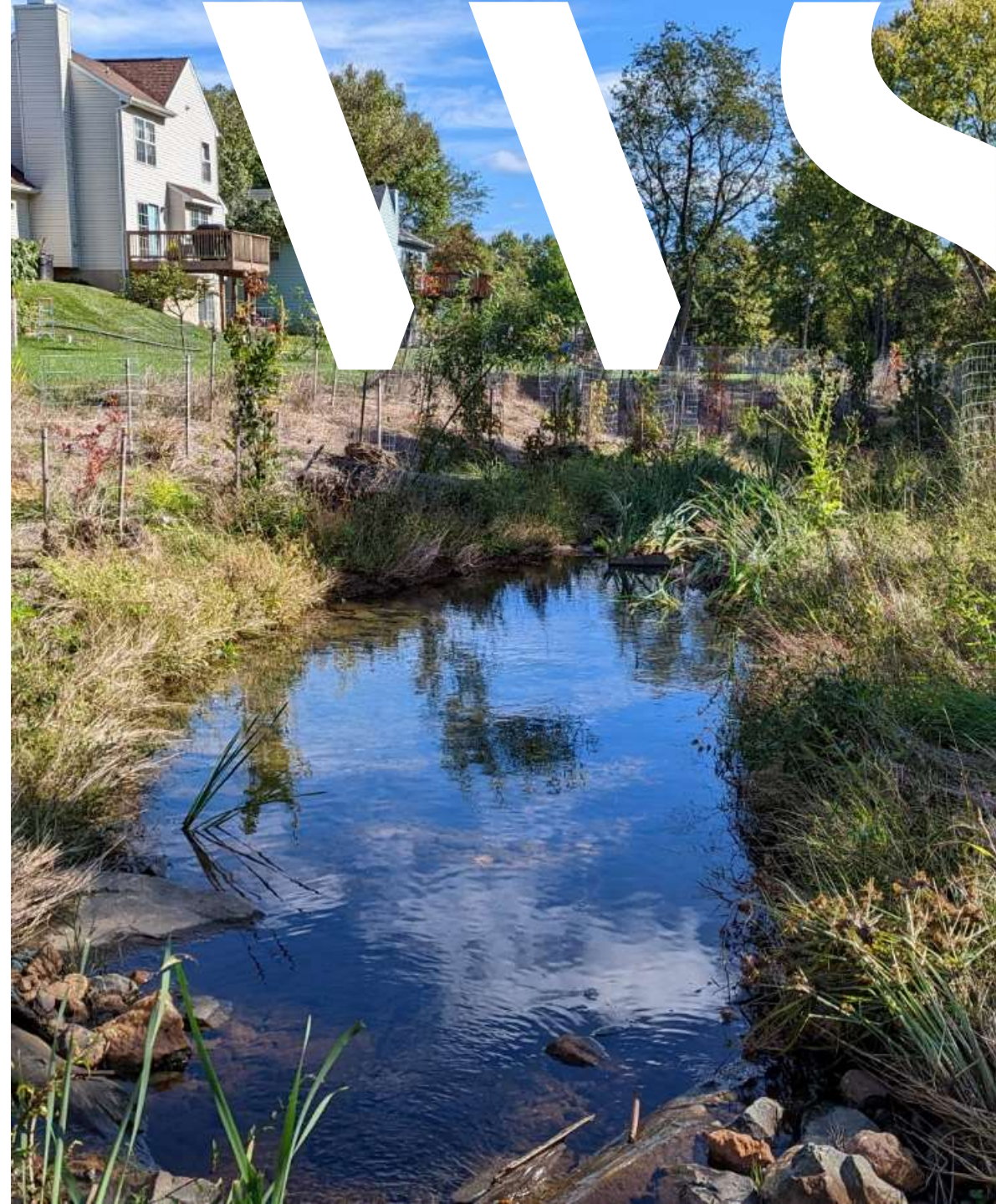




Tributary to Gwynns Falls At Kingsbury

August 22, 2023



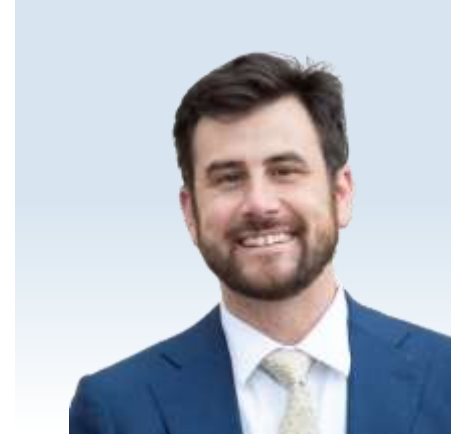
Project Team and Presenters



**Baltimore
County**
Dennis Genito
Client



Justin Lennon
Technical Director



Brian Tetrick
Project Manager



Michael Coco
Hydraulic Modeling

