

Why Go Trenchless?



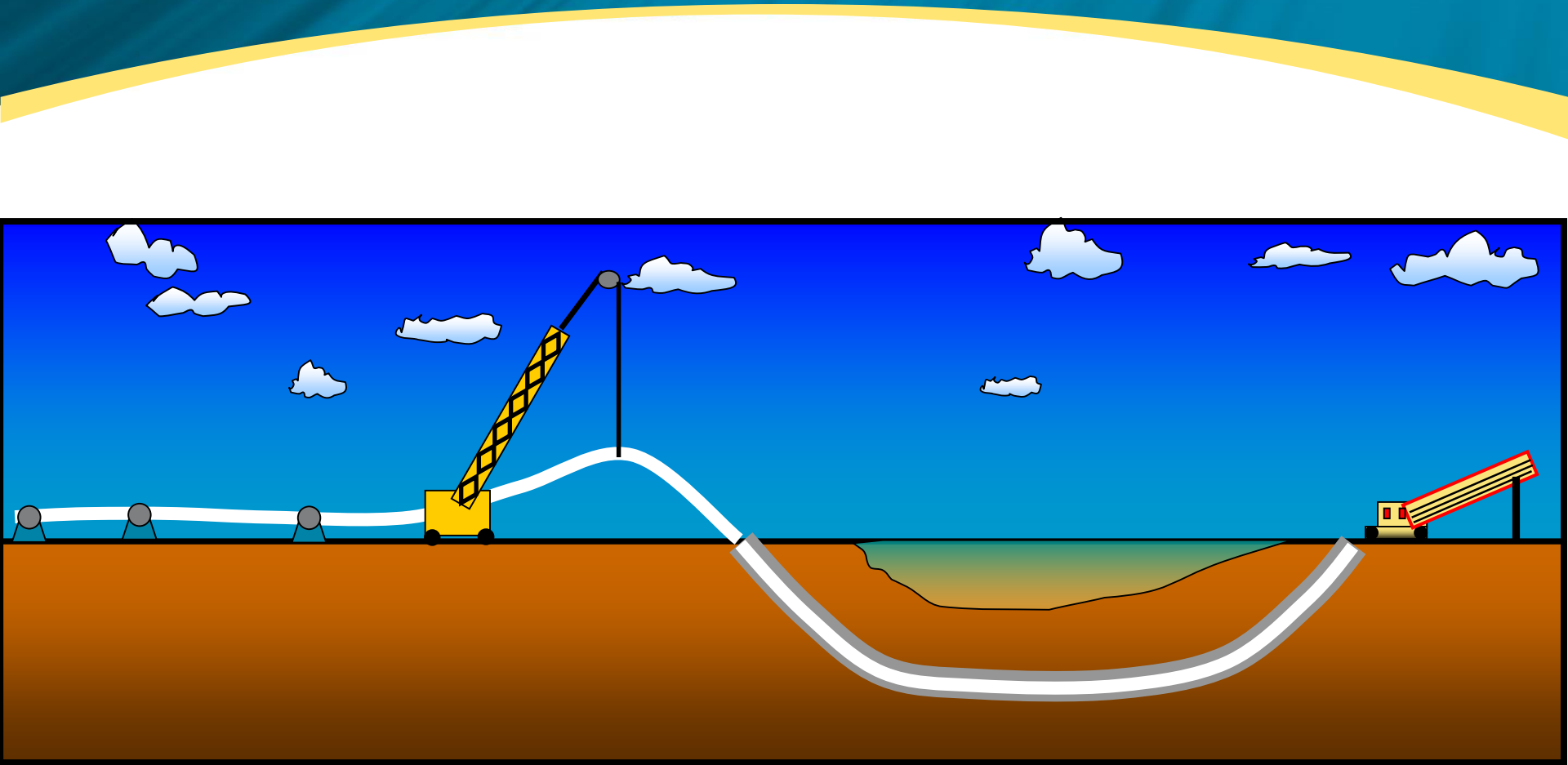
MWH[®]

BUILDING A BETTER WORLD

Trenchless Technologies



HDD Construction



Anacortes Waterline Replacement (1998-2007)



Anacortes Waterline Replacement

- Design began in 1998, completed in 2007.
- 6 Segments with two HDD constructed portions.
 - Segment 2 included an 1200 LF of HDD under the Swinomish Channel
 - Segments 5 and 6 had appx. 1,500 LF of HDD under the Skagit River.



