

# CITY OF PORT ANGELES

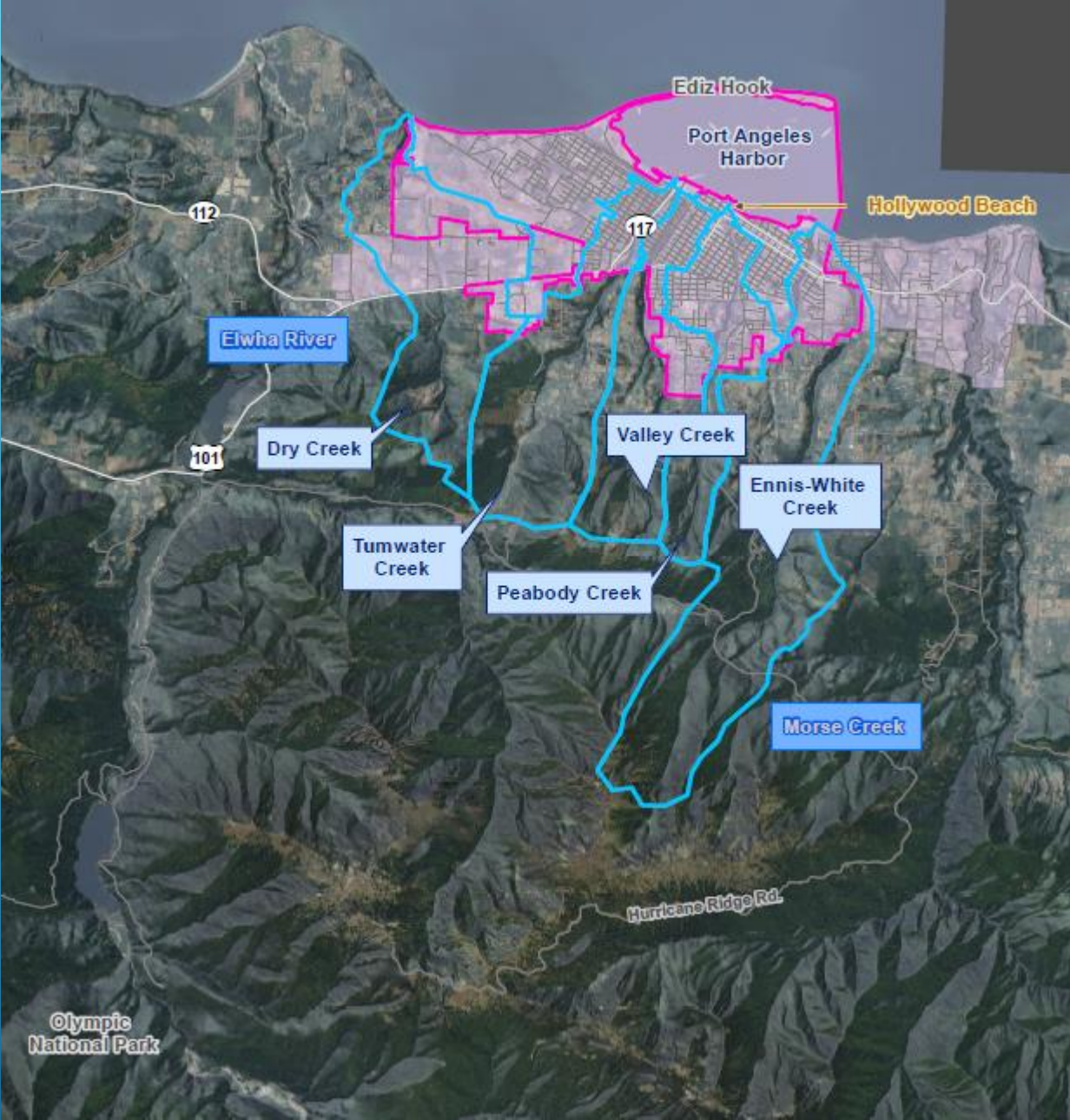
Lincoln Street - Peabody Creek Culvert



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City Engineer

# PORT ANGELES OVERVIEW

Strait of Juan de Fuca  
Port Angeles Harbor  
5 Creeks  
Olympic Mountains



- ▶ Case Study: Creek through middle of City
- ▶ Unique Factors:
  - ▶ On State Fish Passage Injunction List
  - ▶ Multi-jurisdictional (City and WSDOT)
  - ▶ Culvert daylight problematic (R/W, Street Connectivity, limited habitat)
  - ▶ Prioritization and habitat potential among area creeks