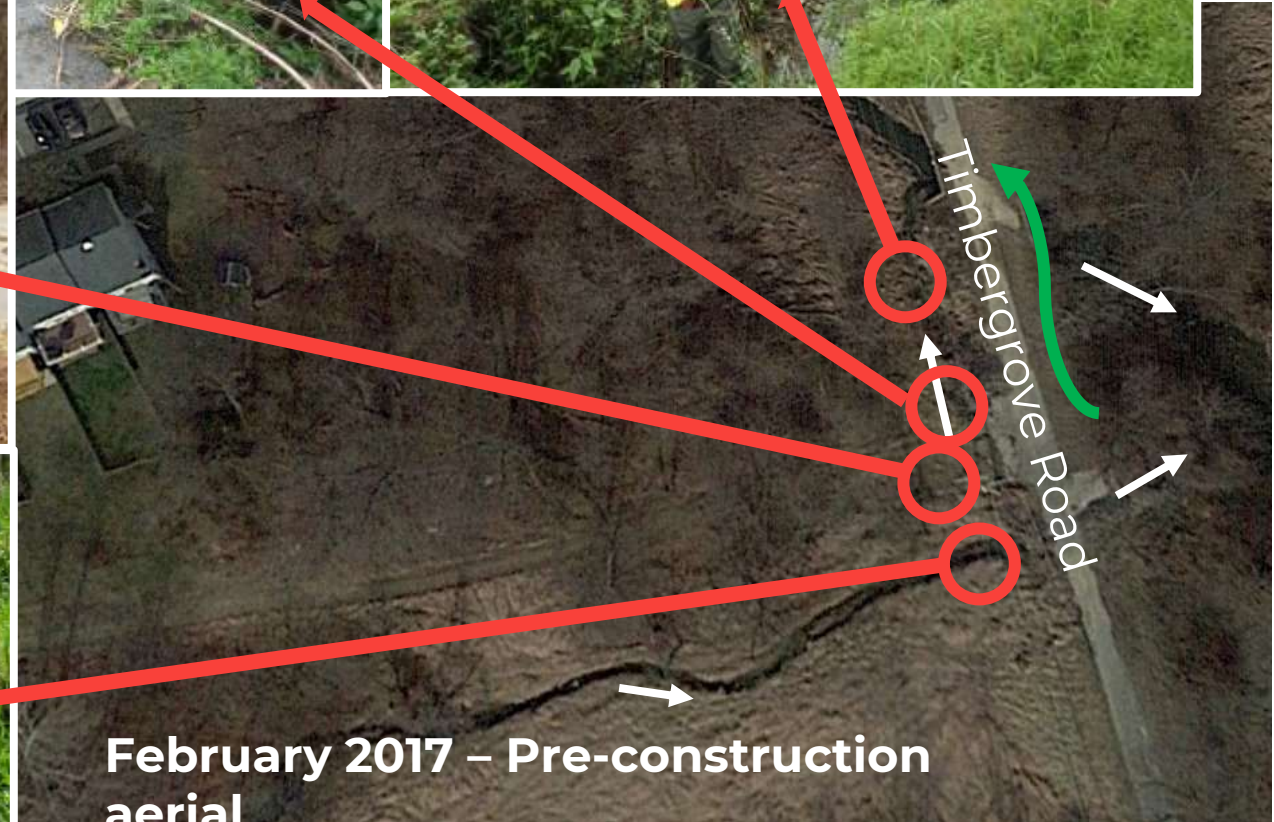
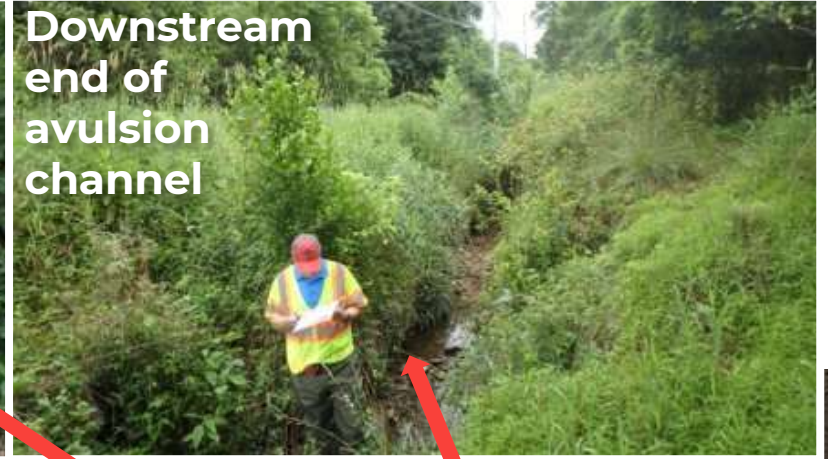
Site Conditions and Design Constraints

- Developed watershed and stream valley
- Piped flow
- Sediment supply to be stabilized
- 100-yr floodplain extents



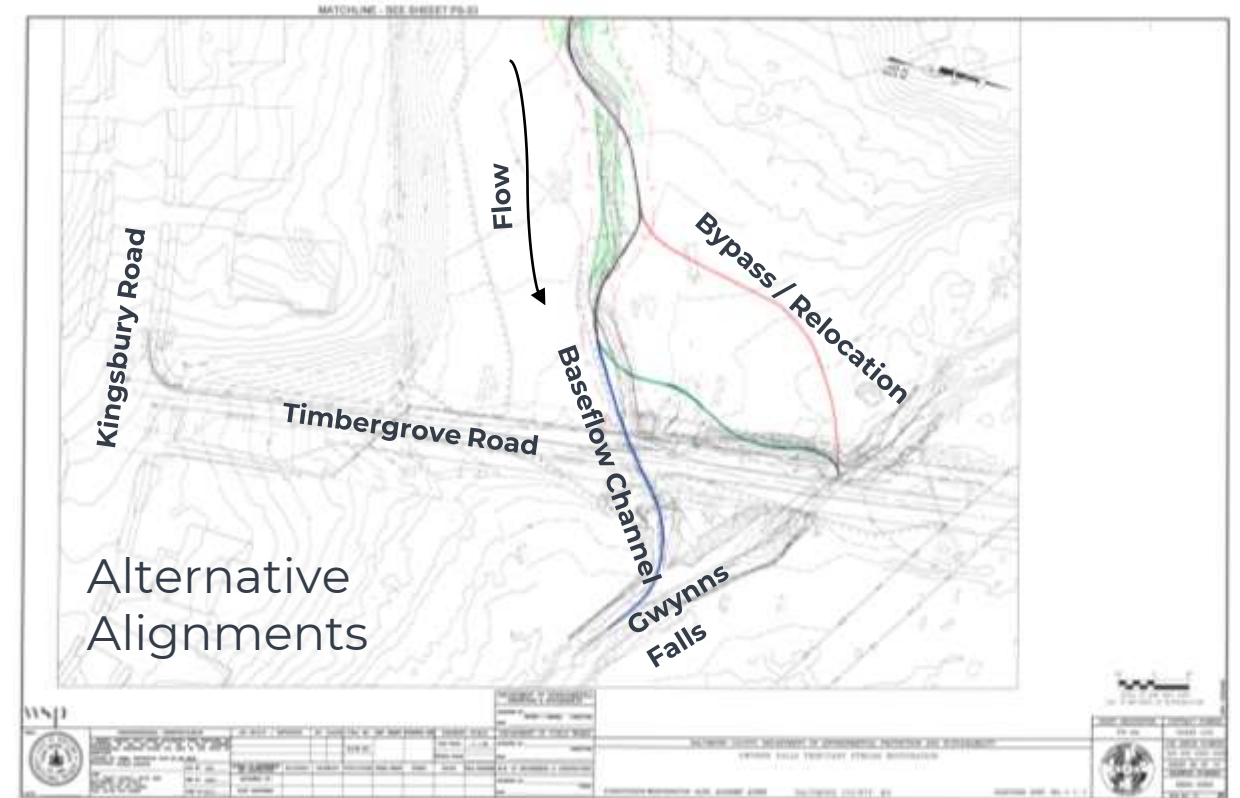
Sediment and Debris Clogged Culvert at Timbergrove Road