Project Location

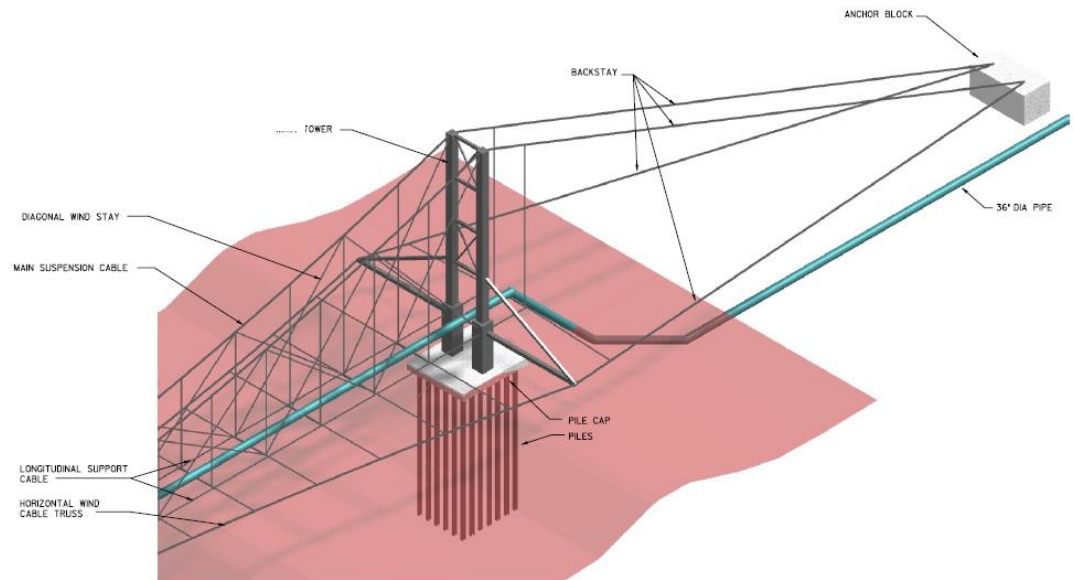


Skagit River Crossing

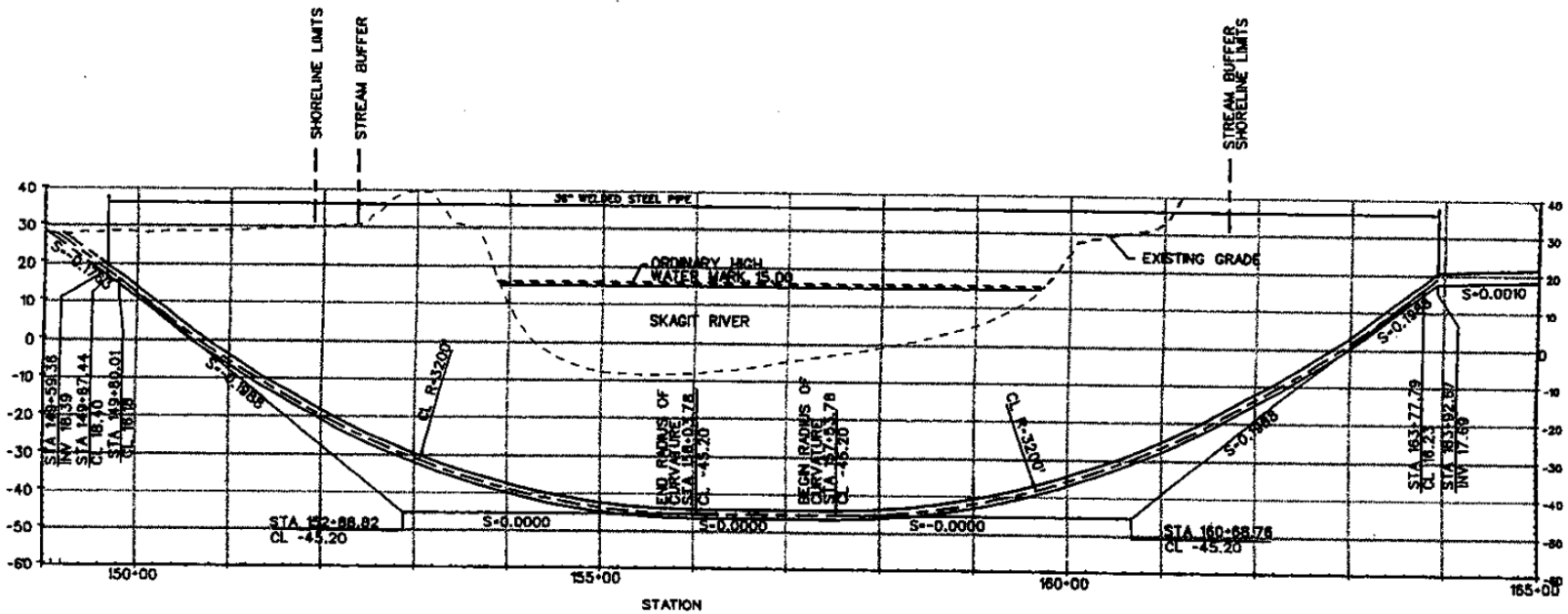


River Crossing Alternatives

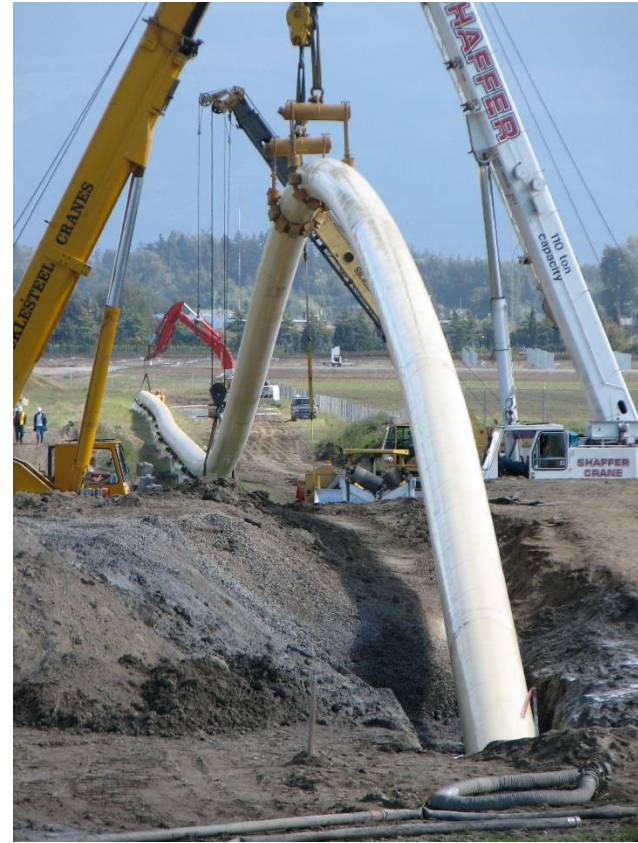
- Microtunneling
- Bridge crossing
- HDD



