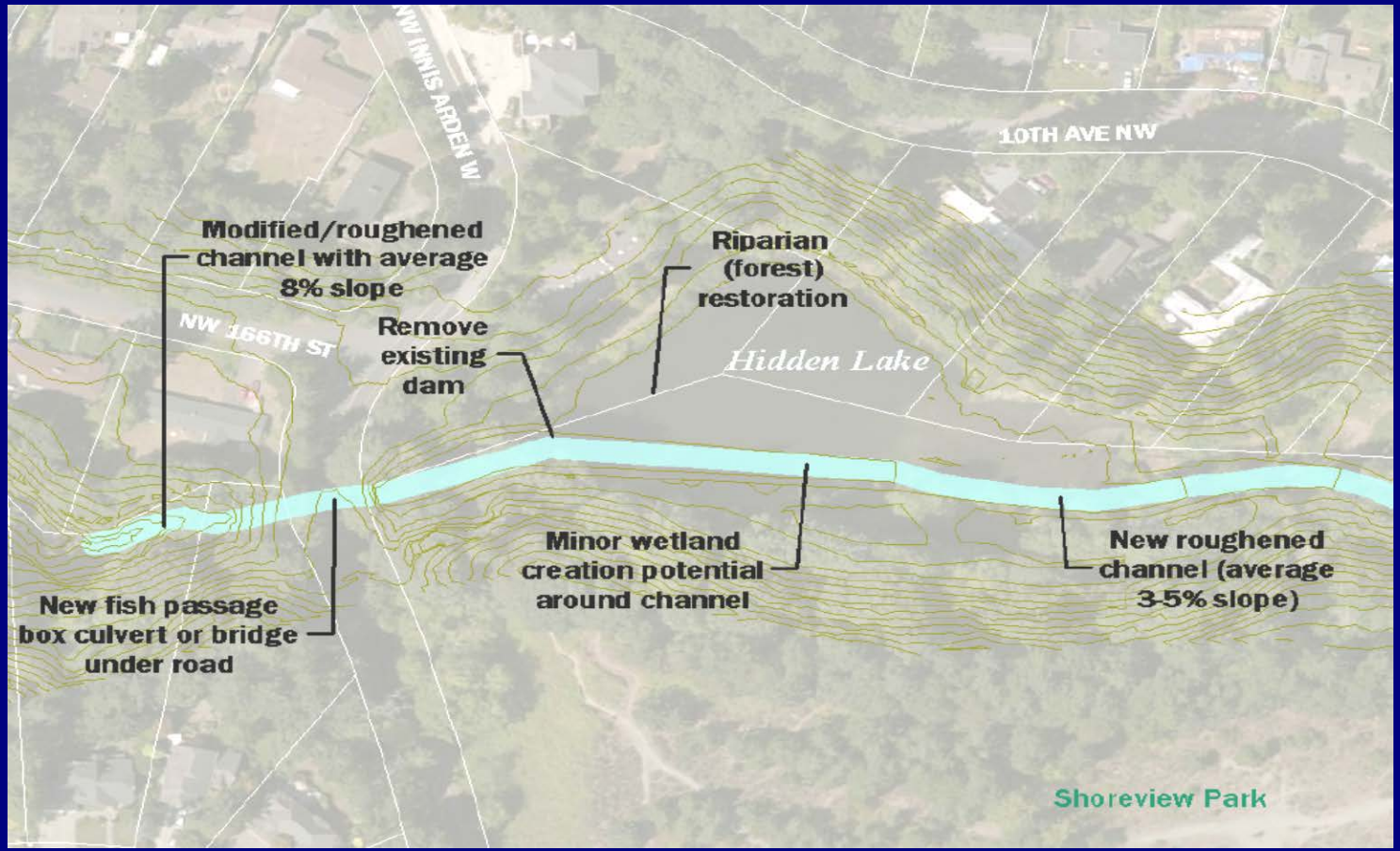
Alternative 3



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Comparison of 3 Alternatives