- Undersized Culvert/Pipe
- Diversion of blocked flows
- Avulsion channel along Timbergrove Road
- Utilities along "road" embankment



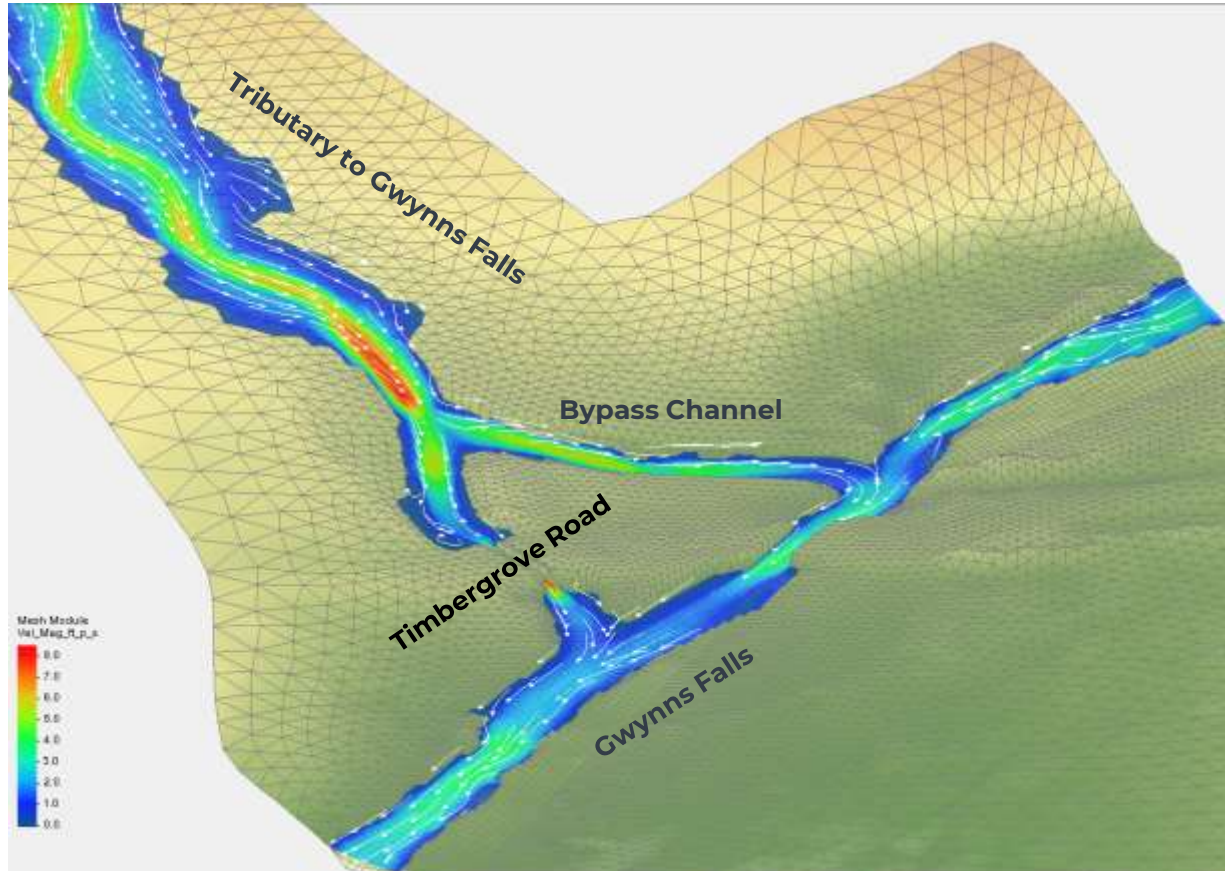
Design Considerations

- Alternative Alignments
 - Relocation of Channel
 - Bypass – Storm Flows & Sediment
- Permitting and Crediting Challenges
 - FEMA Flow Change
 - Loss of Stream Length
- Sediment Transport
 - 1D Flow Limitations – Split Flow and Ponding
 - 2D Analysis – Bypass Configuration