HDD Profile – Skagit River



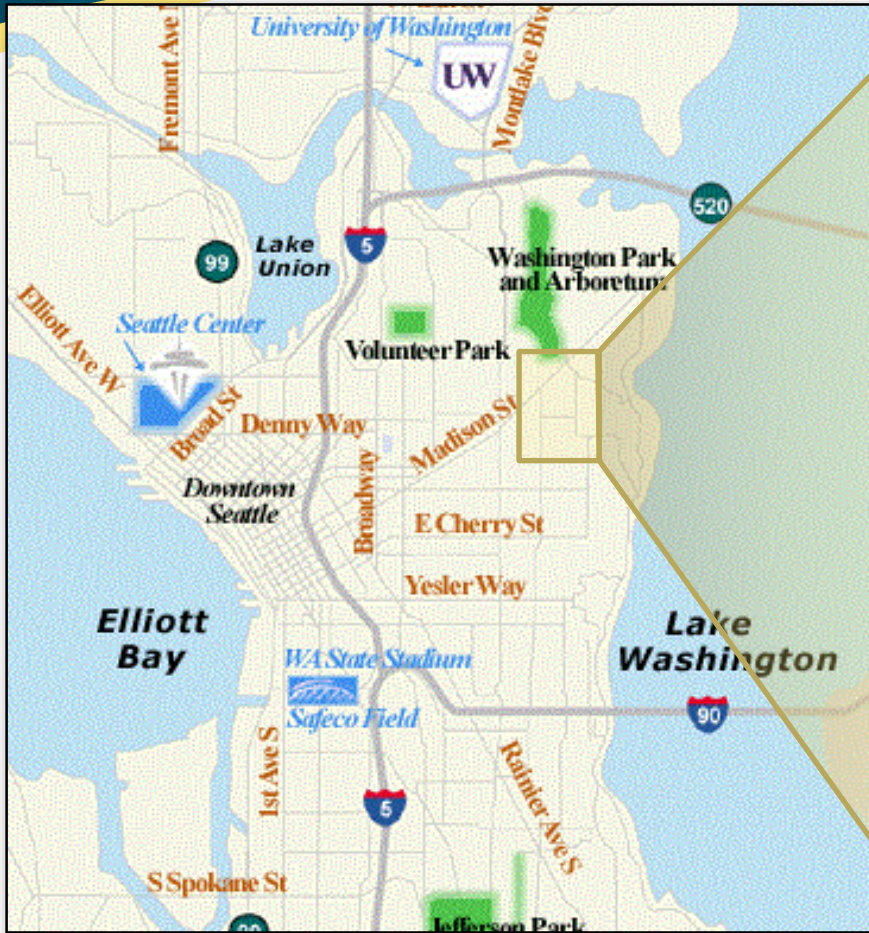
Pipe Construction



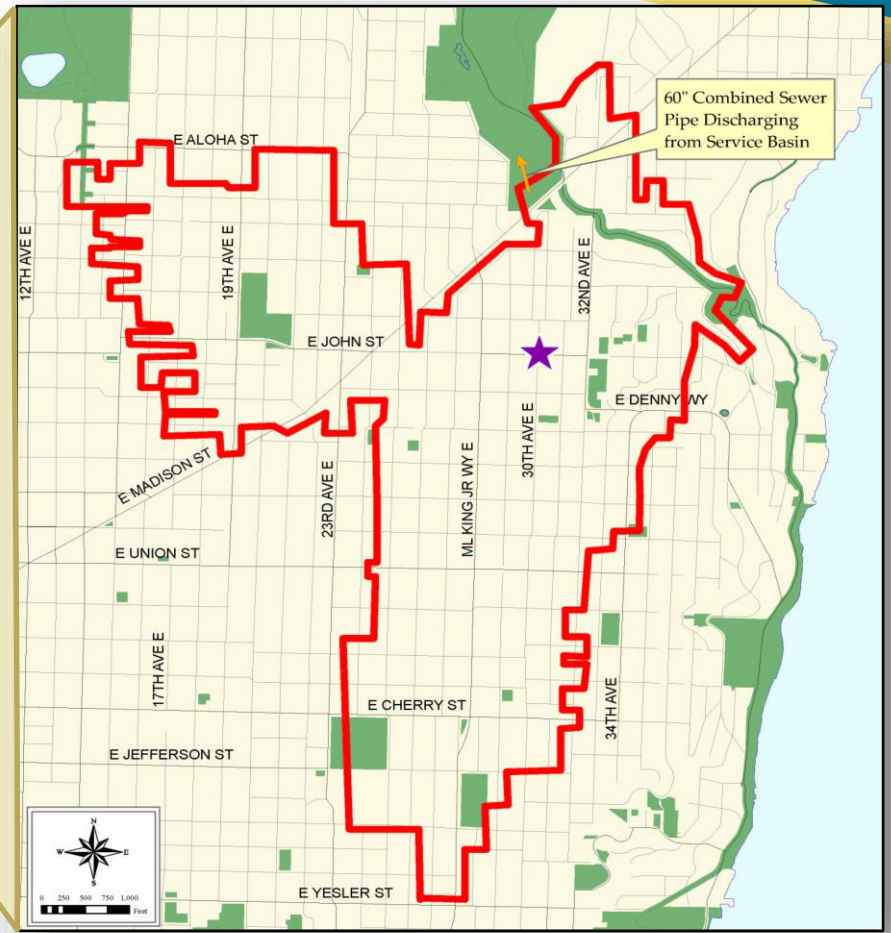
NW Diversion and Washington Park Storage Project (2008-2013)



