



Eagle River Reservoir and Transmission Main

by **R&R Consultant:**



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Summary



- R&R Consultant
- Client, PM, and FA
- Background
- Scope of Work
- Geotechnical
- Reservoir Alternatives
- Transmission Main Alternatives
- Booster Station
- Design Recommendation
- Phasing
- Recap



R&R Consultant



Ryan Rosario - Project Manager

Russell Gingras - Civil Engineer



Alungoo Tumen - Civil Engineer

Evan Rhodes - Civil Engineer



Brandon Shayan - Civil Engineer



Client and Mentors



Client: Anchorage Water and Wastewater Utility



Professional Mentor: Trevor Trasky, P.E.



Faculty Advisor: Matthew Calhoun, Ph.D.



Background

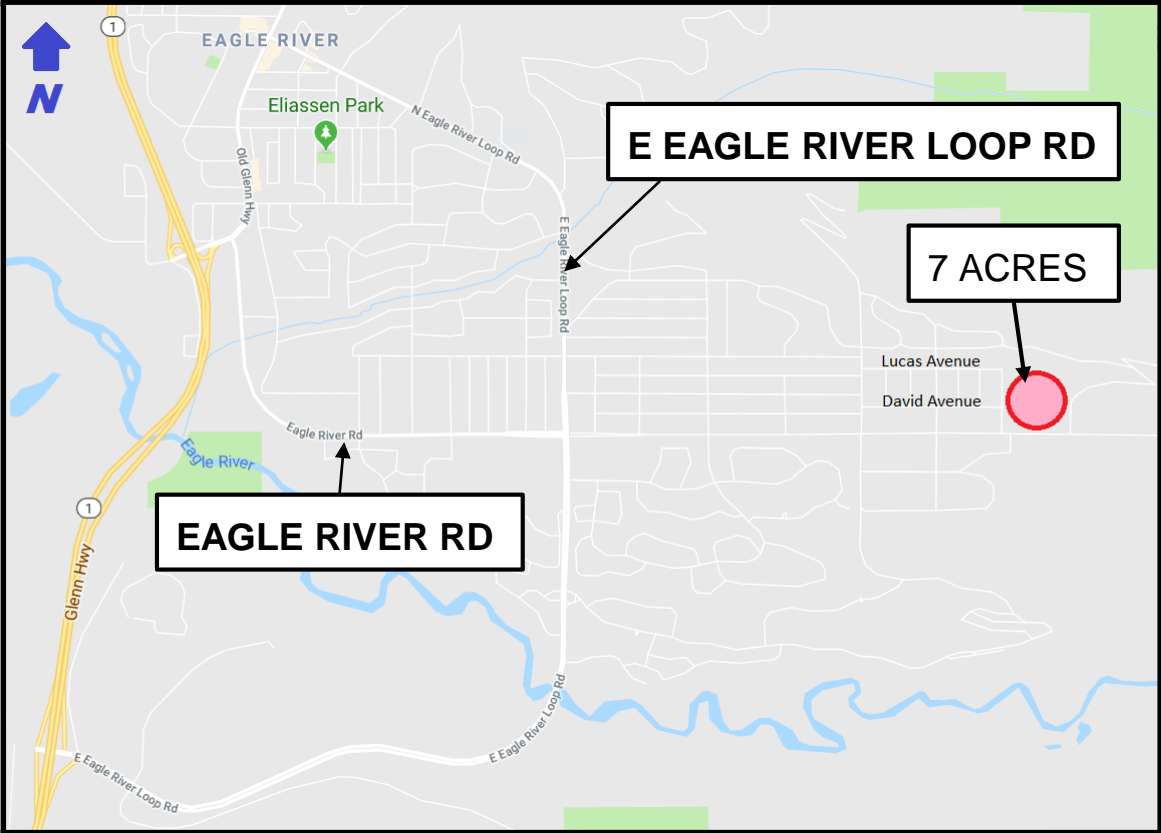


- Currently there is 3.75 MG water storage
- Eagle River needs a total of 10 MG water storage
- 10 MG = 3 day average demand storage