# PEABODY CREEK LINCOLN ST CULVERT

- ▶ Peabody Creek Basin
- ▶ Extends through the middle of the downtown business district
- ▶ Final 1,070 in structurally deficient culvert
- ▶ Culvert on injunction list
- ▶ Creativity beyond typical open cut



# PEABODY CREEK CULVERT

# HISTORICAL PHOTOS



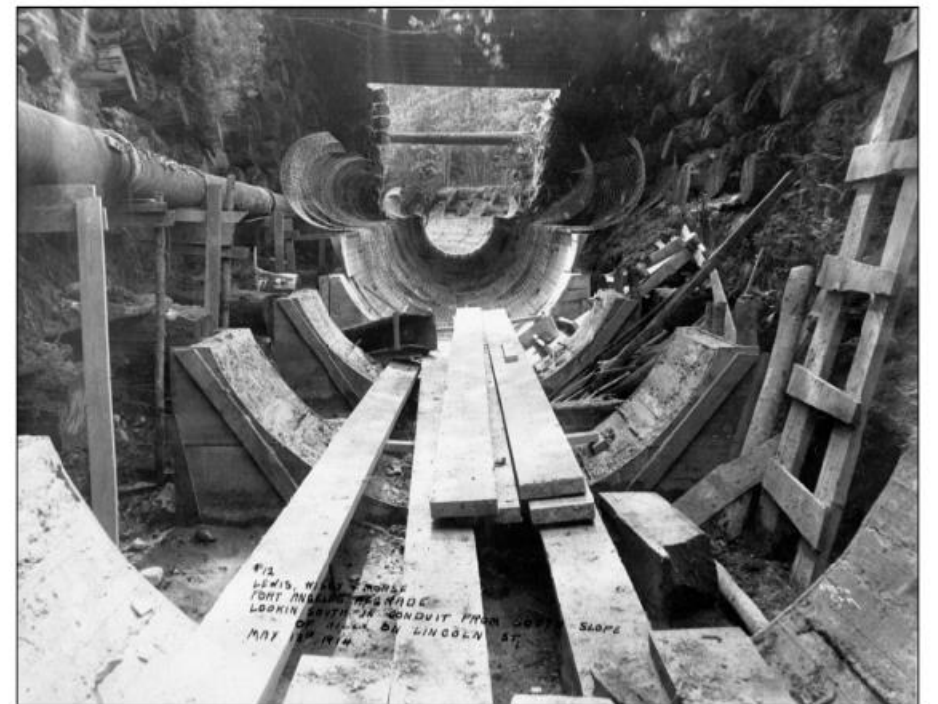
Picture 8: Construction of culvert north at intersection of Front and Lincoln (looking south)



Picture 10: Port Angeles regrading



Picture 2: Construction of bend to the north from entrance (looking north)



Picture 6: Construction of culvert north of intersection of First and Lincoln (looking south)

# CULVERT OBSERVATIONS



Figure 2-3. Ellipse: missing invert (170')



Figure 2-4. Ellipse: missing invert (176')



Figure 2-9. Ellipse: crack with infiltration (335')