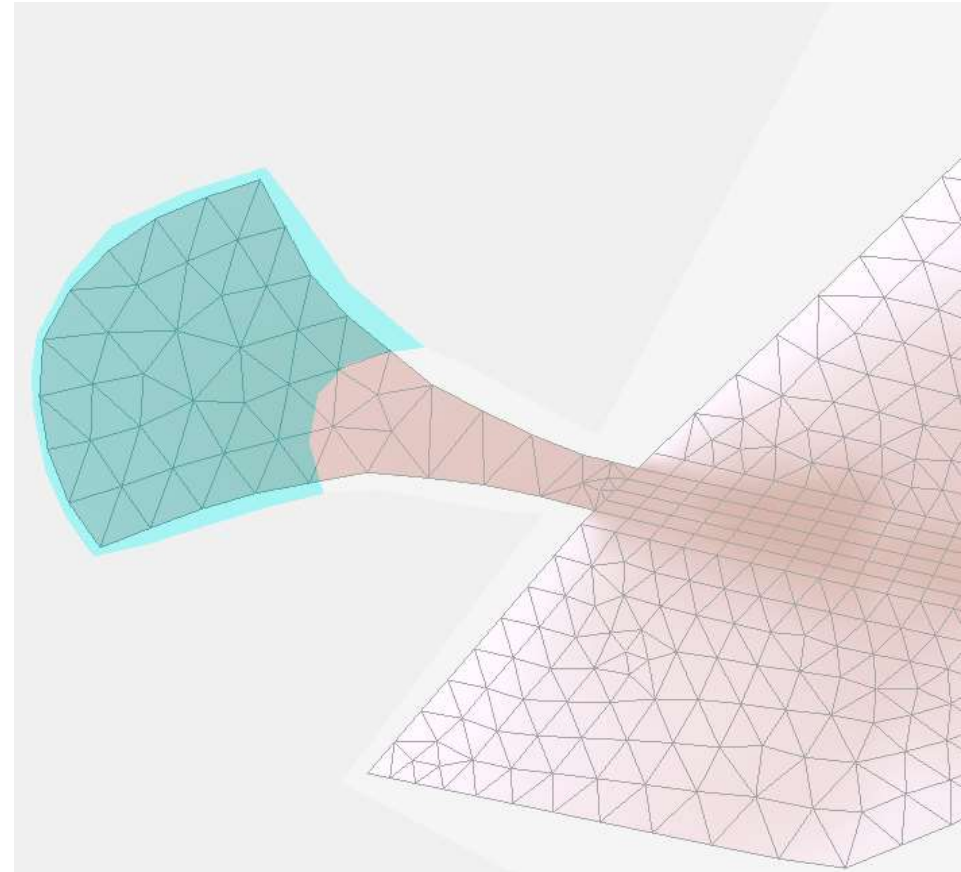


**Typical
Channel
Condition**

SRH-2D (Sedimentation and River Hydraulics – Two-Dimension) Modeling

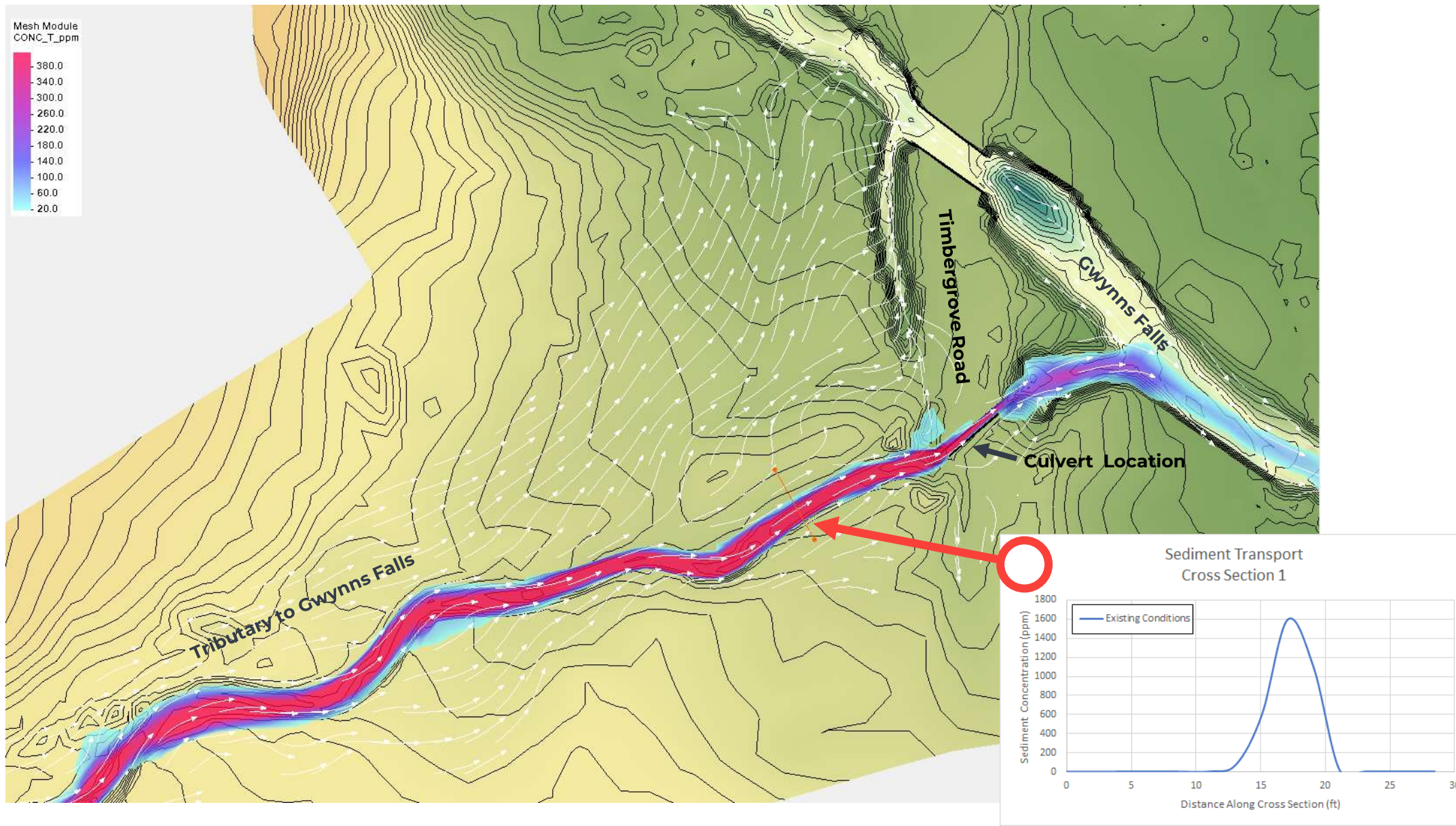


2-D Model Development