Madison Valley Project



City of Seattle



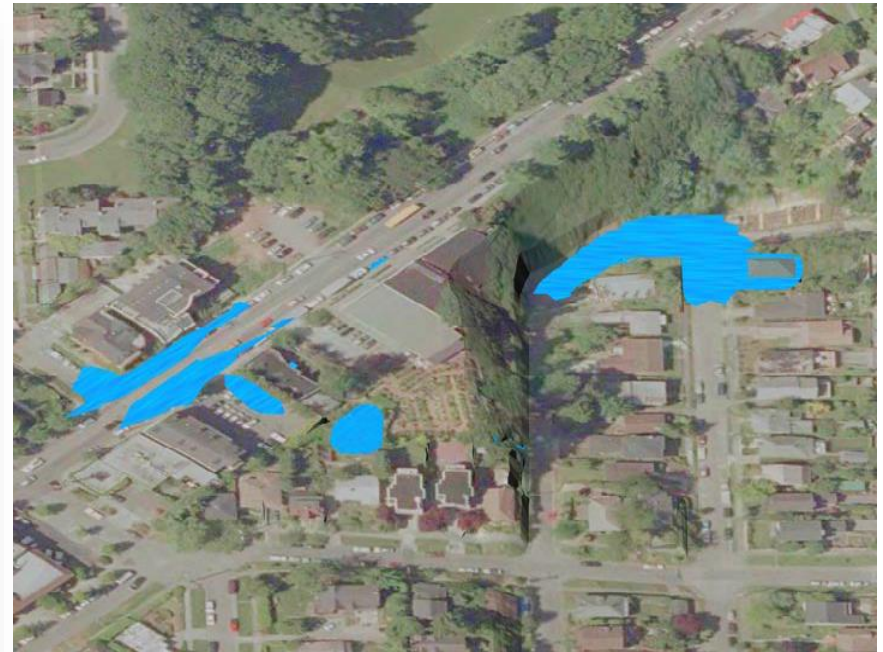
Madison Valley Drainage Boundary



Project to Alleviate Costly Flooding

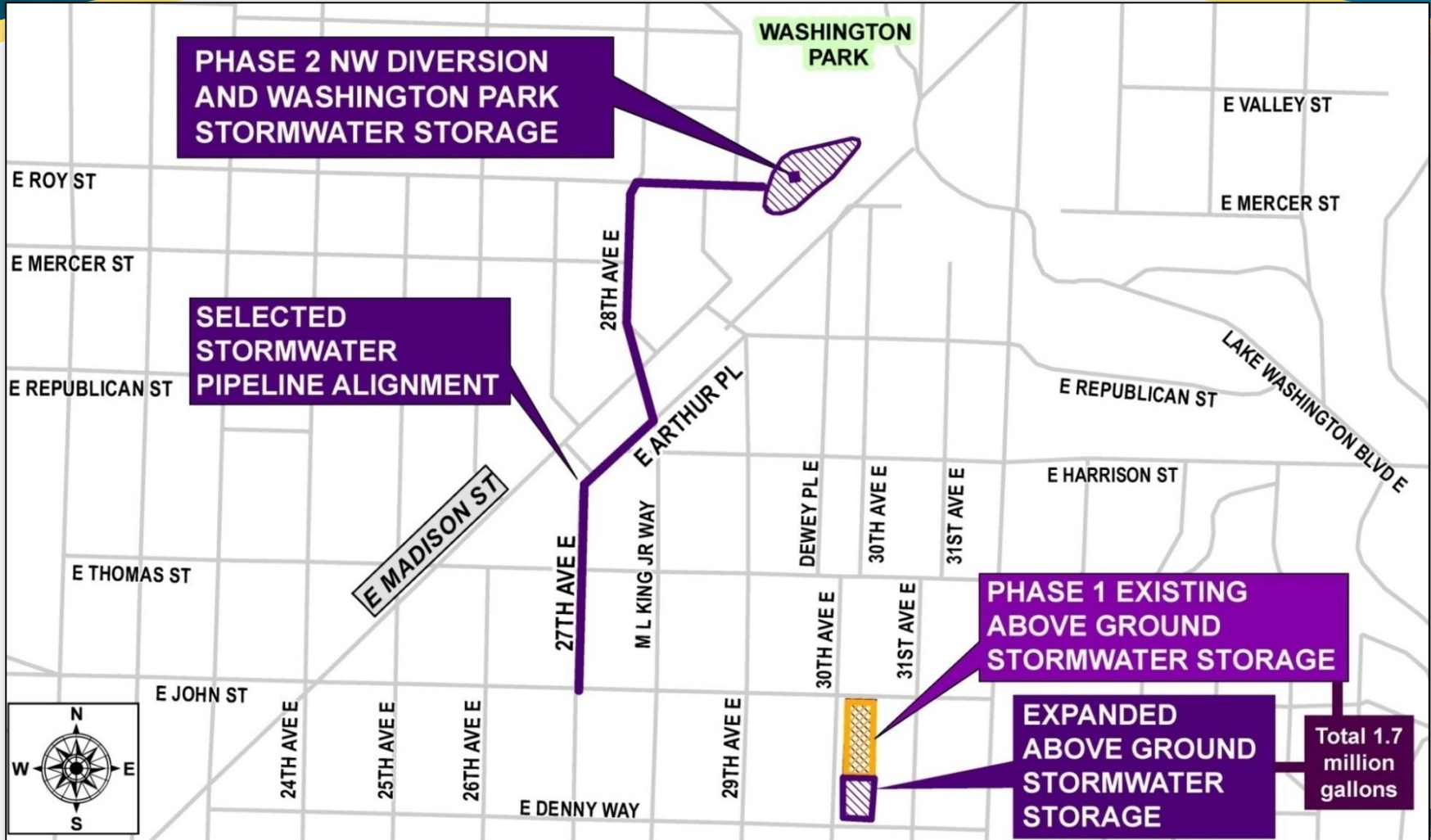


2004 Basement Flooding



2006 Surface Flooding

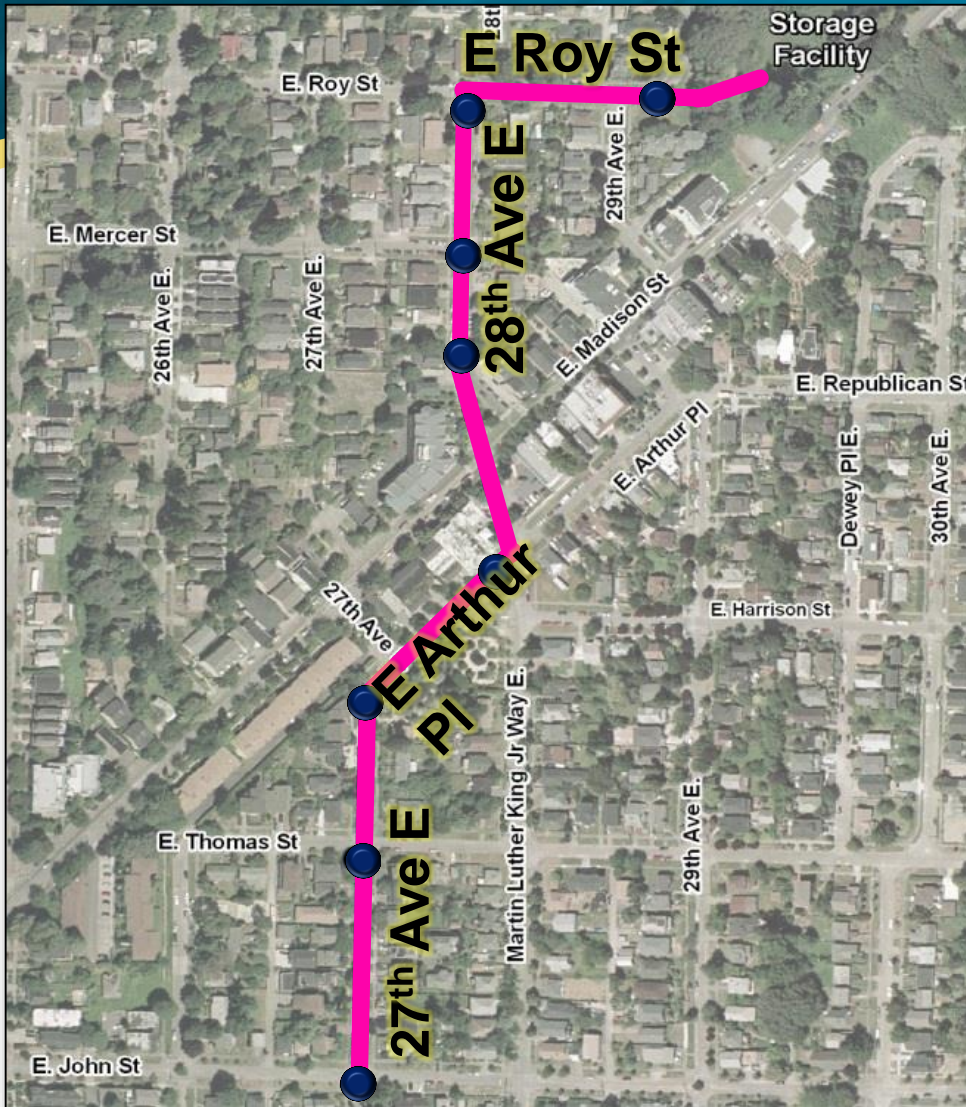
NW Diversion and Washington Park Storage Selected for Phase 2





Pipe Route Alternative Selection

Alternative	Evaluation Criteria		
	Risk	Construction Cost	Impacts
Open Cut Construction	High Potential Damage to underground utilities	Moderate \$8-10 million	High Significant disruption along entire route
Trenchless Construction	Low Potential damage to underground utilities	Moderate \$7-8 million	Moderate Impacts primarily at shafts





-  = Proposed shaft location
-  = New stormwater pipeline



Launching Pits



Tulalip Water Pipeline (2008- Present)



Tulalip Water Pipeline Project

- Project to supply Tulalip Tribes with water from the City of Everett's system.
- Predesign began in 2008 and the final segment (Segment 2) is in construction.
- Divided into 8 segments and includes 5 HDD sections.
 - Segment 2 (2,200 ft)
 - Segment 3 (2,000 ft)
 - Segment 5S (3,680 ft)
 - Segment 5N (2,760 ft)
 - Segment 7 (1,200 ft)

