

# Coal Creek Parkway Culvert Replacement

Bruce Jensen – City of Bellevue

Dustin Atchison – CH2M

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ch2m<sup>SM</sup>



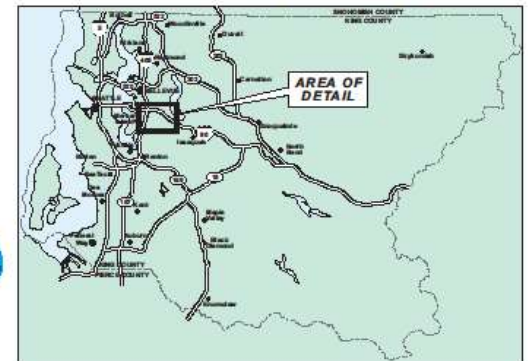
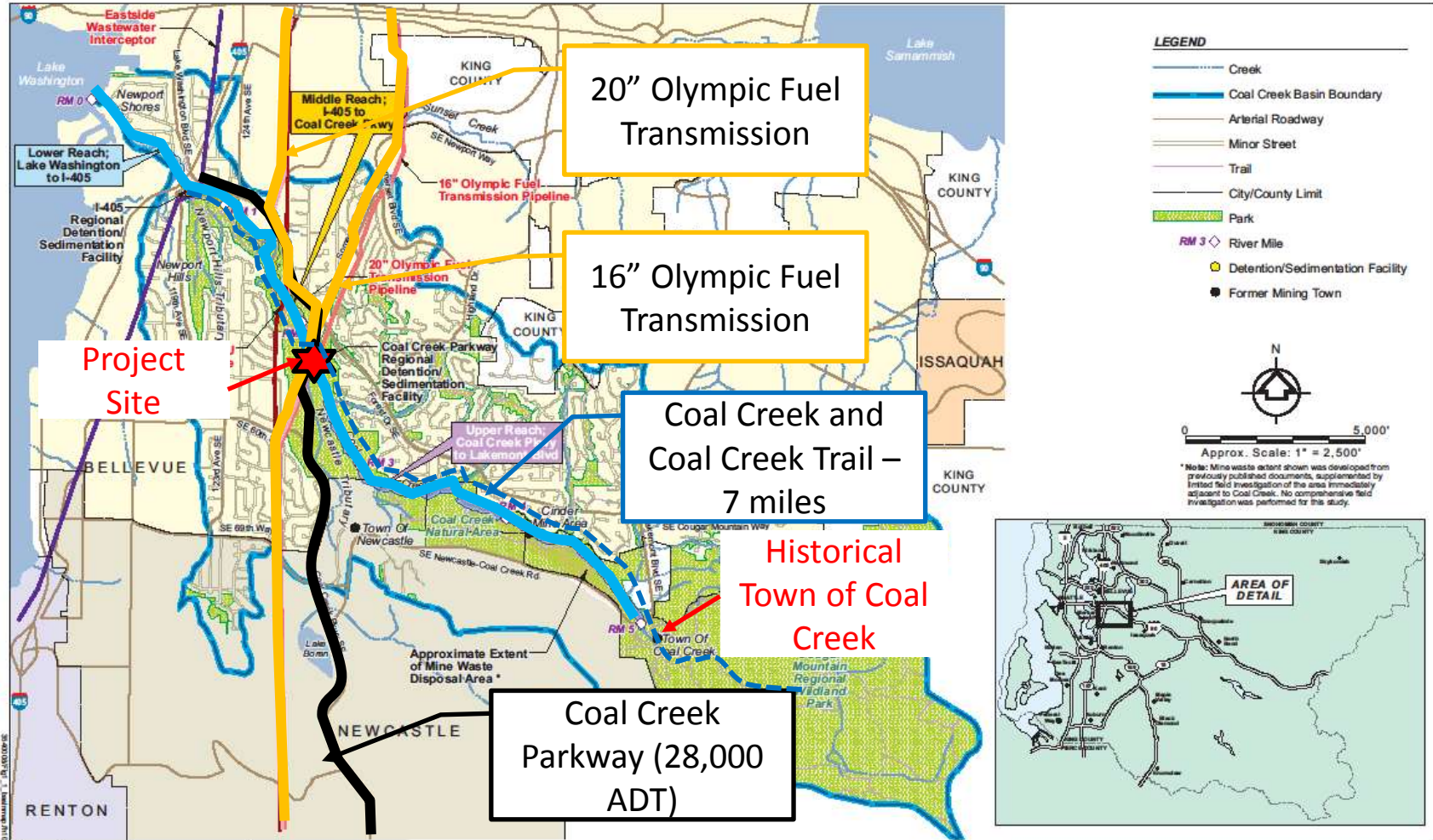


# Agenda

- Project Background
- Project Need
- Challenges, Solutions & Lessons Learned
- End Product



# Coal Creek Basin





# Coal Creek



# Legacy of Coal Mining





# Legacy of Coal Mining



# Legacy of Coal Mining

**Town of Coal Creek - 1919**



**Today**





# Unstable, Erodible Stream Banks



# Stream Stabilization at the Bunker

2009 construction





# Stabilized Banks

**Immediately after  
construction**



**Spring 2015**



# Coal Creek Sediment Pond

After 2007 Storm



Not native streambed?