Alternative 1

- Minimal
- Lowers flood risk
- Few other benefits
- $680,000

Alternative 2

- Wetland floodplain
- Lowers flood risk
- Habitat benefits
- 25% fish passage barriers removed
- Park benefits
- Mimics likely historic condition
- $2,350,000

Alternative 3

- Forested channel
- Best flood risk reduction
- Habitat benefits
- 75% fish passage barriers removed
- Park benefits
- $5,200,000

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Comparison of 3 Alternatives

Among alternatives analyzed, Alternative 3 is the preliminary preferred approach because:

- Best overall flood risk reduction and protection of roadway infrastructure
- Best fish passage and Boeing Creek restoration benefits
- Best Shoreview Park amenities
- Favored in outreach efforts

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Comparison of 3 Alternatives

Alternative 3 Implementation:

- Limited Surface Water Utility funds
- Problematic timeframe

Alternative 4

Alternative 4 is a phased and expanded variation upon Alternative 3.

This approach will:

1. Maximize grant funding opportunities
2. Minimize flood risks from sedimentation

Alternative 4

Alternative 4 is a phased and expanded variation of Alternative 3.

- Phase 1 will address priority flooding risk due to sediment in-filling of Hidden Lake
- Phase 2 will provide maximum fish passage and habitat benefits along creek downstream of existing Hidden Lake Dam.

Alternative 4

Alternative 4 - Phase 1:

Address Flood Risk

- Remove Hidden Lake Dam and restore Boeing Creek within Shoreview Park
- Install park amenities, including trails
- Potential grant funding from Washington State Recreation and Conservation Office (RCO) Land and Water Conservation Fund (LWCF); grant application in progress.

