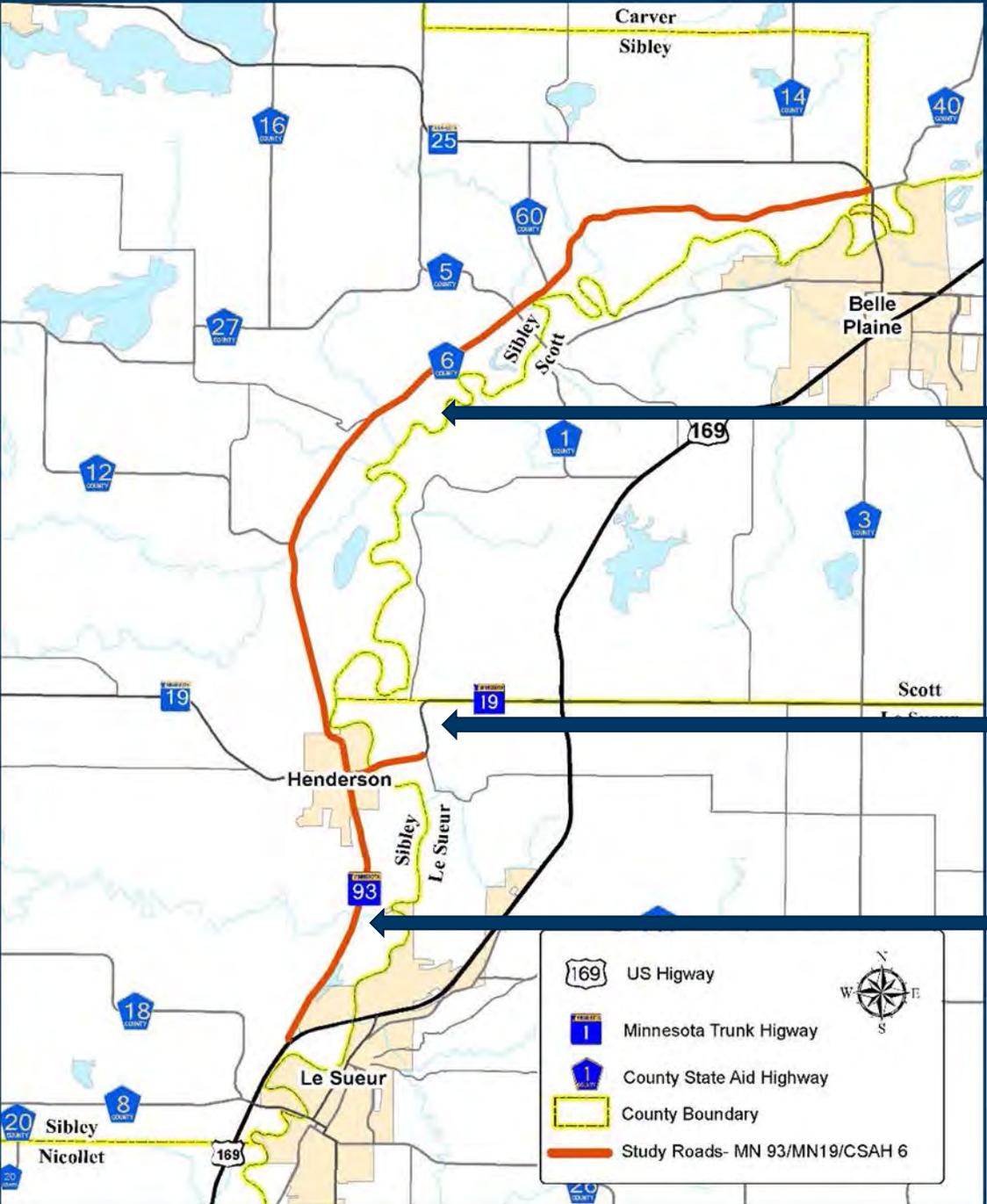




Welcome to the Henderson Flood Mitigation Study Open House

May 17, 2017