Figure 2-10. Ellipse: crack with infiltration

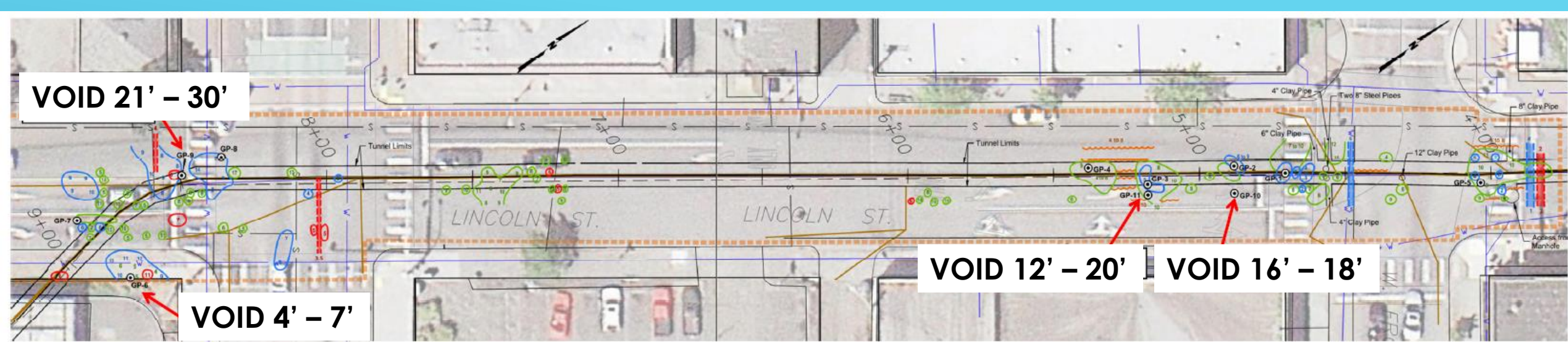
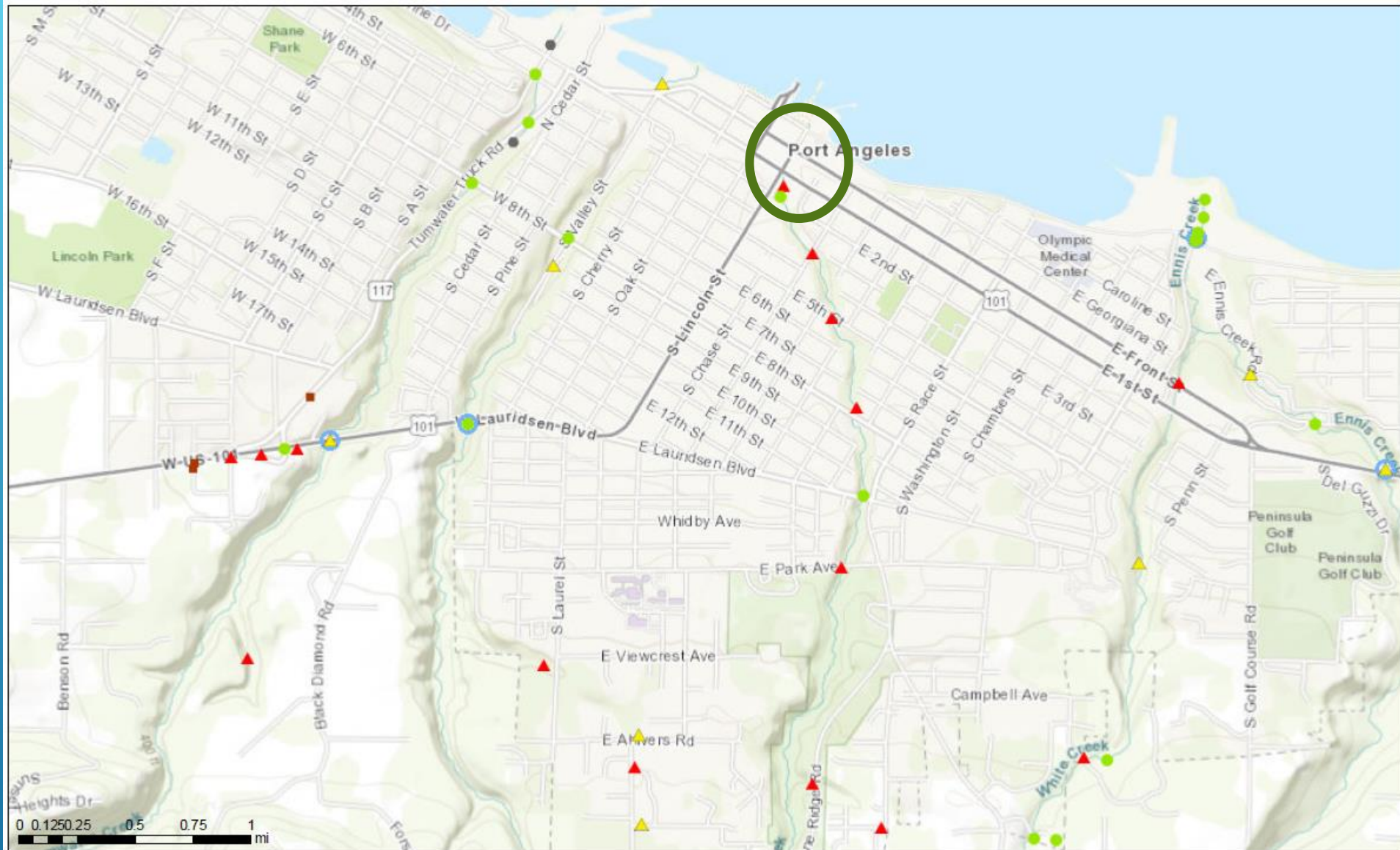