Location of the Project

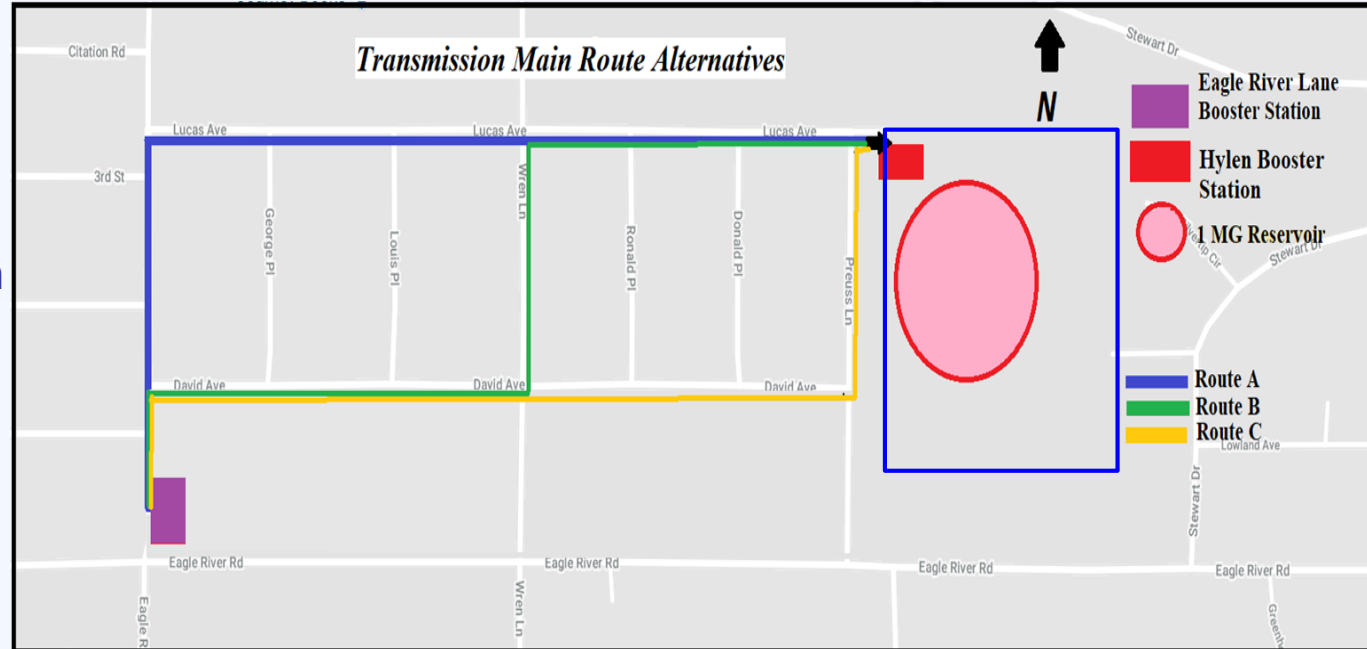




Location/Scope of Work



- 1 MG reservoir
- Booster station
- Transmission main











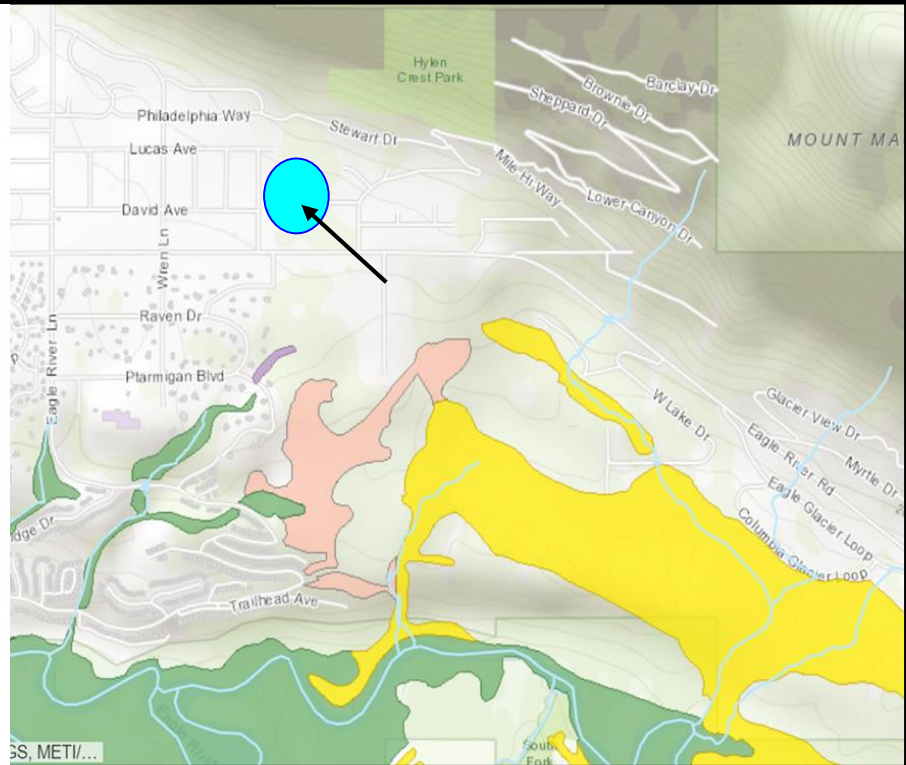
Map/Wetland



MOA Mapped Wetlands

WETLANDS

-  A - High Valuation
-  B - Moderate Valuation