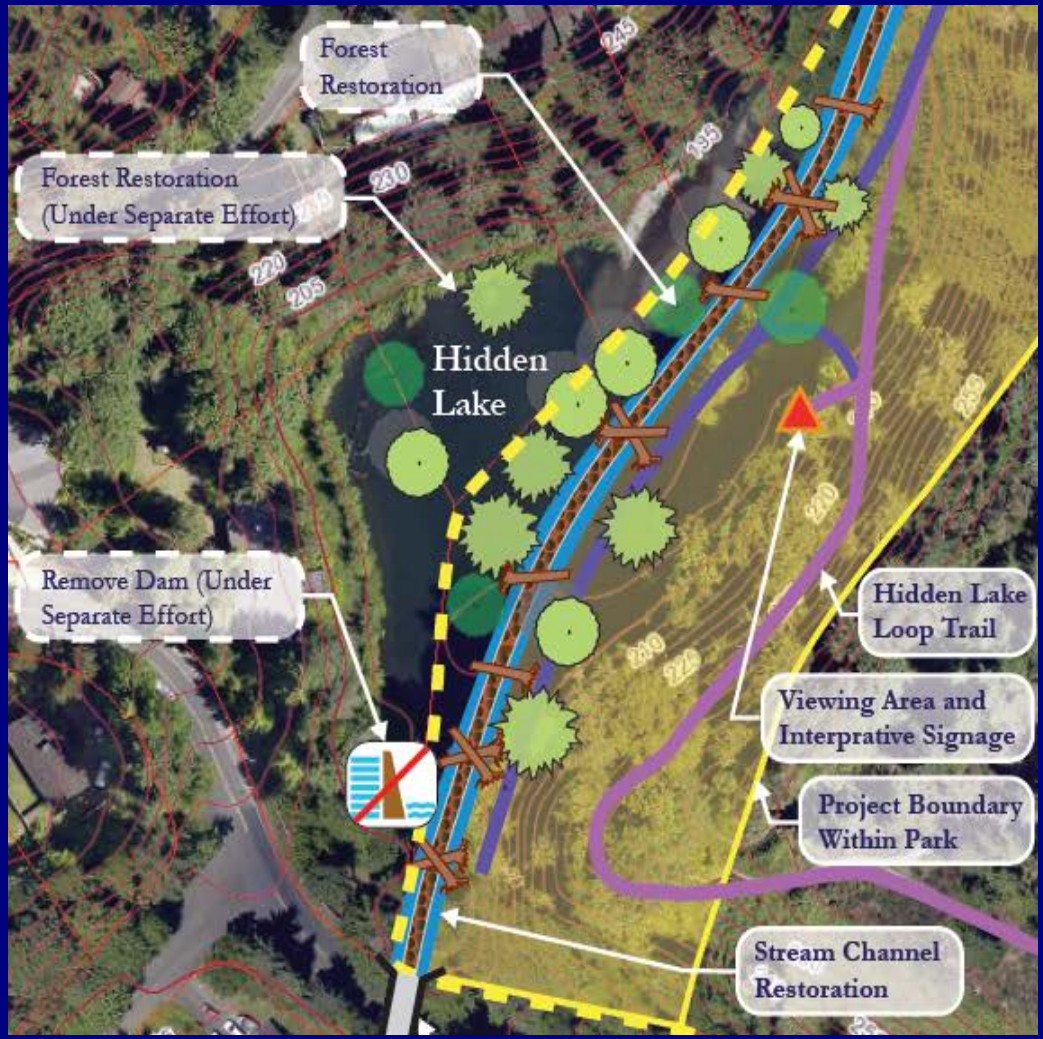
Alternative 4

Phase 1

RCO LWCF

Grant Application

Conceptual Plan