Figure 3-1. Void locations at the intersection of Lincoln Street and First Street

- ▶ High potential for structural failure
- ▶ 2012 – 8 foot sinkhole was identified and filled at the intersection of Lincoln St and First St
- ▶ 2014 – Ground penetrating radar identified 4 voids in close proximity to the culvert
- ▶ 2019 – Inspection of culvert revealed no significant changes in condition

# CULVERT OBSERVATIONS



### Washington State Fish Passage



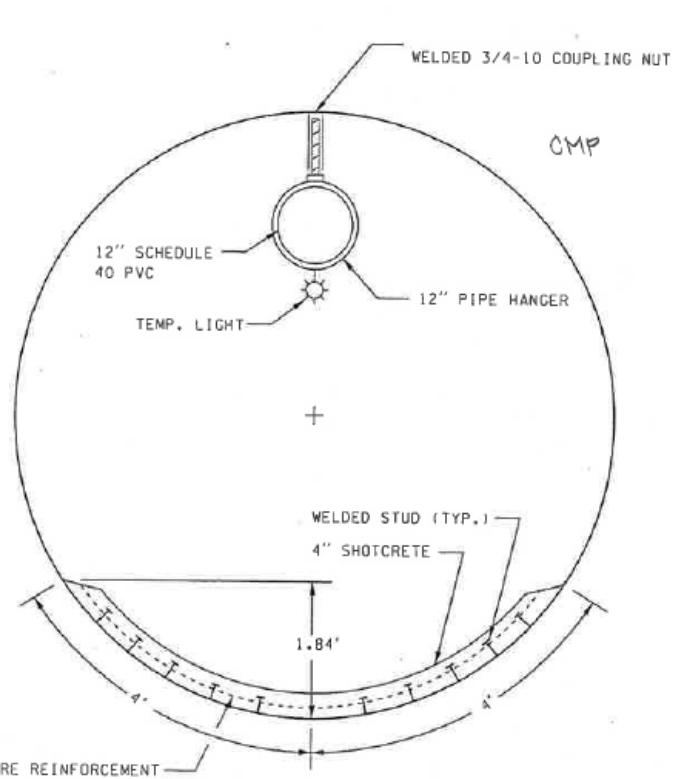
Washington  
Department of  
**FISH and WILDLIFE**

- Not a barrier
- ▲ Partial Fish Passage Blockage
- ▲ Total Fish Passage Blockage
- ▲ Barrier, Unknown Percent Passable
- Diversion
- ▲ Natural Barrier - Verified
- Unknown
- Corrected Barriers



- ▶ 2009 Scoping level concepts evaluated including open cut and repair alternatives
- ▶ 2013 State Fish Passage Injunction
- ▶ 2014 City Study identify' s four voids in close proximity to culvert
- ▶ 2016 City identify' s preliminary design funding to accelerate project, Meets with Stakeholders WSDOT, LEKT and USACOE
- ▶ 2019 City Environmental and Permitting coordination and interest in accelerating nearby Ennis Creek Restorations