-  C - Low Valuation
-  D - Undesignated
-  P - Potential
-  U - Not Classified





Geotechnical - Boring Logs



Soil Layer Conditions

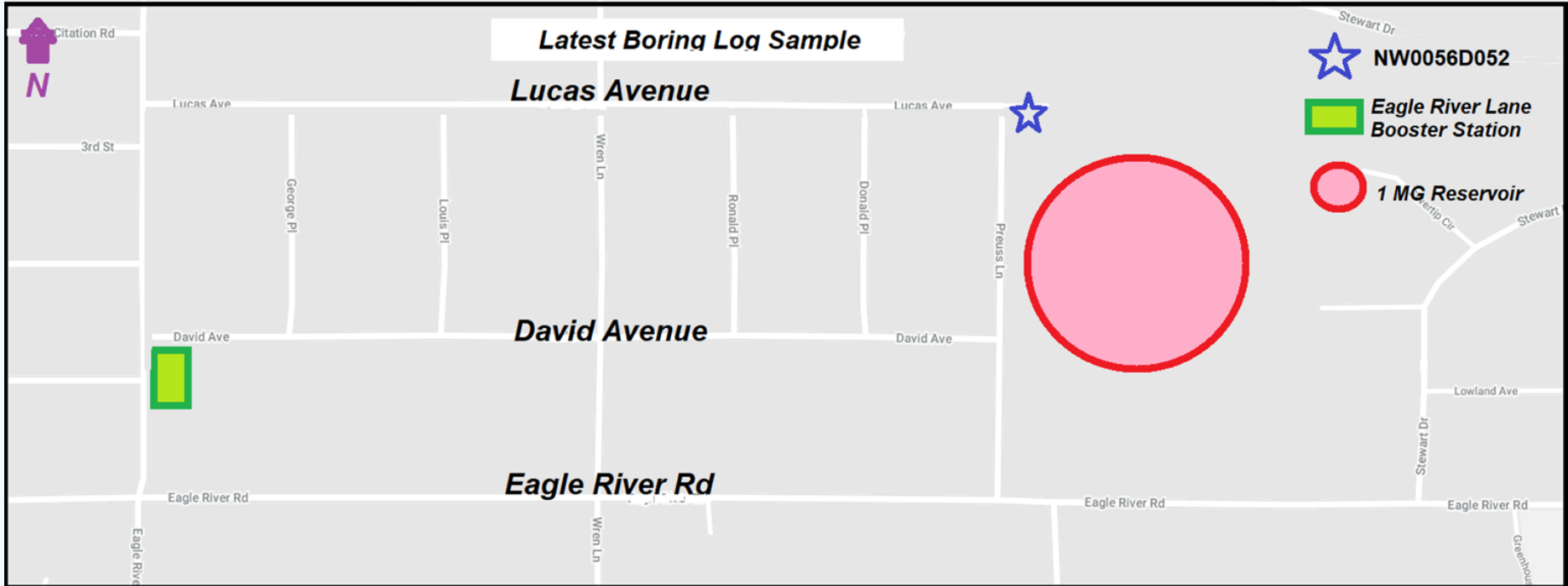
- Sandy Silt/Organics ~1-2 ft
- Silty Gravel ~ 2 ft to 5 ft
- Sandy or Silty Gravel 5 ft to 13 ft
- No Water Table Found on Any Sample