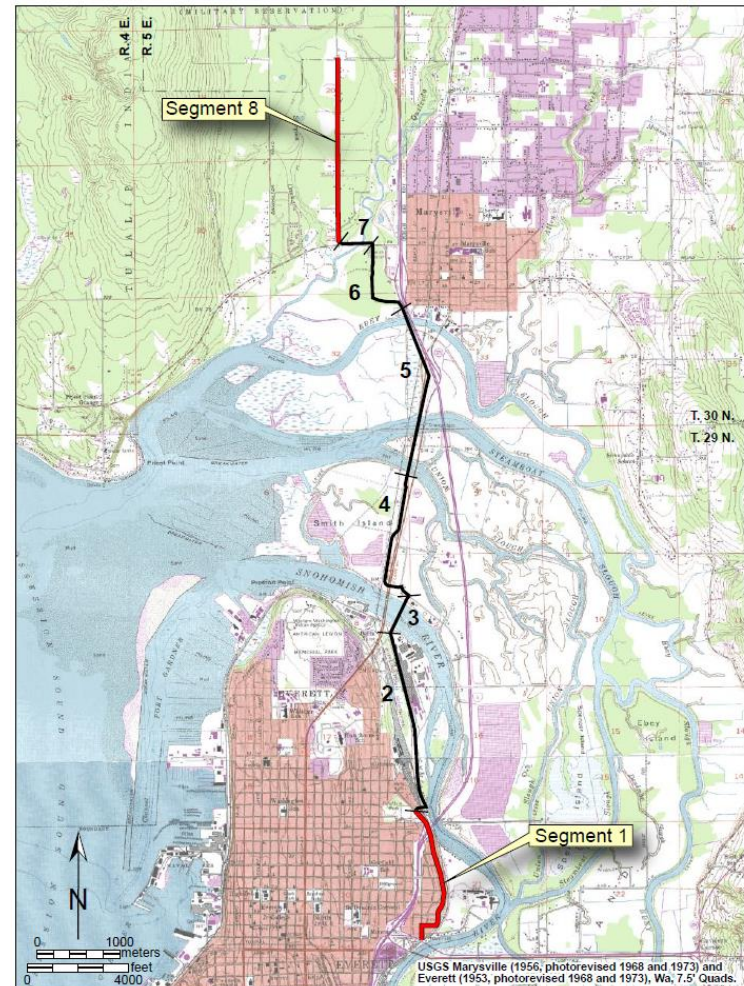
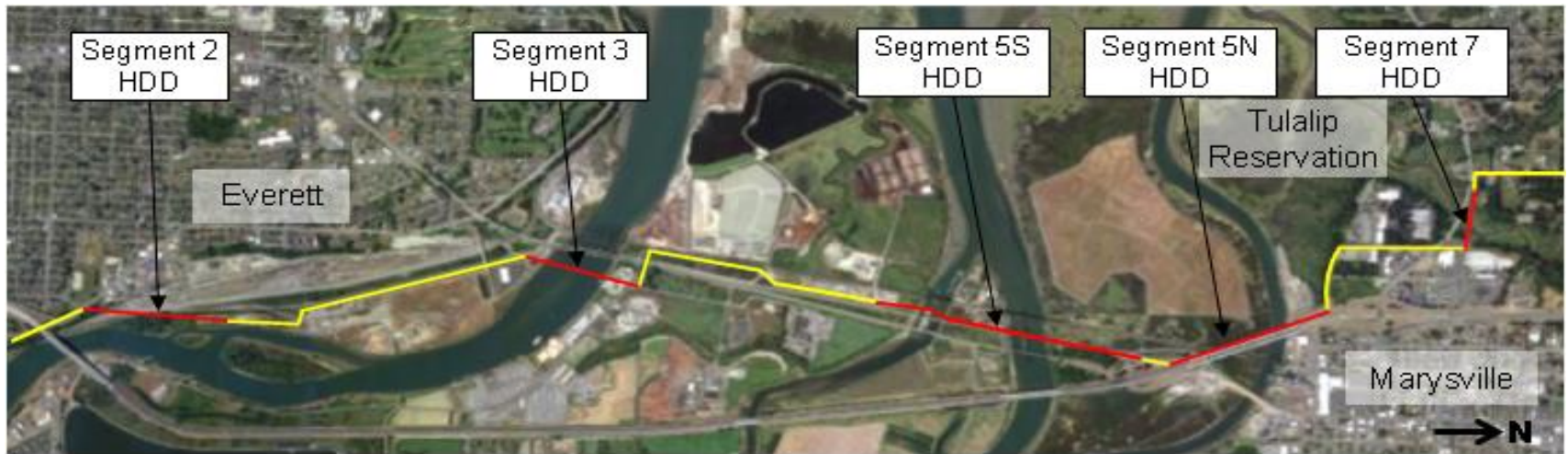


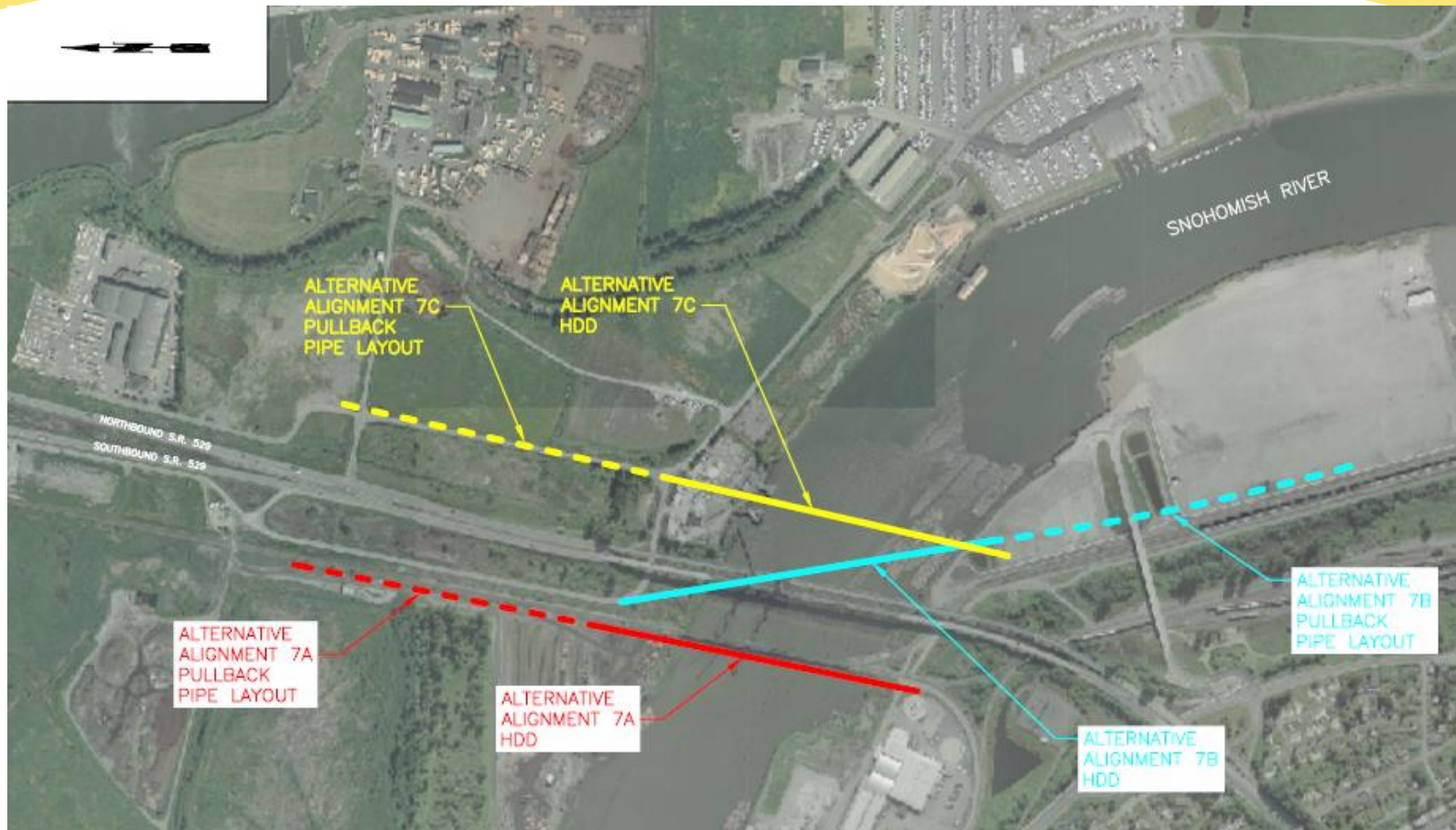
Figure 1. Tulalip Water Pipeline route showing segments 1 through 8.