TIMELINE



### SECTION A

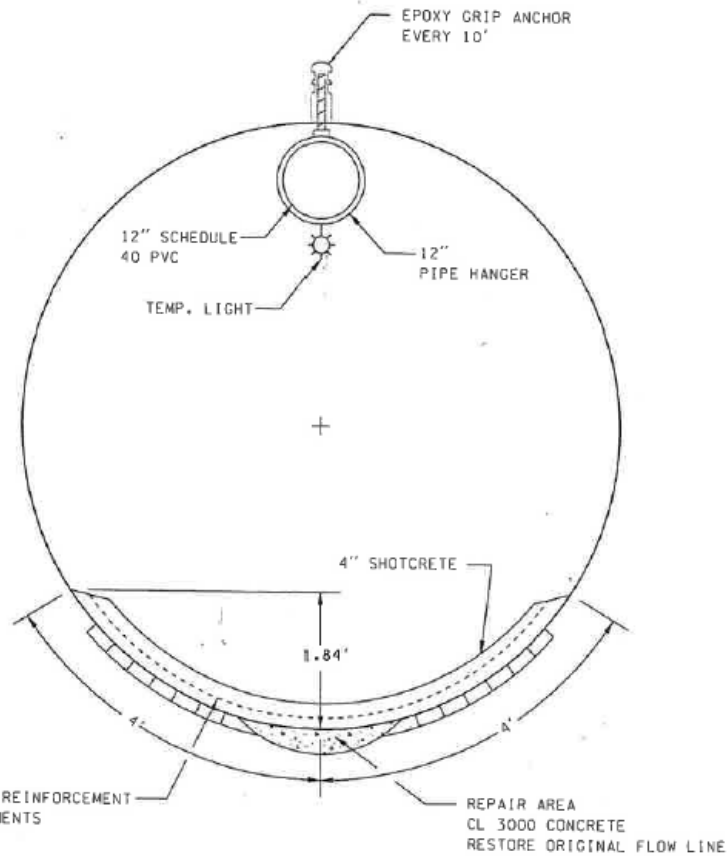
(NOT TO SCALE)

EXISTING 8' CMP

STA 0+00 TO STA 1+80

(STATIONING BEGINS AT INLET)

*upstream*

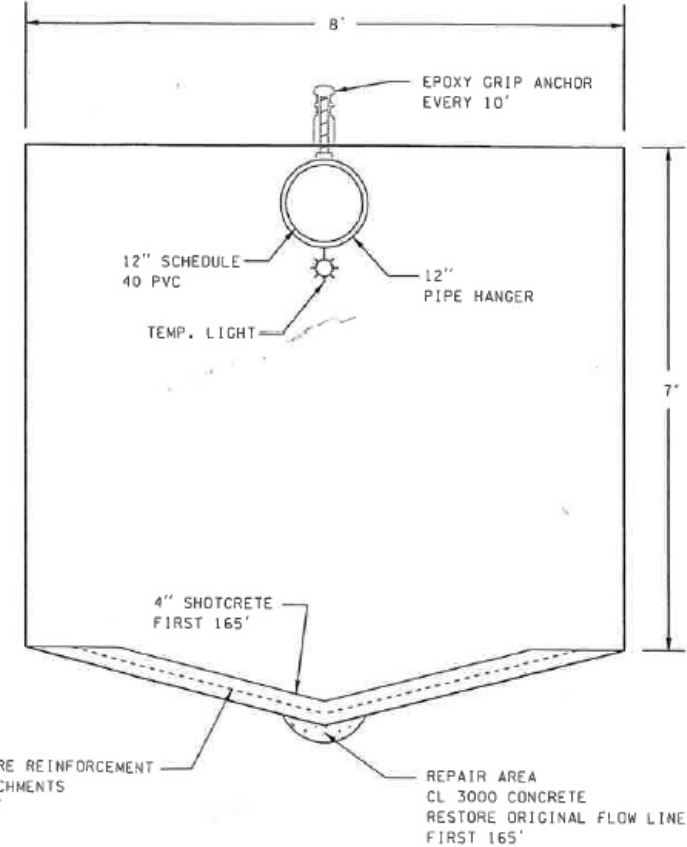


### SECTION B

(NOT TO SCALE)