DR	DESCRIPTION	St. No.	Per.	% Mac.	Bl. Ct.	Soil Profile	REMARKS
	Brown silty gravel	1					NO FROST
	Brown sandy silt with gravel and occasional cobbles	2					
	GW (F-1)	3					
		4					
		5					
		6					Sample
		7					
		8					
		9					
		10					
		11					Sample DRY A.T.D.
	Bottom of Hole at 11'						

FIGURE 2



Updated Soil Data





Transmission Main Paths



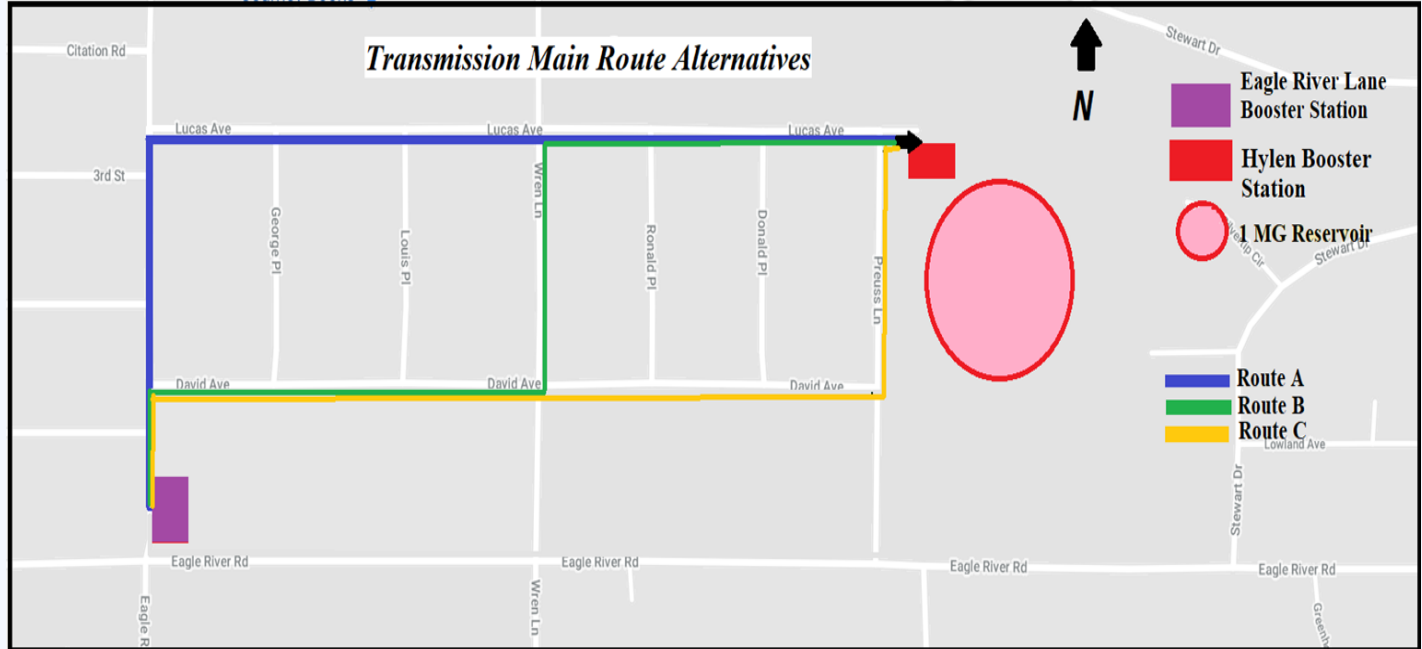
Start: Eagle River Lane Booster Station

End: Proposed ground