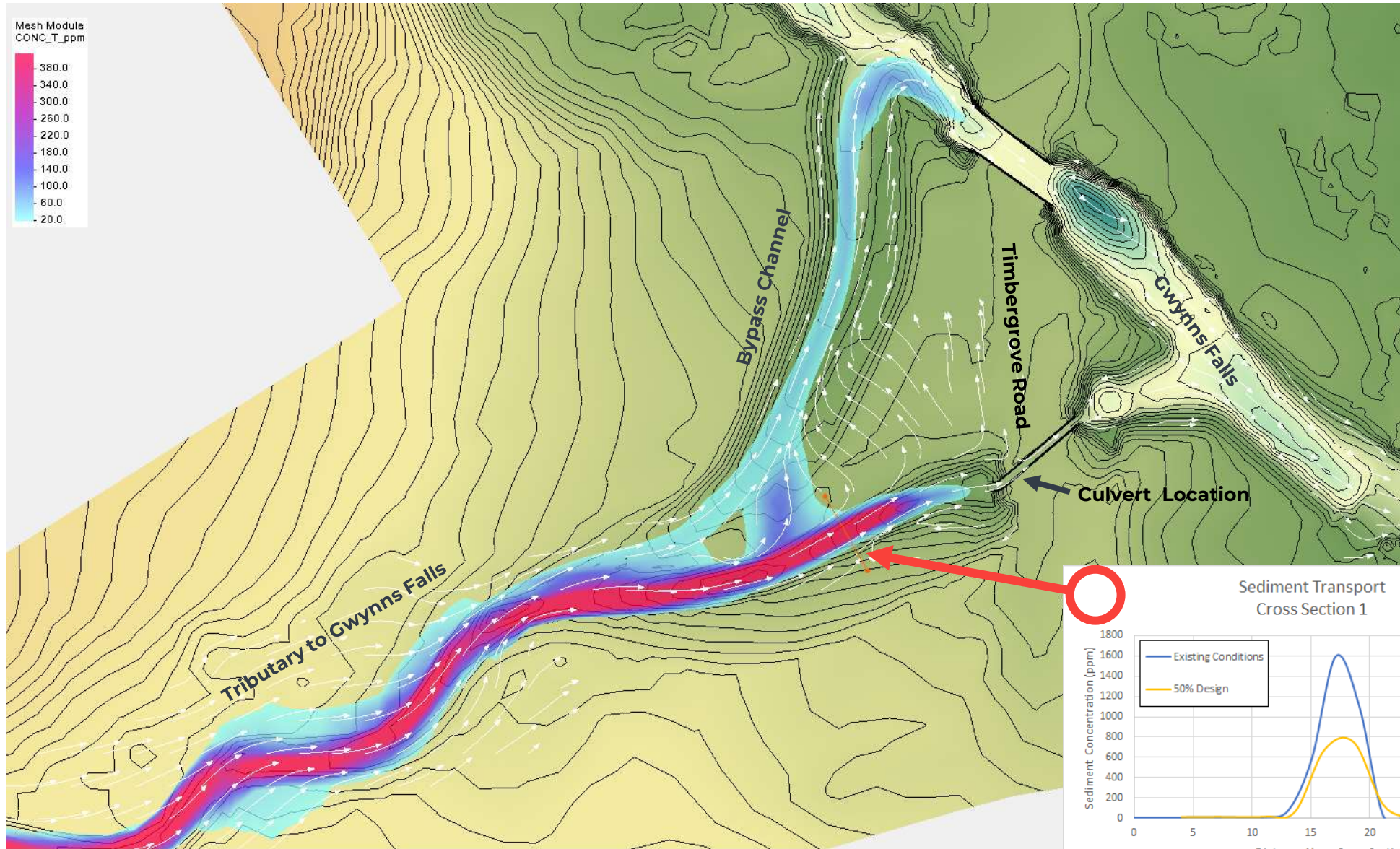


Sediment Transport Modeling

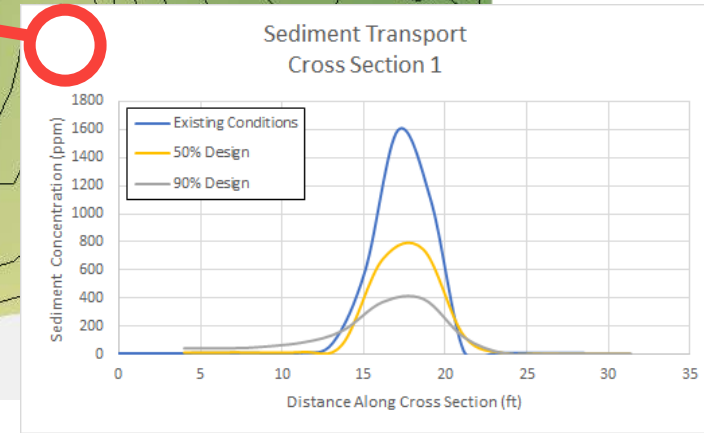
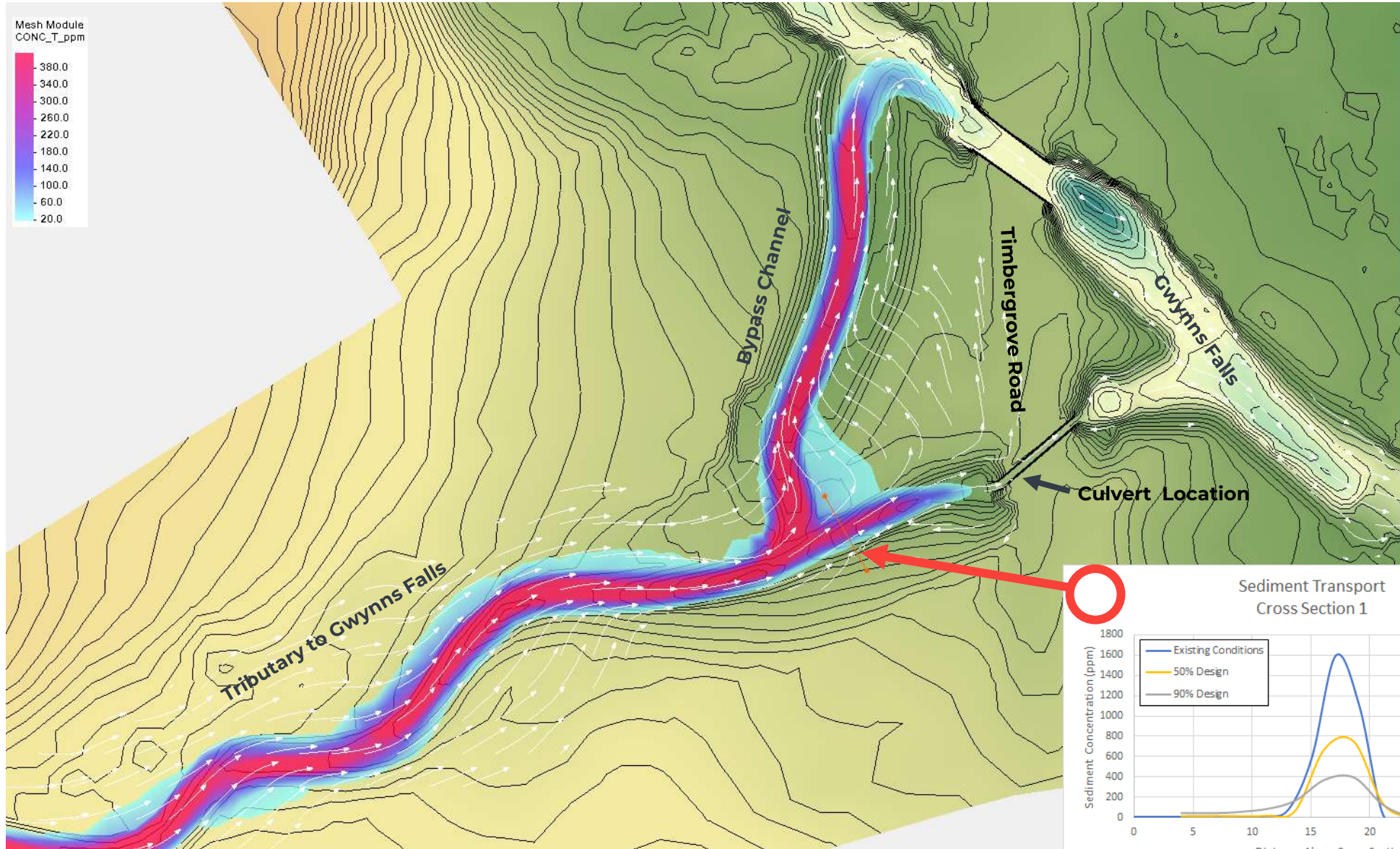
Pre-Project (Existing Conditions) Simulation