EXISTING 8' CONCRETE PIPE

STA 1+80 TO STA 6+80



### SECTION C

(NOT TO SCALE)

EXISTING CONCRETE BOX

STA 6+80 TO STA 10+80

# PEABODY CREEK / LINCOLN STREET CULVERT REHAB

- ▶ Stakeholder buy in of repair with in place concepts and fish baffles
- ▶ Finalize Design
- ▶ Secure construction funding for Peabody Culvert Repair and Ennis Creek Culvert Replacement

Project Status:

Preliminary Design (2019/2020)

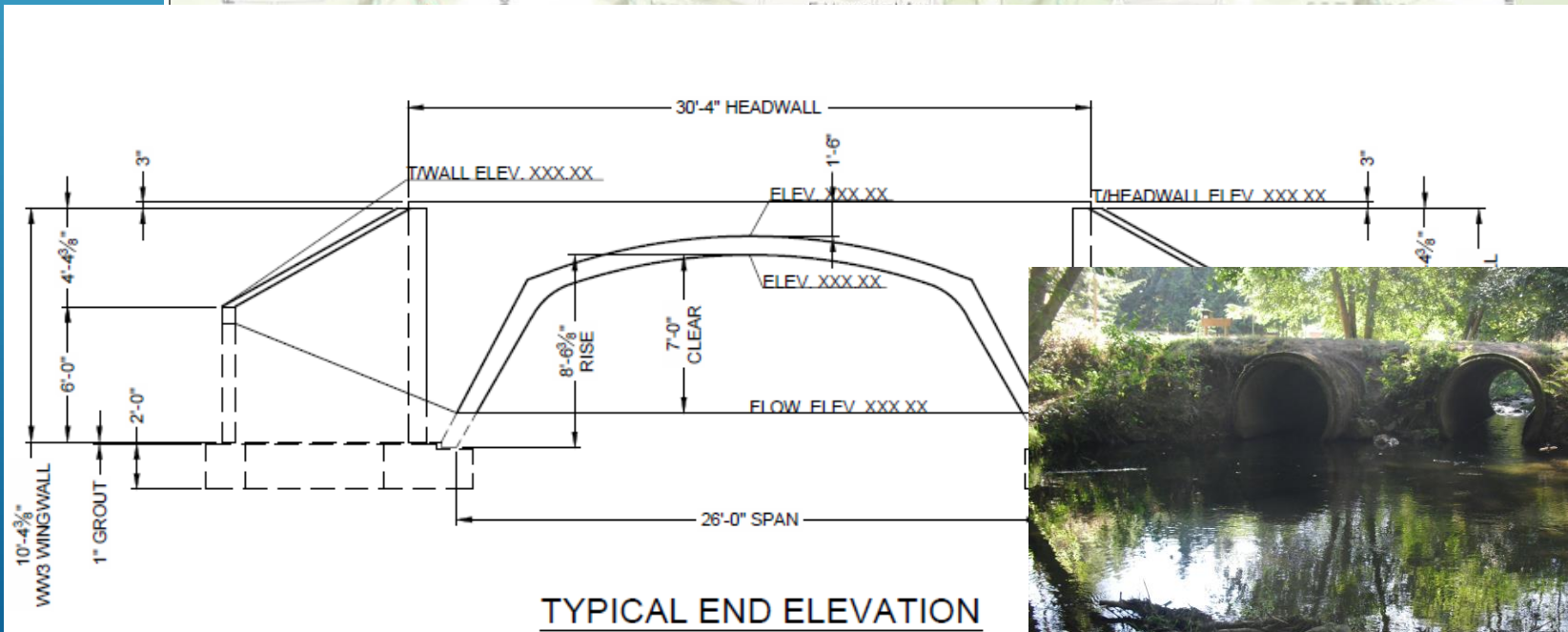
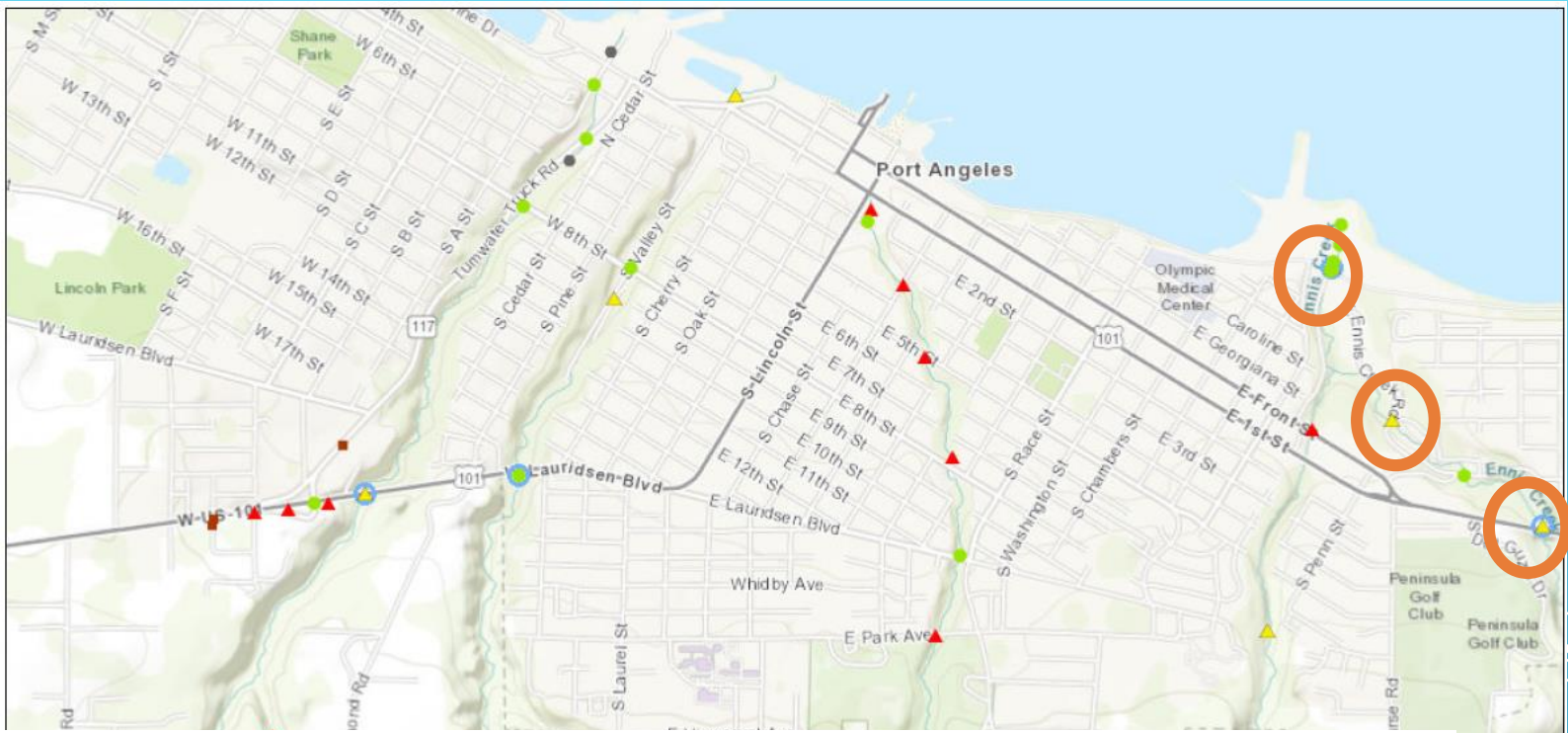
**Total Construction Project Cost: \$3.0 million**

# PEABODY CREEK / LINCOLN STREET CULVERT REHAB NEXT STEPS



- ▶ City Double Barrel Culvert Replacement
- ▶ WSDOT Culvert Replacement upstream
- ▶ High habitat potential in Ennis Creek Watershed

Project Status: Unfunded  
 Project Cost: \$0.5 million



# ENNIS CREEK CULVERT REPLACEMENT

Questions & Discussion

THANK YOU

A decorative graphic consisting of several parallel white lines of varying lengths, arranged in a diagonal pattern from the bottom right towards the top right of the slide.