HDD Overview



Segment 3 – Snohomish River Crossing



Segment 3 – Views of the Crossing



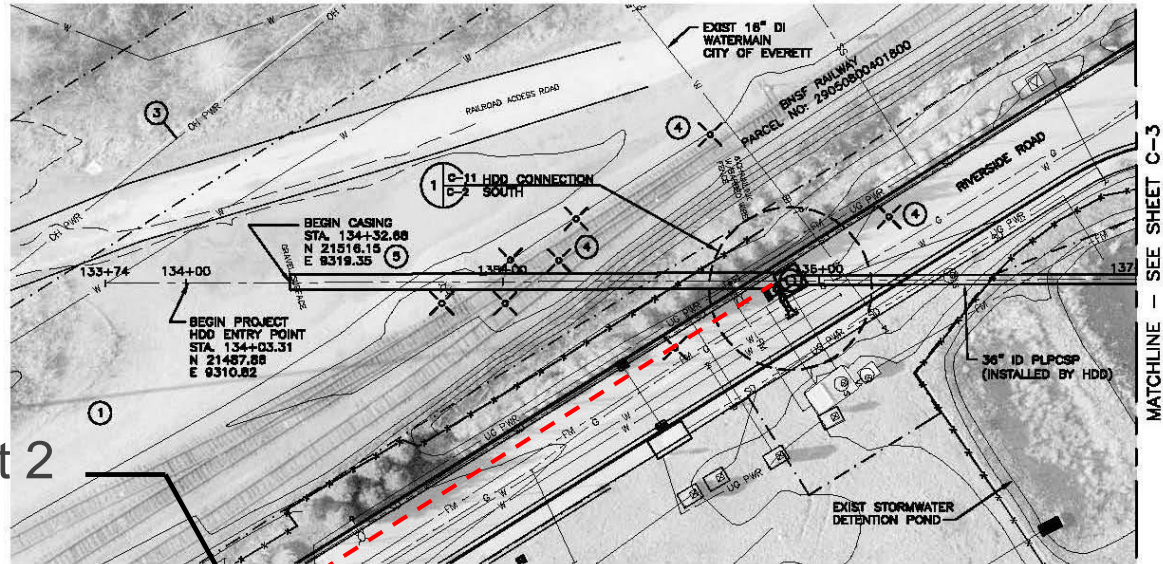
Segment 3 crossing of Snohomish River looking north



Segment 3 crossing of Snohomish River looking south

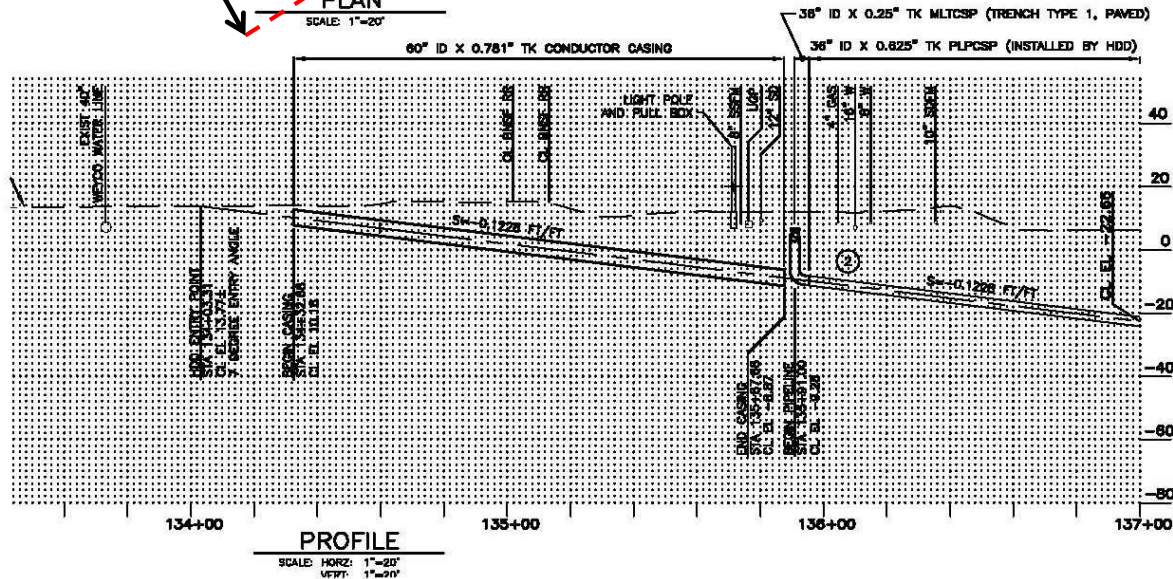


Future Segment 2



MATCHLINE - SEE SHEET C-3

PLAN
SCALE: 1"=20'