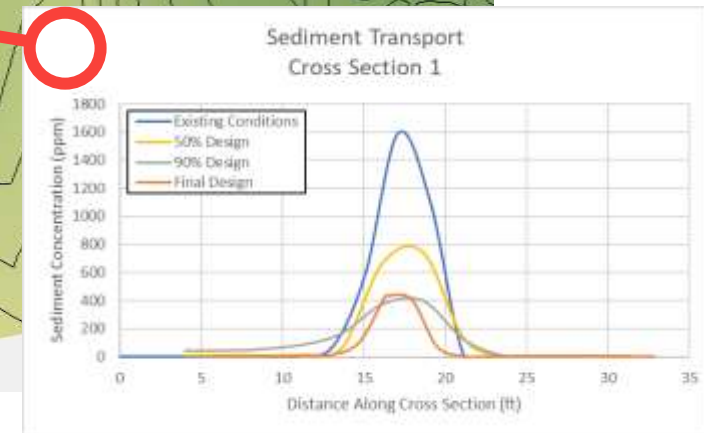
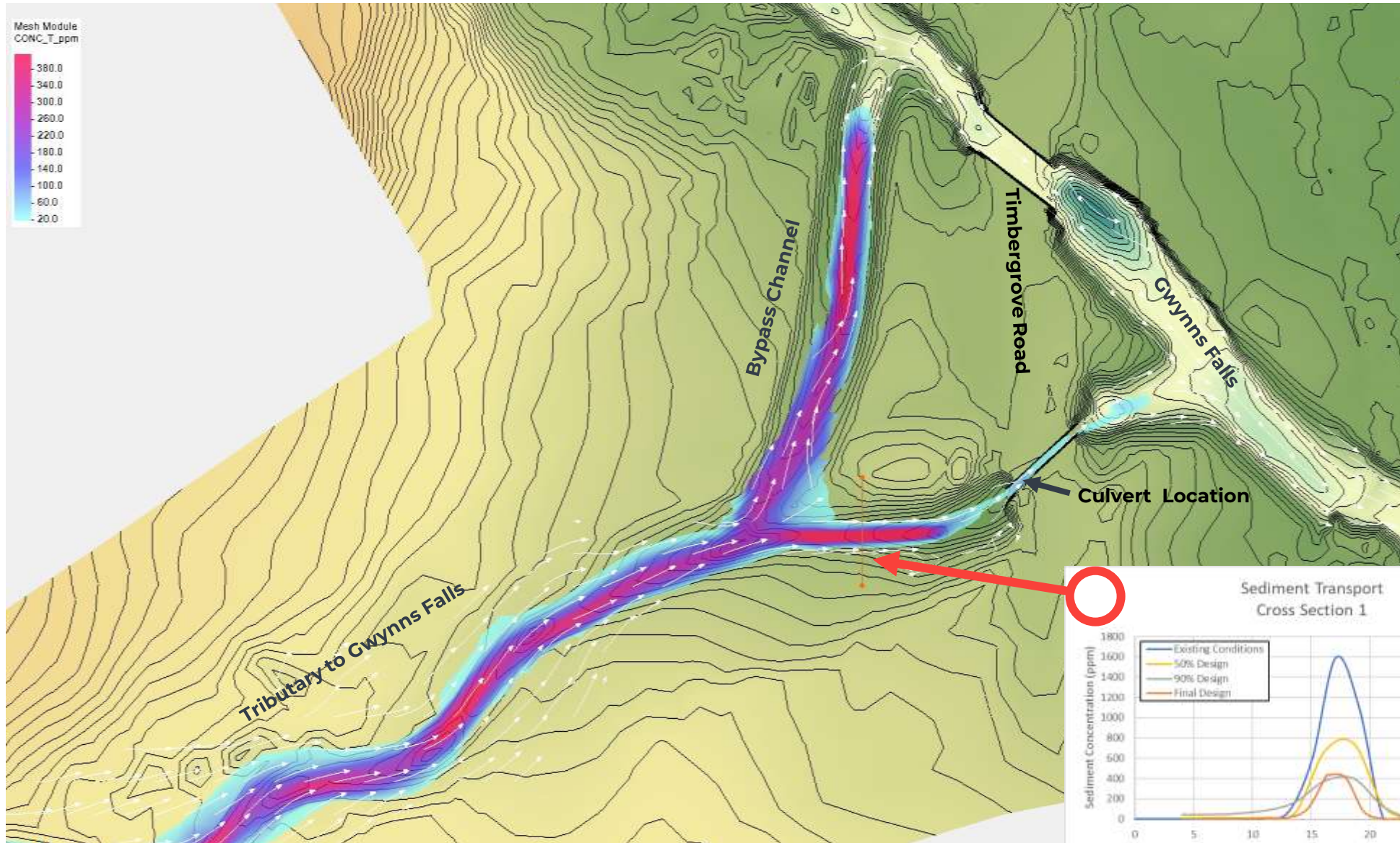
50% Design Simulation