# The Deteriorating Coal Creek Culvert Needed to be Replaced



# Old Culvert Issues included Capacity, Corrosion, Scour, Fish Passage, Risk of Failure





# Interim Repair Completed in 2011

- Reshaped inlet
- Lined invert
- Committed to agencies to complete full repair within 5 years



# The Vision





# The Challenges

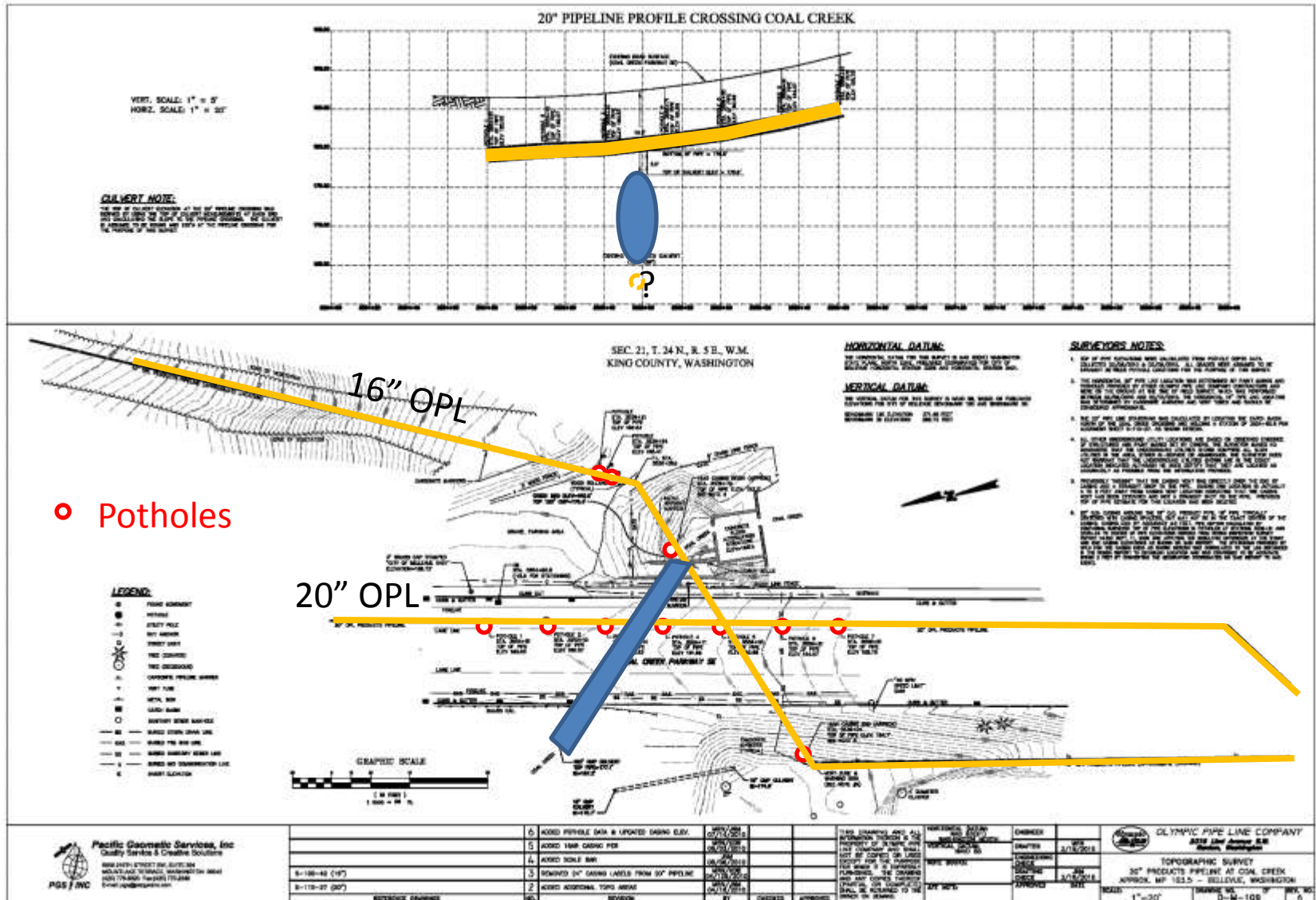
- Work around petroleum pipelines or relocate (and if so where?)
- Minimize impacts on Coal Creek Parkway traffic
- In-stream work within HPA window
- Removing weirs and providing fish passage
- Maintaining existing upstream flow control and sedimentation basin