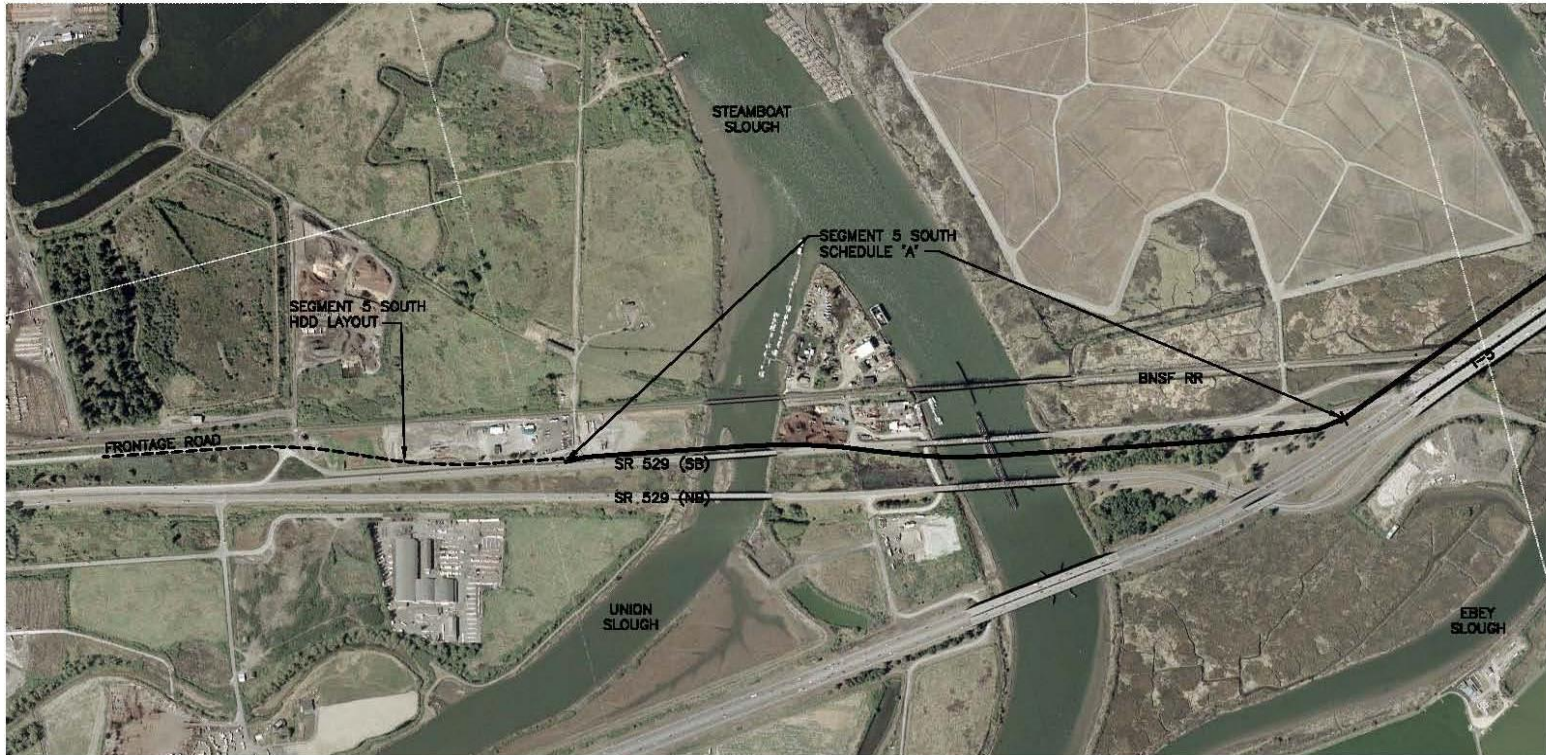
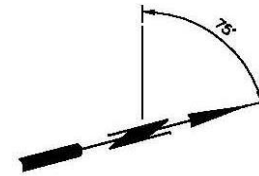
PROFILE
SCALE: HORZ: 1"=20'
VERT: 1"=20'