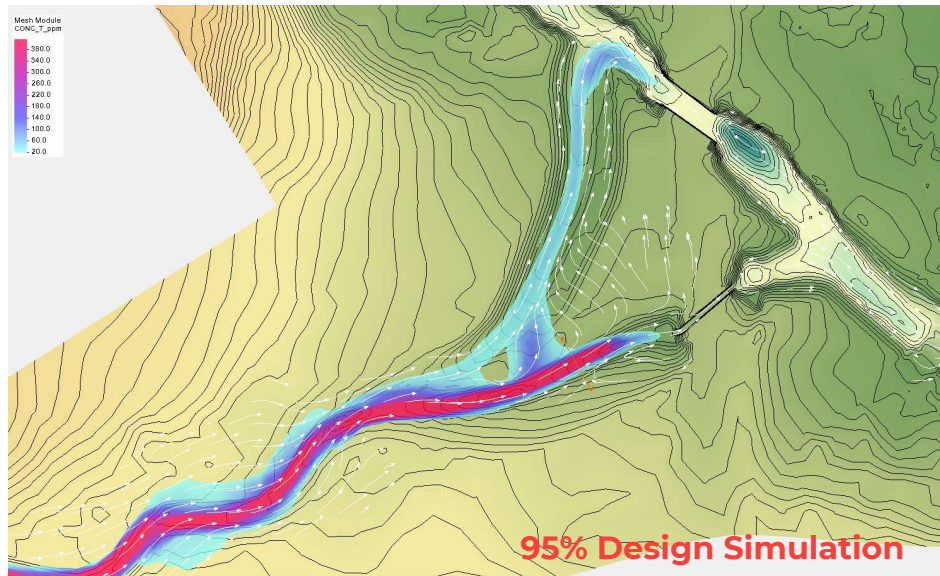
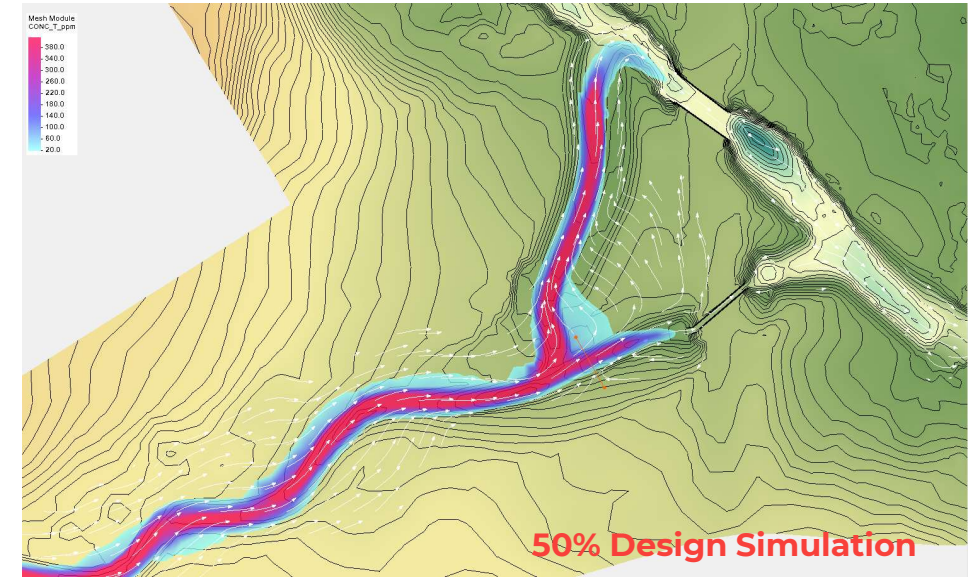
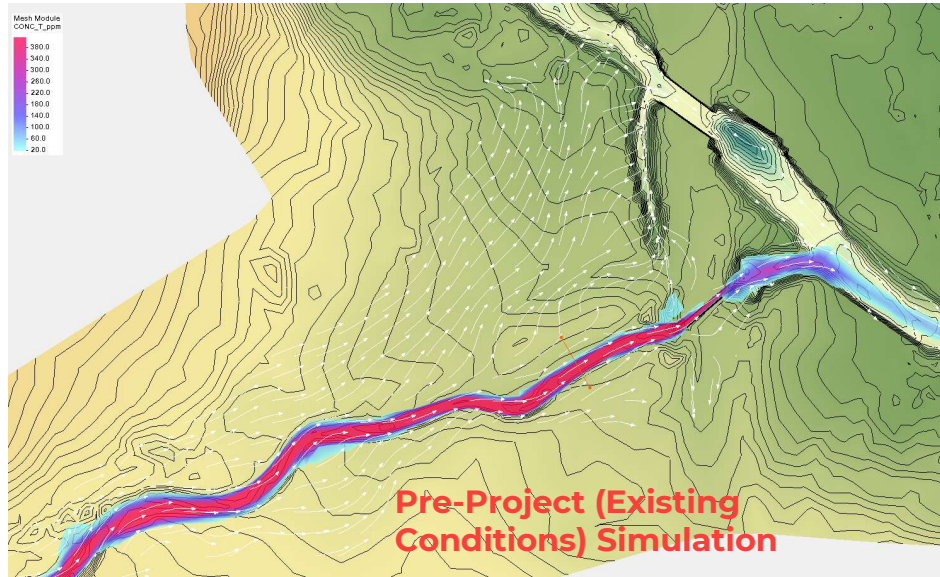
90% Design Simulation