**Option 1 (Blue):
3D Length = 3742 FT**

**Option 2 (Green):
3D Length = 3743 FT**

**Option 3 (Yellow):
3D Length = 3734 FT**

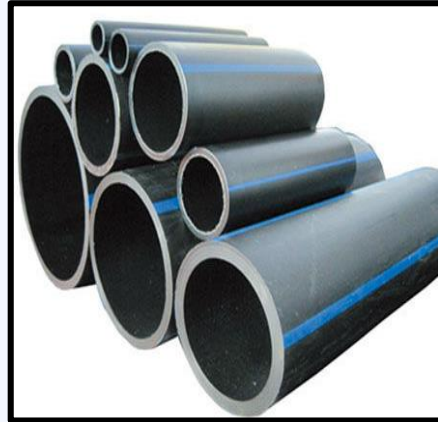




Transmission Main Materials



C900 PVC
DIP



HDPE

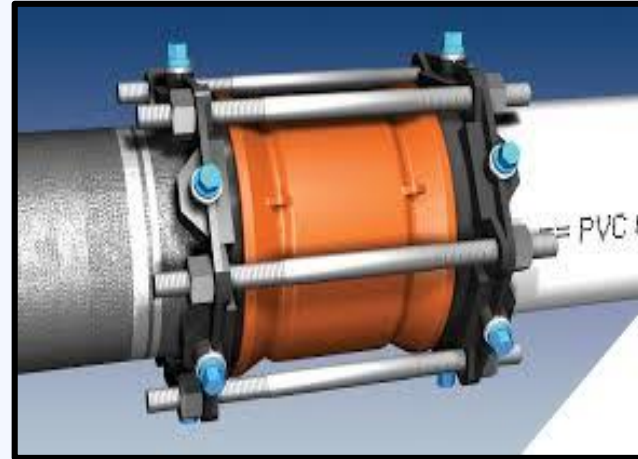




C900 Polyvinyl Chloride



- VOC Safe
- Non Corrodible
- Economic
- Toxic Disposal





Ductile Iron Pipe

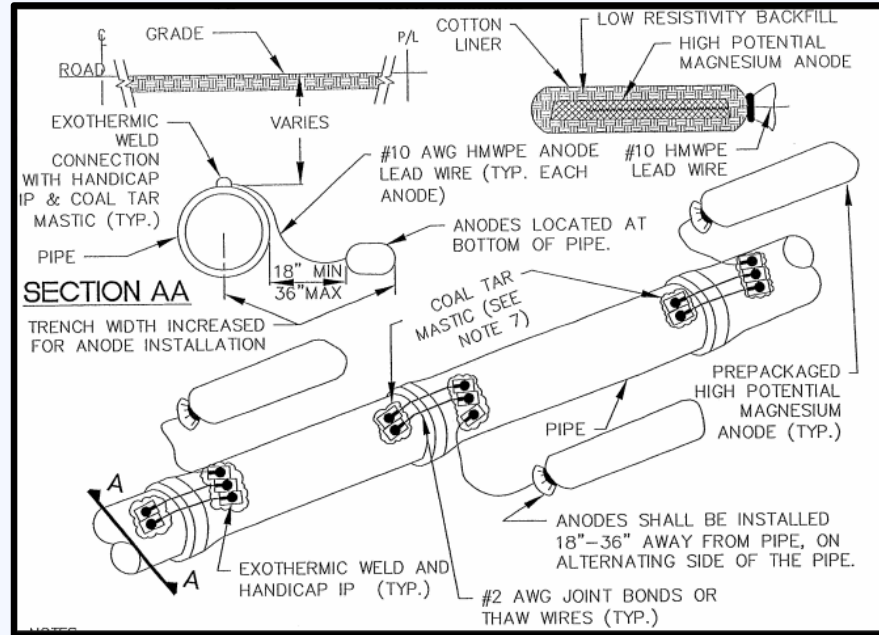


- Strong
- Existing System
- Polyurethane
- Cathodic Protection





Cathodic Protection