Segment 3 Pullback and Casing Installation



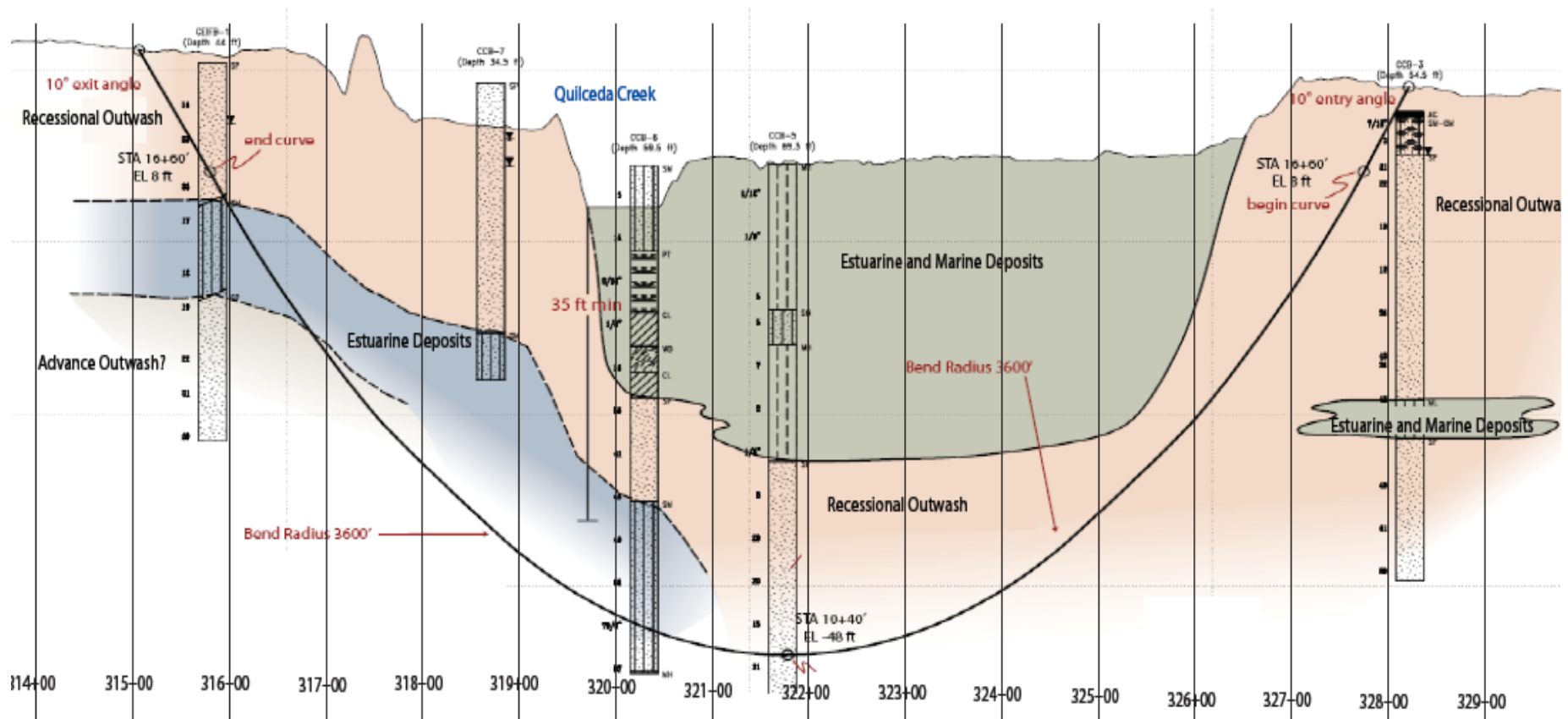
Segment 5S – Plan View and Staging Area



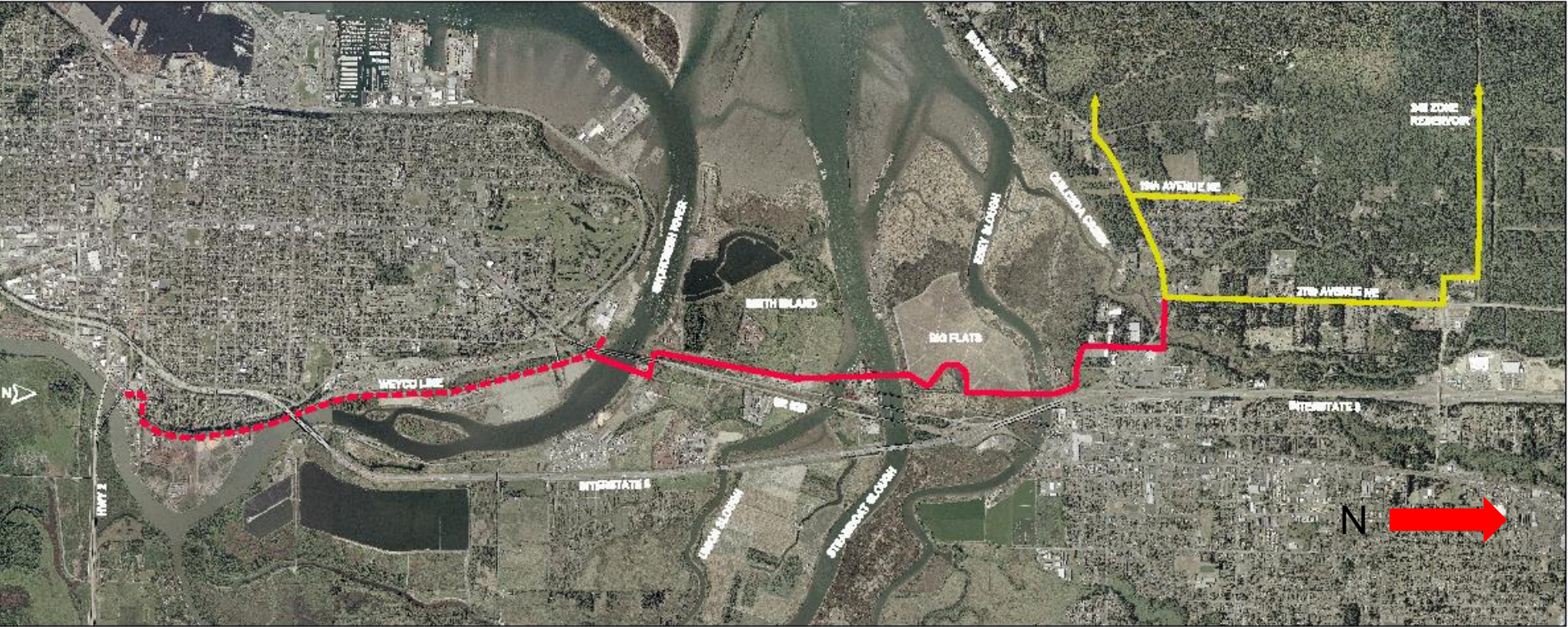
Segment 5N – Ebey Slough



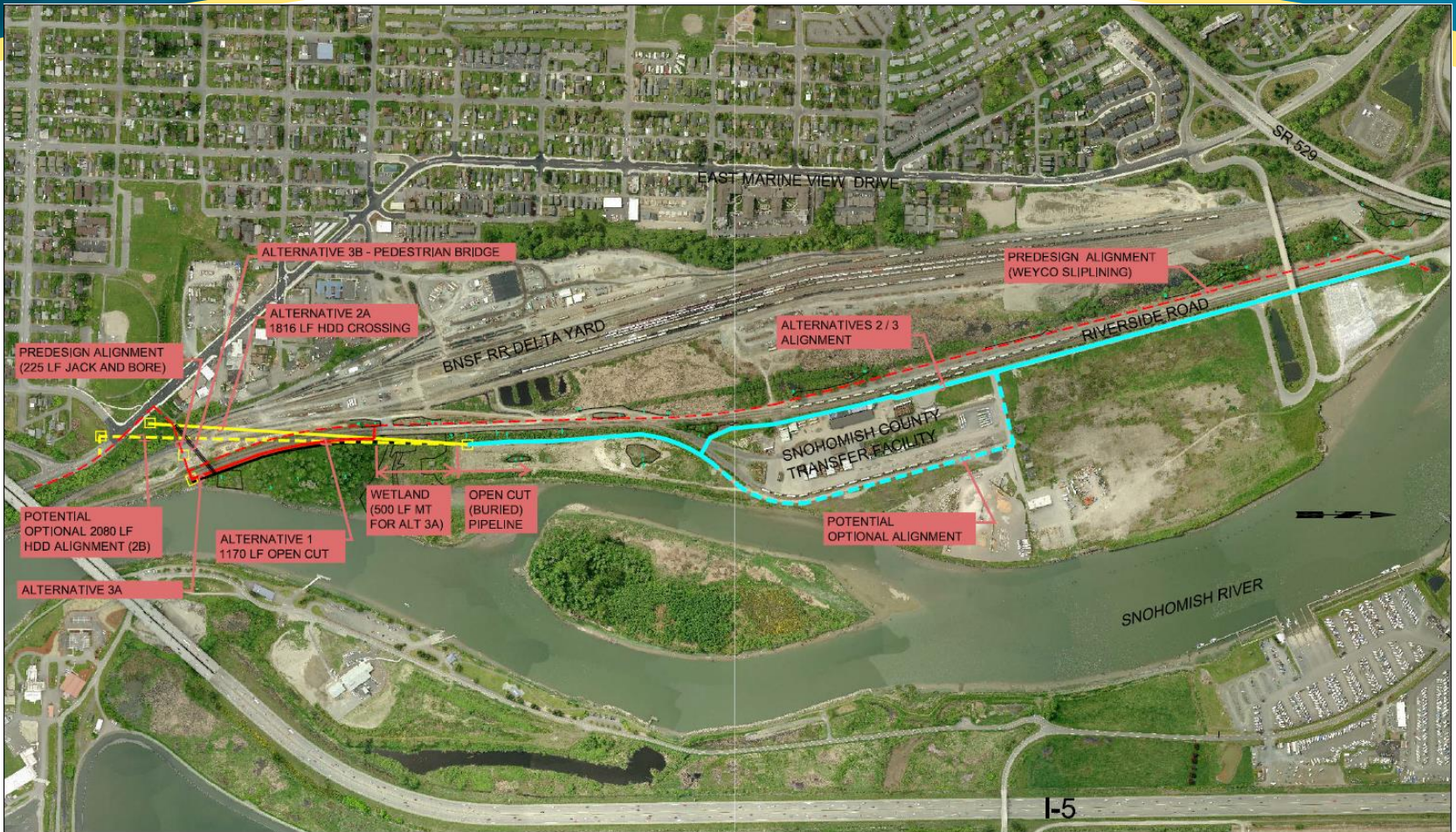
Segment 7 – Quilceda Creek



Weyco Slipline



Segment 2



June 15, 2010

Approximate Scale 1"=500'

Tulalip Water Pipeline Project
FIGURE 1 - SEGMENT 2
ALTERNATIVE ALIGNMENT



Acknowledgements

- AMEC
- Aspect Consulting
- Black & Veatch
- Brown & Caldwell
- CDM Smith
- CH2M Hill
- Davido Consulting Group
- Construct Company
- IMCO Construction
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- Seattle Parks Department
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- EnviroIssues
- Karen Keist Landscape Architects
- Nakano Associates
- Northwest Hydraulic Consultants
- Staheli Trenchless Consultants
- Transpo Group
- MidMountain Construction
- Northwest Boring



Acknowledgements

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- Tulalip/Everett Joint Board
 - Clair Olivers – Project Administrator
- Tulalip Tribes:
 - Gus Taylor
 - Mac McKinsey
 - Debbie Bray
- City of Everett Staff:
 - Jim Miller
 - Souheil Nasr

Consultant Team:

- MWH Americas, Inc.- Design Lead
- Parametrix - CM Lead
- Staheli Trenchless Consultants
- GeoEngineers
- DOWL/HKM
- Northwest Archeology
- Northwest Corrosion



Questions?