Final Design Simulation



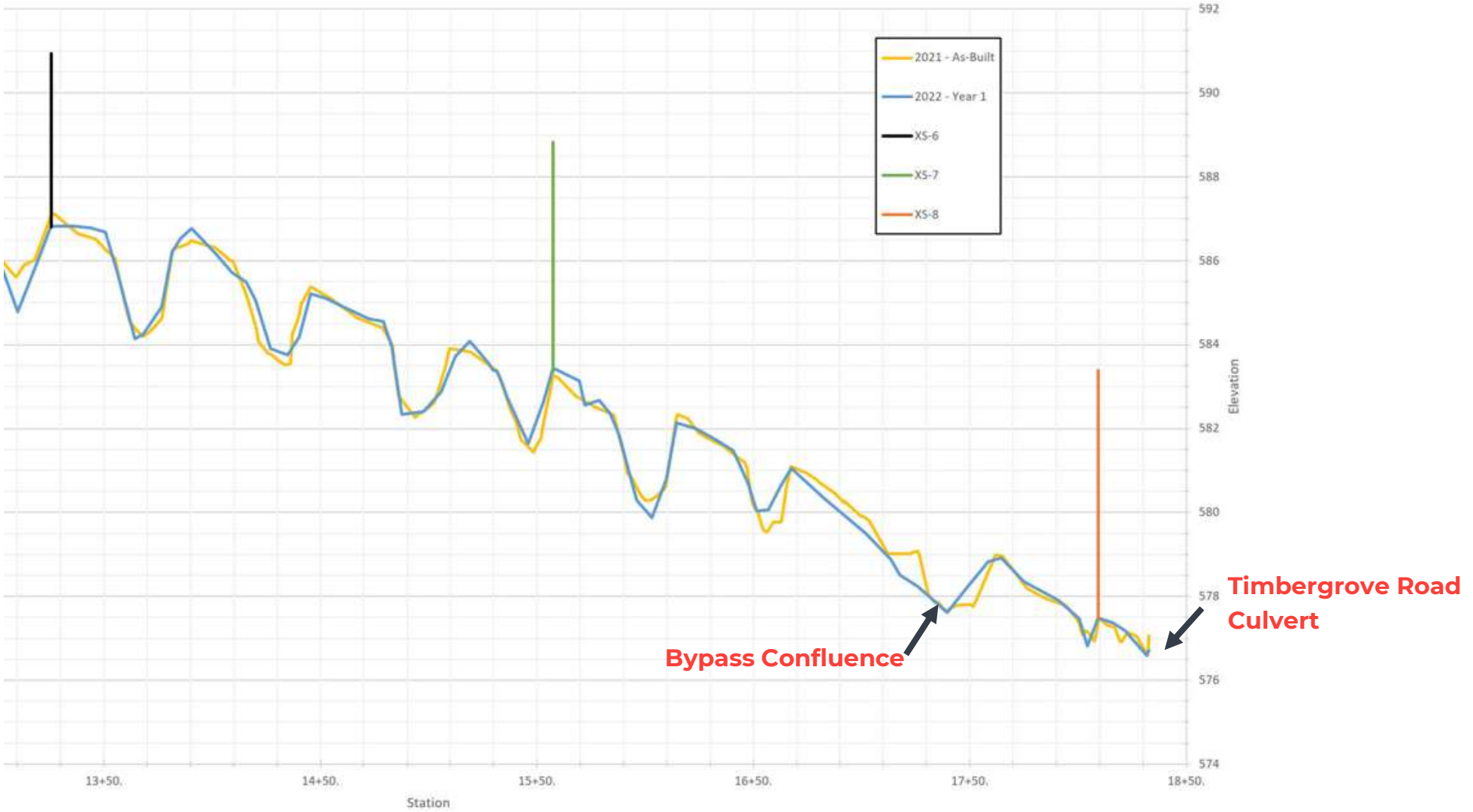
Comparison



Post Construction - Upstream of Timbergrove Road



Post Construction - Profile Upstream of Timbergrove Road



Post Construction - Bypass Channel Confluence



Post Construction - Bypass Channel



Year 1

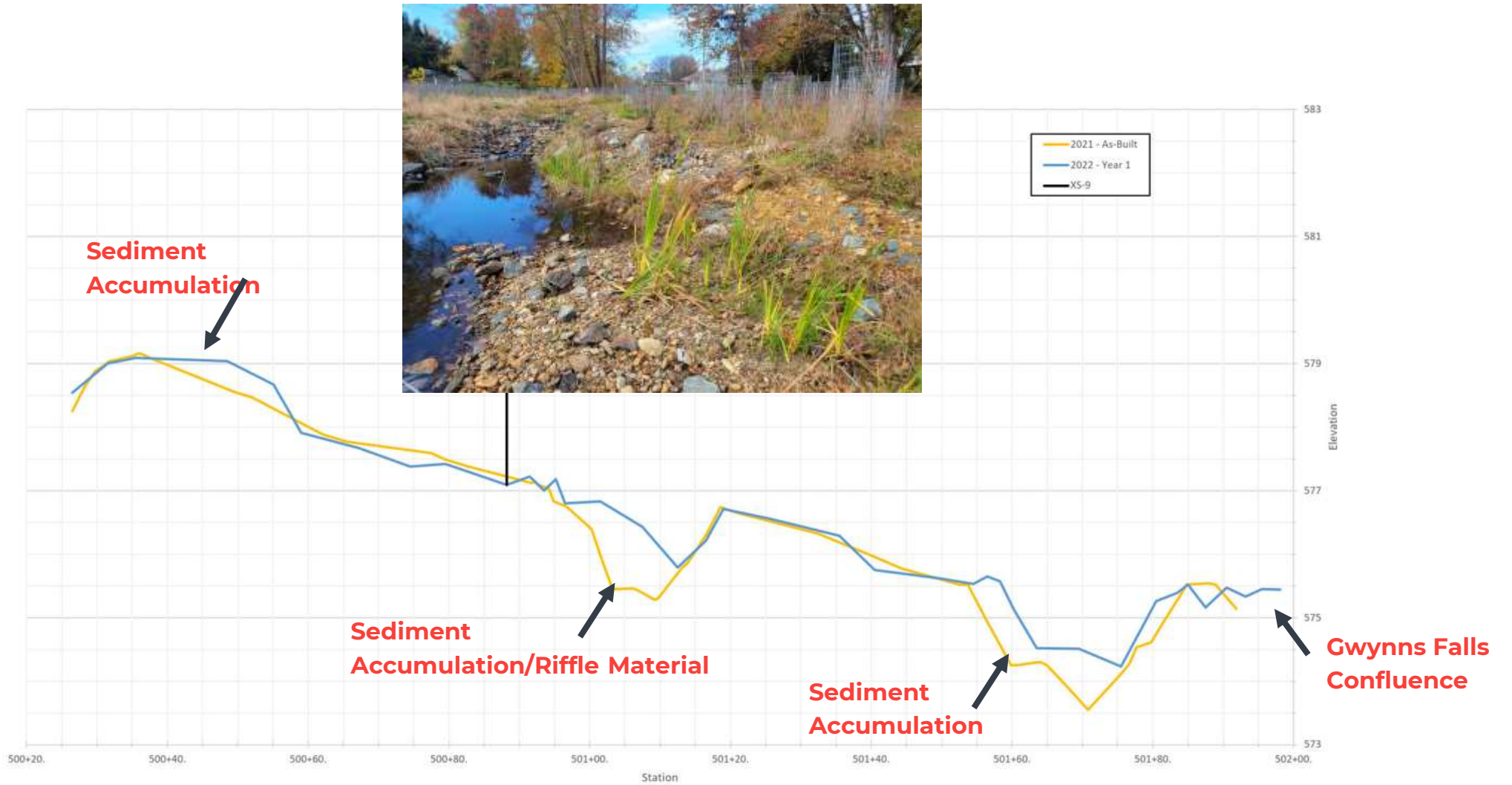


Year 2



Post-Construction Aerial

Post Construction - Profile of Bypass Channel





Questions?



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