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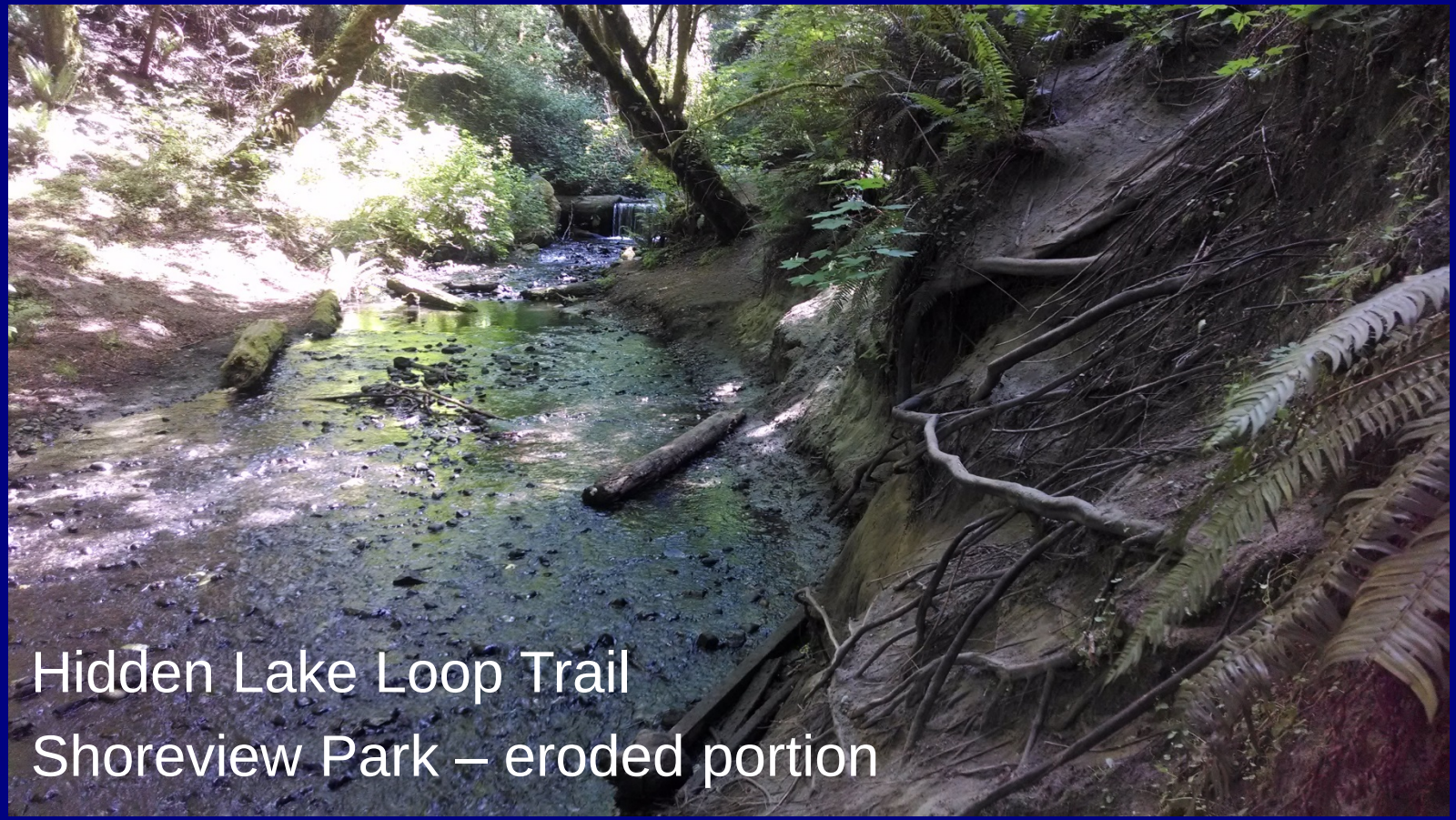
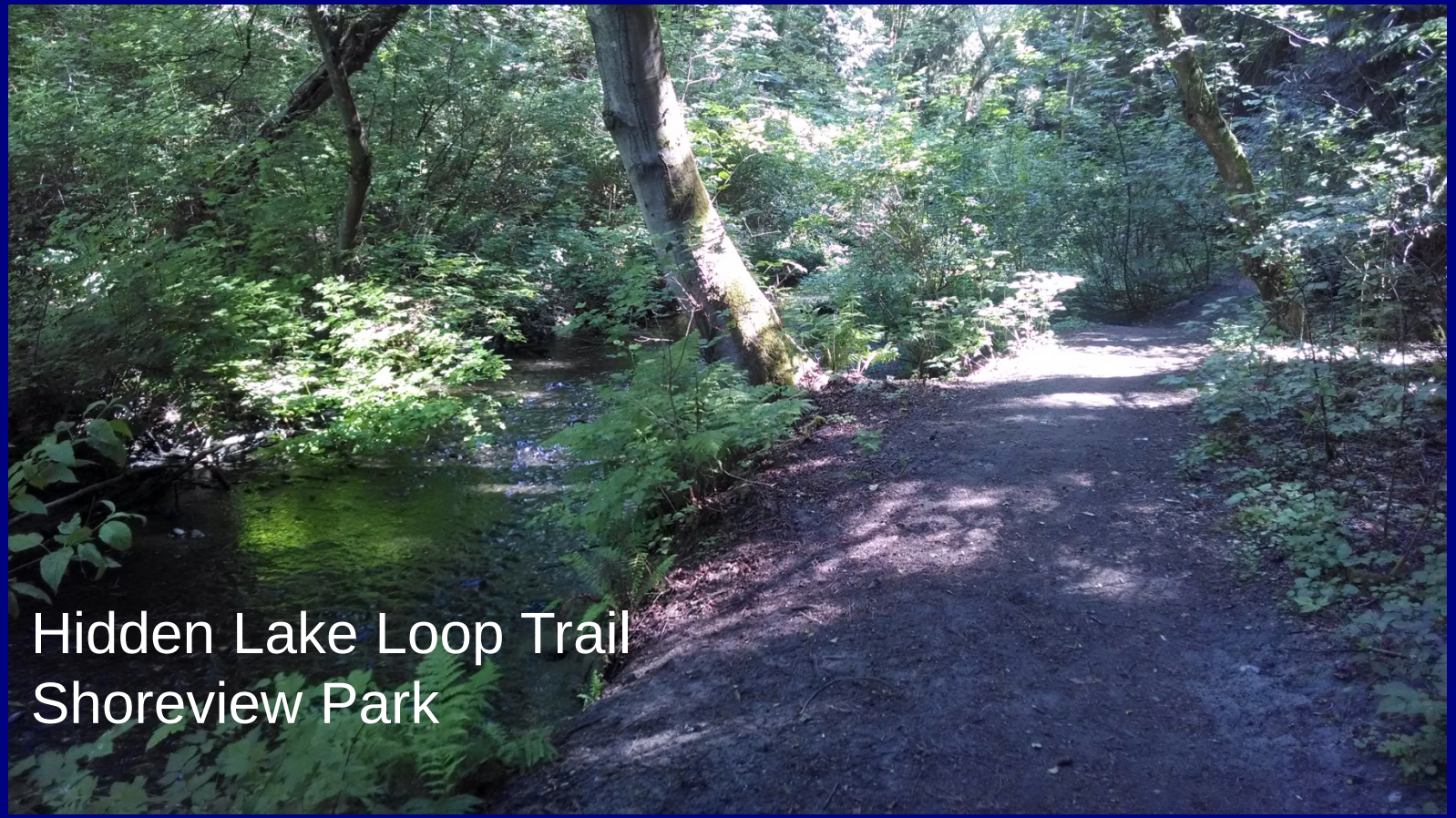
Alternative 4 - Phase 1