# Petroleum Pipelines

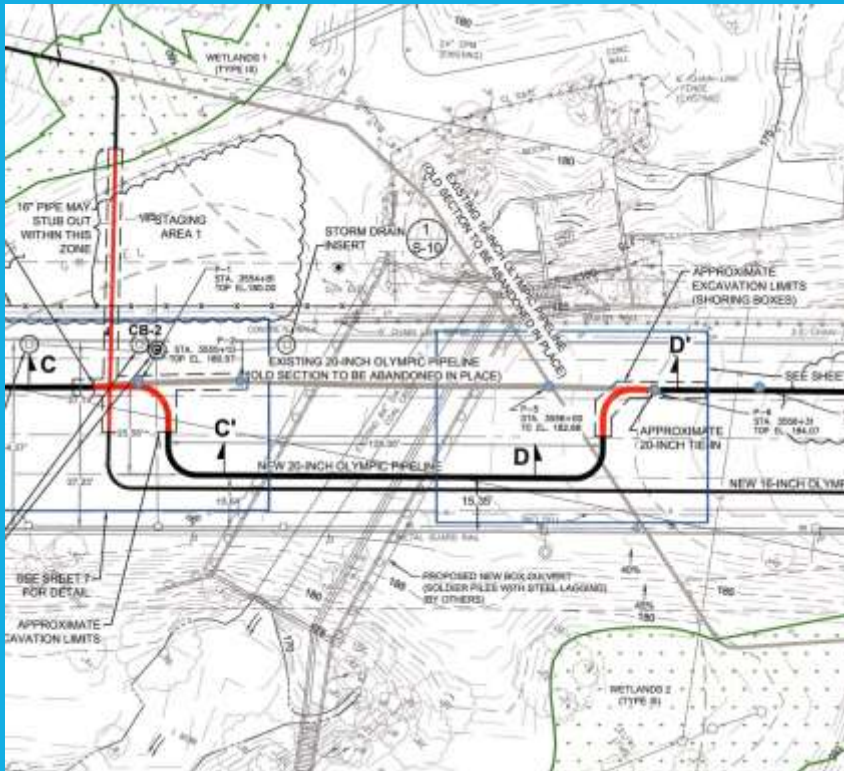
- Where are they?
- Can we work safely around them?
- Can they be moved?
- How to move them?



# Locating Petroleum Fuel Lines



# solution – Olympic to Relocate in Phases



- Only 1 pipeline can be shut down at a time.
- Fall 2013 – lay down both pipelines within ROW
- November 2013 – connect 20" line
- February 2014 – connect 16" line



# Minimizing Impacts to Coal Creek Parkway Traffic

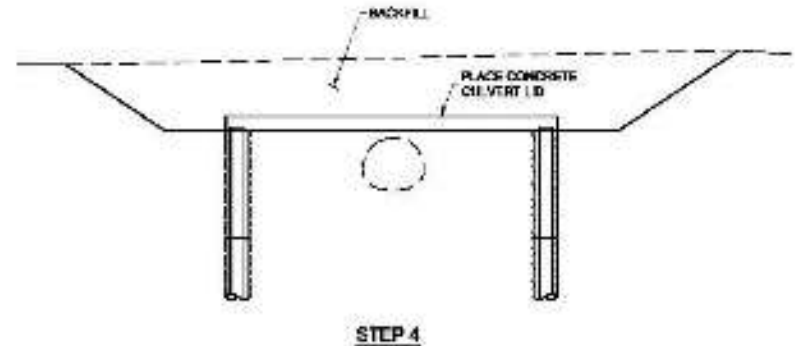
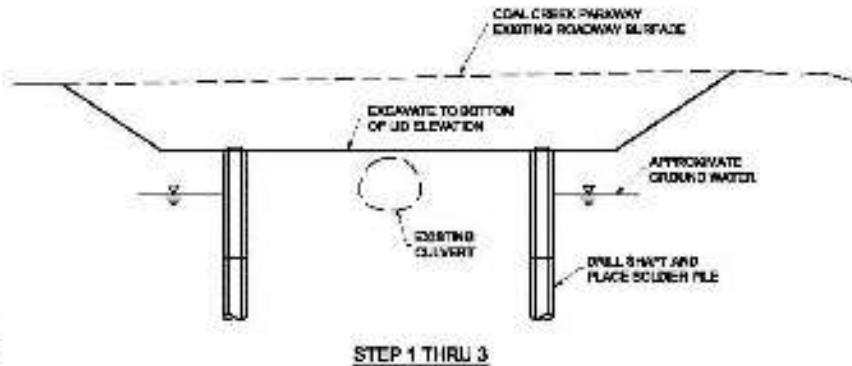
- Coal Creek Parkway has 28,000 ADT and is a critical connector within region
- Must construct portion of bridge to allow relocation of petroleum pipelines
- How to keep traffic open during construction?