Reservoir Options



- Concrete
- Steel
 - Bolted
 - Welded
 - Glass Fused



Steel Bolted





Steel Welded





Steel Glass Fused

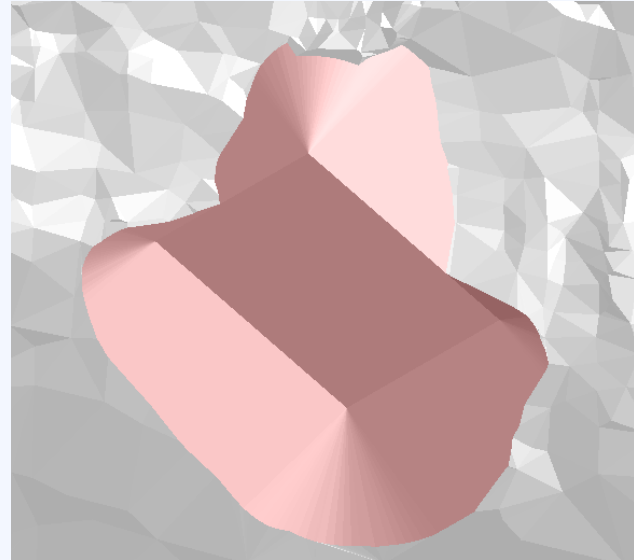




Design Recommendations

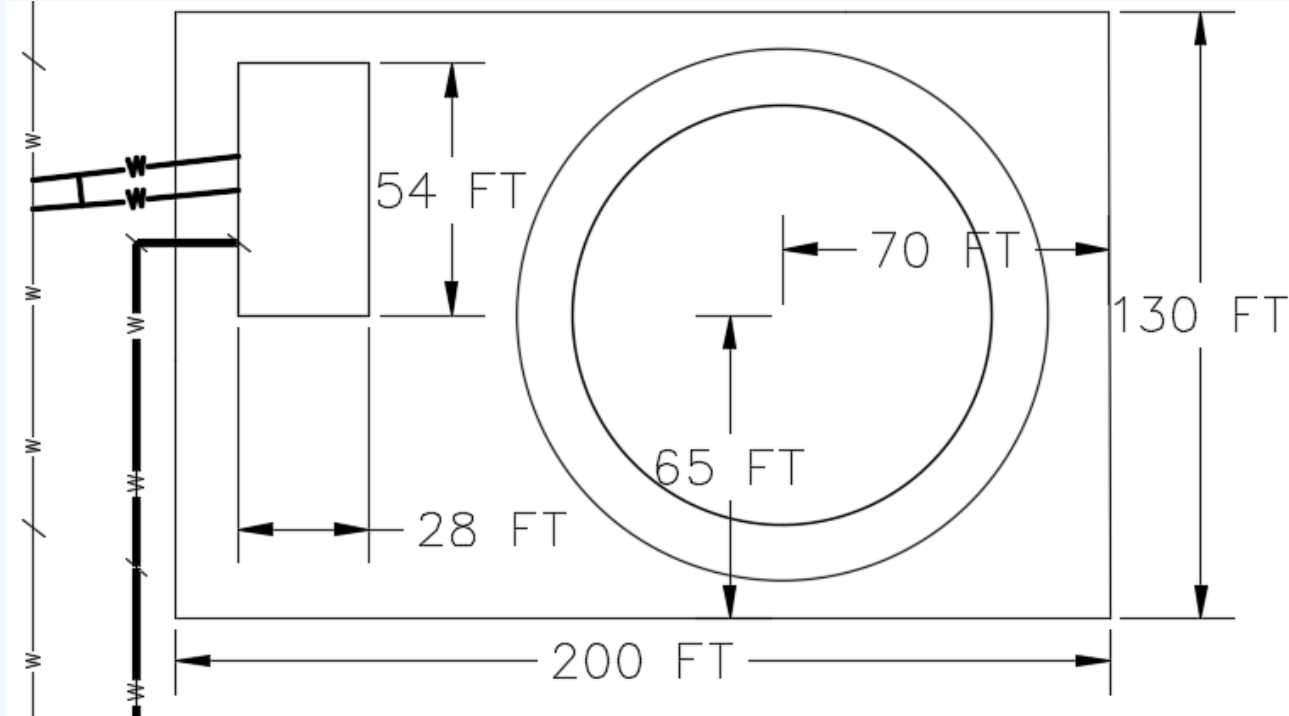


- Finished Ground
- Booster Station
- Reservoir
- Transmission Main





Proposed Finished Ground





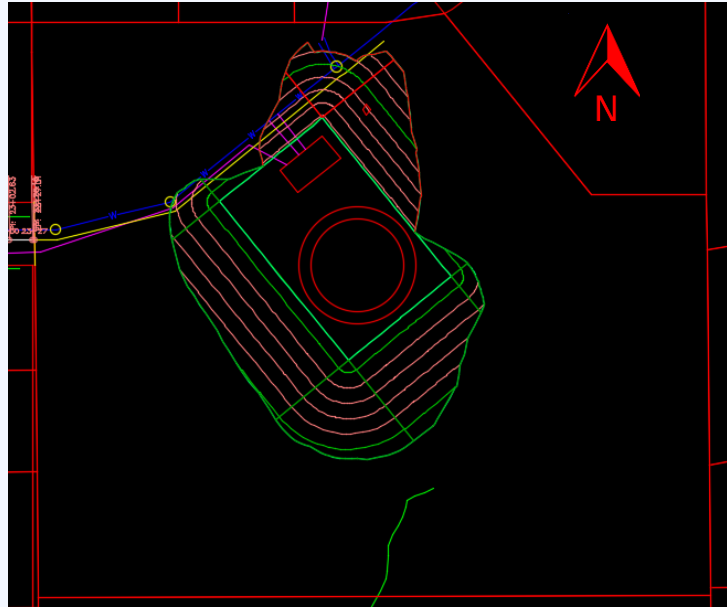
Cut/Fill



Footing elevation: 879 FT
NAVD

Cut slope: 2.5:1

Fill slope: 3:1