Hidden Lake Loop Trail

Shoreview Park – eroded portion

Alternative 4 - Phase 1



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Alternative 4 - Phase 2:

Improve Fish Passage and Habitat

- Remove three remaining major fish passage barriers on Boeing Creek
- Much less time sensitive than Phase 1
- Implementation could take many years
- Contingent upon grant funding

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Alternative 4 - Phase 2

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Staff Recommendation

Alternative 4 is the recommended approach because:

- Best overall flood risk reduction and protection of roadway infrastructure
- Best Boeing Creek restoration benefits
- Removes all four major fish passage barriers
- Best Shoreview Park amenities
- Favored in outreach efforts
- Maximizes grant funding opportunities

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Staff Recommendation (cont.)

Alternative 4 - Phase 1 Estimated Costs:

- $1.3M, (includes administration, engineering, permitting, and construction) for:
  - $250,000 for Shoreview Park trail improvements
  - $300,000 for Hidden Lake Dam removal
  - $750,000 for Boeing Creek restoration
- $500,000 in potential RCO LWCF grant funds
- Similar to Feasibility Study dam removal concept

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Staff Recommendation (cont.)

Alternative 4 - Phase 2 Estimated Costs:

- $6.6M, (includes administration, engineering, permitting, and construction) for:
  - $4.6M for NW Innis Arden Way culvert replacement and other Boeing Creek restoration work
  - $2M for Seattle Golf Club Dam removal
- Estimated costs are rough
- Long-term approach

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Staff Recommendation (cont.)

Alternative 4

- Implementation contingent upon grant funding success
- Surface Water Utility funds will be used only as needed, such as for grant matching and/or other minor funding gaps

Staff Recommendation (cont.)

If funding for Alternative 4 - Phase 1 is not secured by 2018-2019:

- Staff to provide Council with updated recommendation
- Updated options will address flood risks in a timely manner utilizing Surface Water Utility funding

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Next Steps

- Pursue grants and other funding
- Monitor sediment accumulation in lake
- Develop design, obtain permits, and construct improvements within 3 to 8 years

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Questions?

Painting of Boeing Creek in Shoreview Park by artist and Shoreline resident Paul Lewing