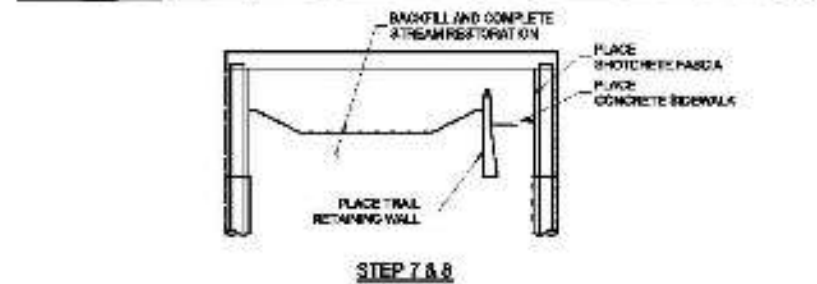
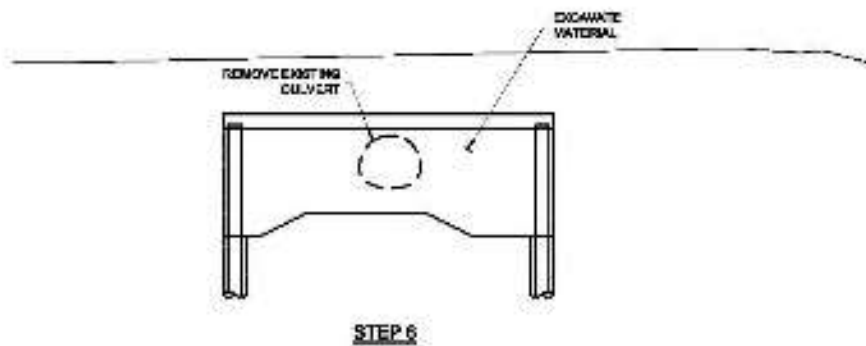




# Construction Sequence



**STAGE 1**



**STAGE 2**

# Shoring between Phases





# Excavation to Lid Grade



# Construction of Soldier Piles





# Driving Steel Plate Lagging



# Preparing Base of Lid



# Rebar (lots of it!)





# Constructing the New Culvert Lid



# Pouring and Curing the Lid



# Completing West Side





# Backfill to Grade



# PSE Replaces their Pipe







# Both Olympic Pipelines Rerouted over West End of Culvert



# OPL Connects 20-inch Pipe & Reopens Coal Creek Parkway for the Winter



# Beginning of Phase 2 OPL Completes Work on 16-inch Petroleum Pipeline





# OPL Completes Work on 16-inch Petroleum Pipeline



# OPL Completes 16-inch Pipeline Work





# Removing the Decommissioned Pipelines





# Mining Out the New Structure



# Removing the Old Culvert



# Applying the Shotcrete





# Constructing the Trail



# Working with an In-Stream Work Window (July 1\* to September 30)



\*WDFW Granted Earlier Window (June 15<sup>th</sup>) in 2014

# Working around Existing Culvert





# Working around the Existing Culvert



# Stream Bypass



# Stream Bypass





# Bypassing Coal Creek



# August 13<sup>th</sup> Storm





# Improving Fish Passage per Emerging WDFW Guidance





# Constructing New Roughened Stream Channel



# Concrete Sill for Upstream Fish Passage

August 26<sup>th</sup>



September 15<sup>th</sup>





# Completed Roughened Channel

**Lower end**



**Below the bridge**





# A Completed Vision



# Before and After



# Project Accomplishments

- Reduced risk of failing culvert
- Protects Coal Creek Parkway (28,000 ADT) from flooding/debris
- Securely protect fuel and gas pipelines.
- Improves fish passage
- Provides safe connection across Coal Creek Parkway for trail users





# Thank you

- **City of Bellevue**
  - Bruce Jensen – PM
  - Shawn Riley – Inspection Supervisor
- **Scarsella Bros. Construction**
  - SB Structures
- **Consultant Team**
  - CH2M HILL
  - Herrera Environmental Consultants
  - Stepherson & Assoc.
- **Partners**
  - Olympic Pipeline Co.
  - Puget Sound Energy
  - Verizon
  - WDFW
  - Muckleshoot Tribe