Booster Station

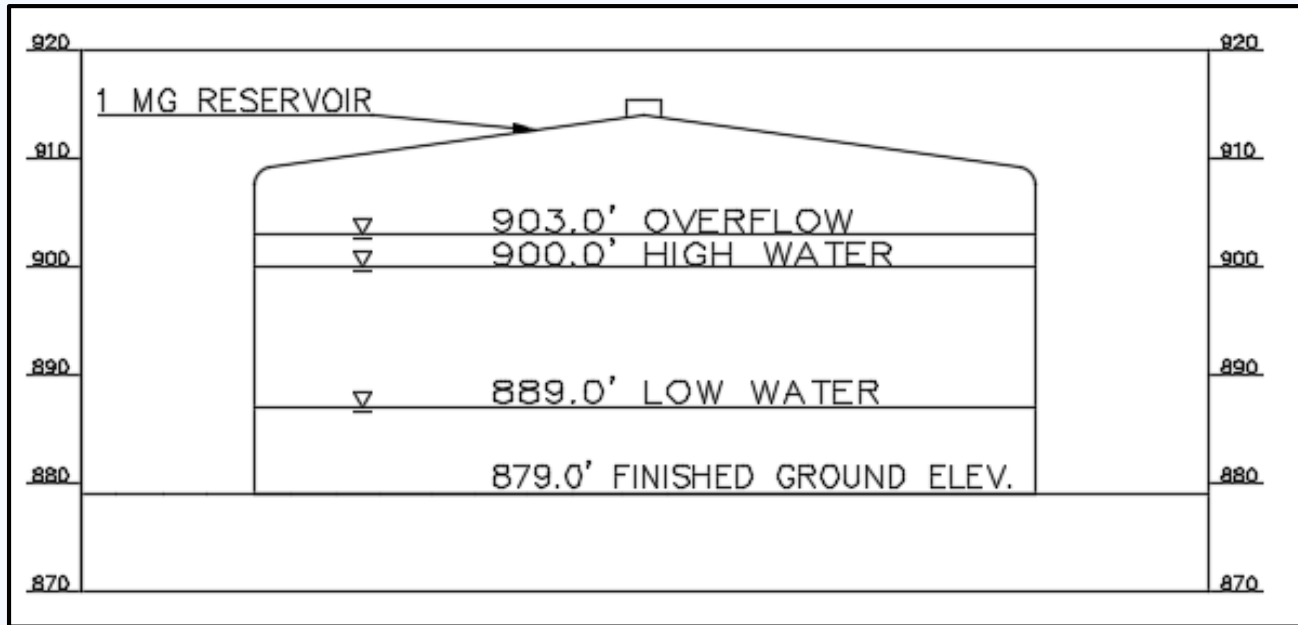


Hylen Crest Booster Station





Reservoir Recommendation





Public Input



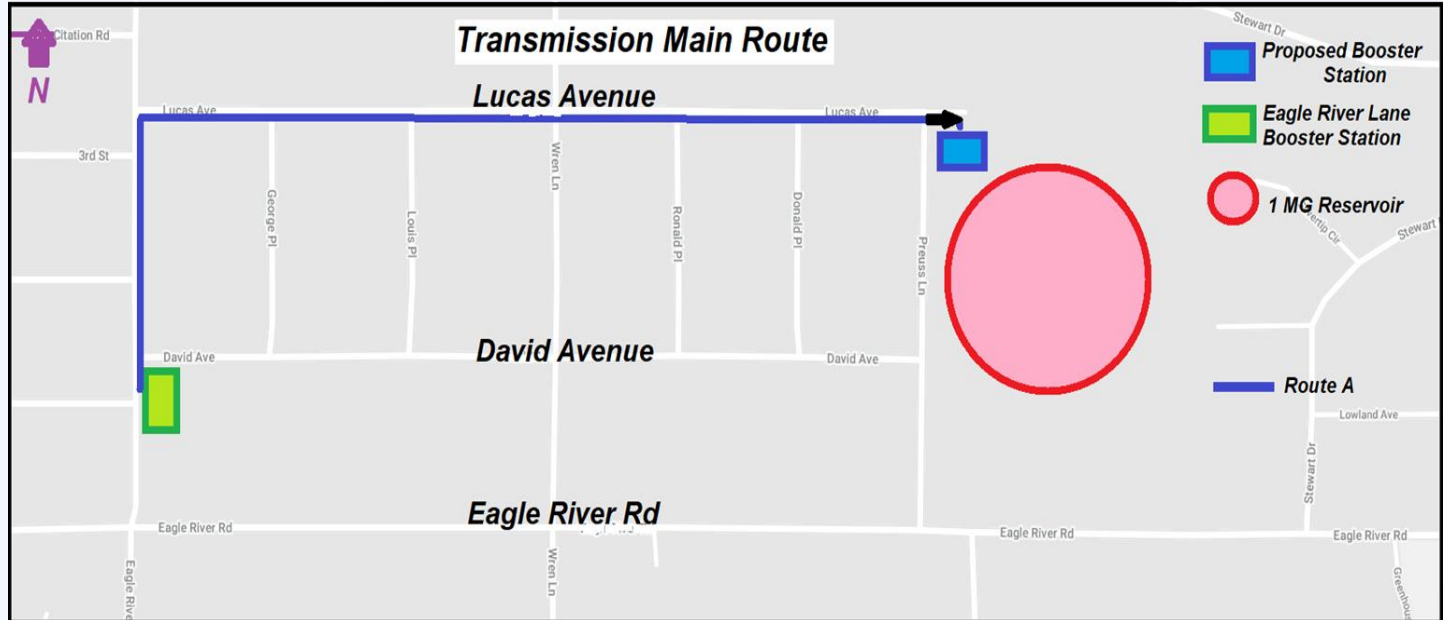
“Not In My BackYard”



Transmission Main Recommendation

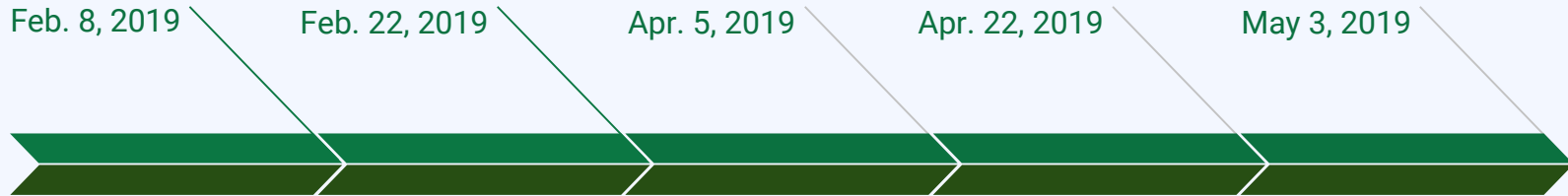


Option 1 (Blue):
3D Length = 3742 FT
12" Ductile Iron
Velocity ~ 7.70 ft/s





Design Schedule and Costs



Phase 1

Data Collection

Estimate: \$ 9,500

Actual: \$ 4,500

Phase 2

Mapping

Estimate: \$ 18,500

Actual: \$ 5,000

Phase 3 & 4

Reservoir &
Transmission Main
Development.

Estimate: \$ 11,000

Actual: \$ 12,000

Phase 5

Closeout

Estimate: \$ 13,500

Actual: \$ 15,000

Phase 6

Presentations

Estimate: \$ 94,500

Total (whole): \$ 57,230



Recapitulate



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- **Transmission Main Alternatives**
- **Booster Station**
- **Design Recommendation**
- **Phasing**



Questions?



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