Henderson Flood Study Alternatives



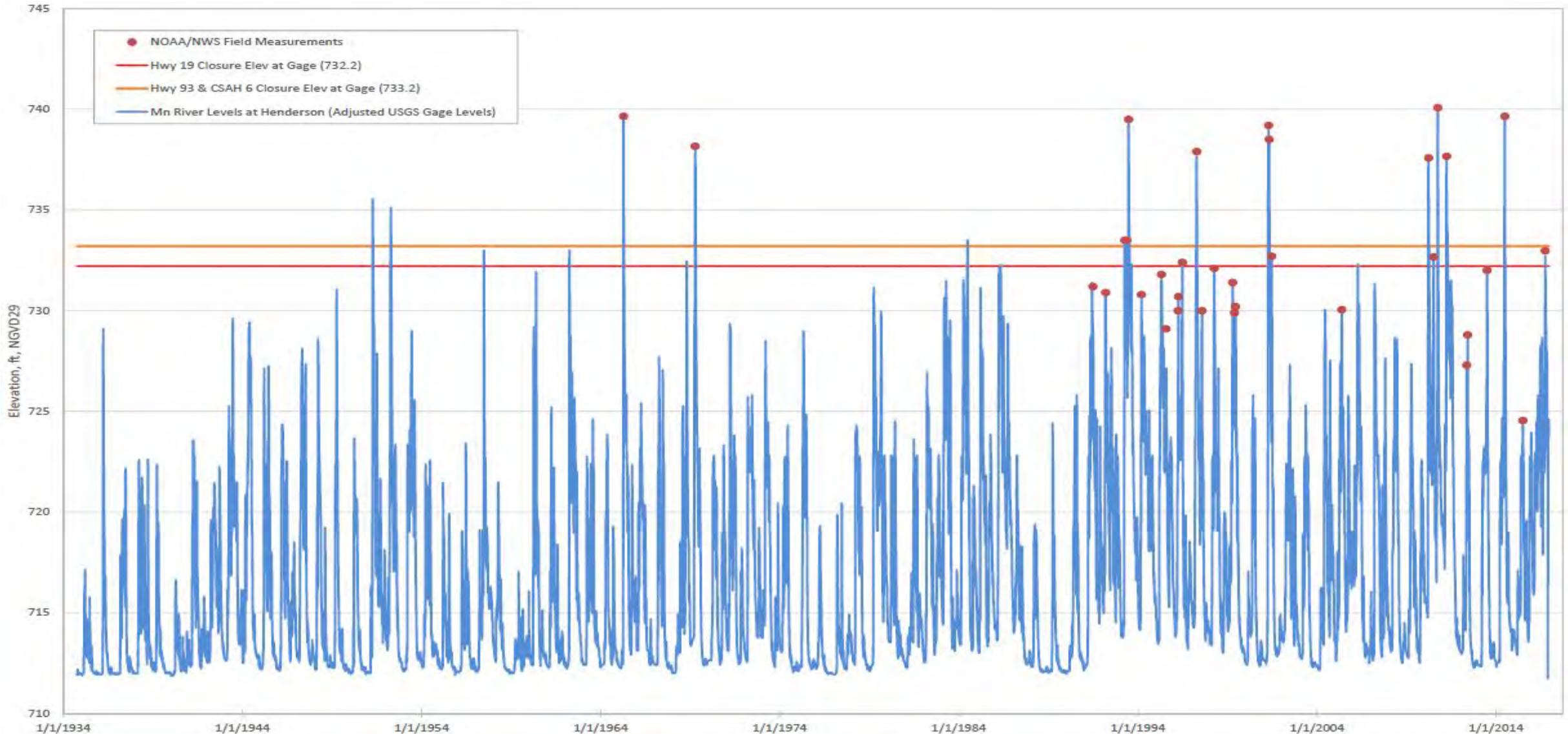
County Road 6

Highway 19

Highway 93

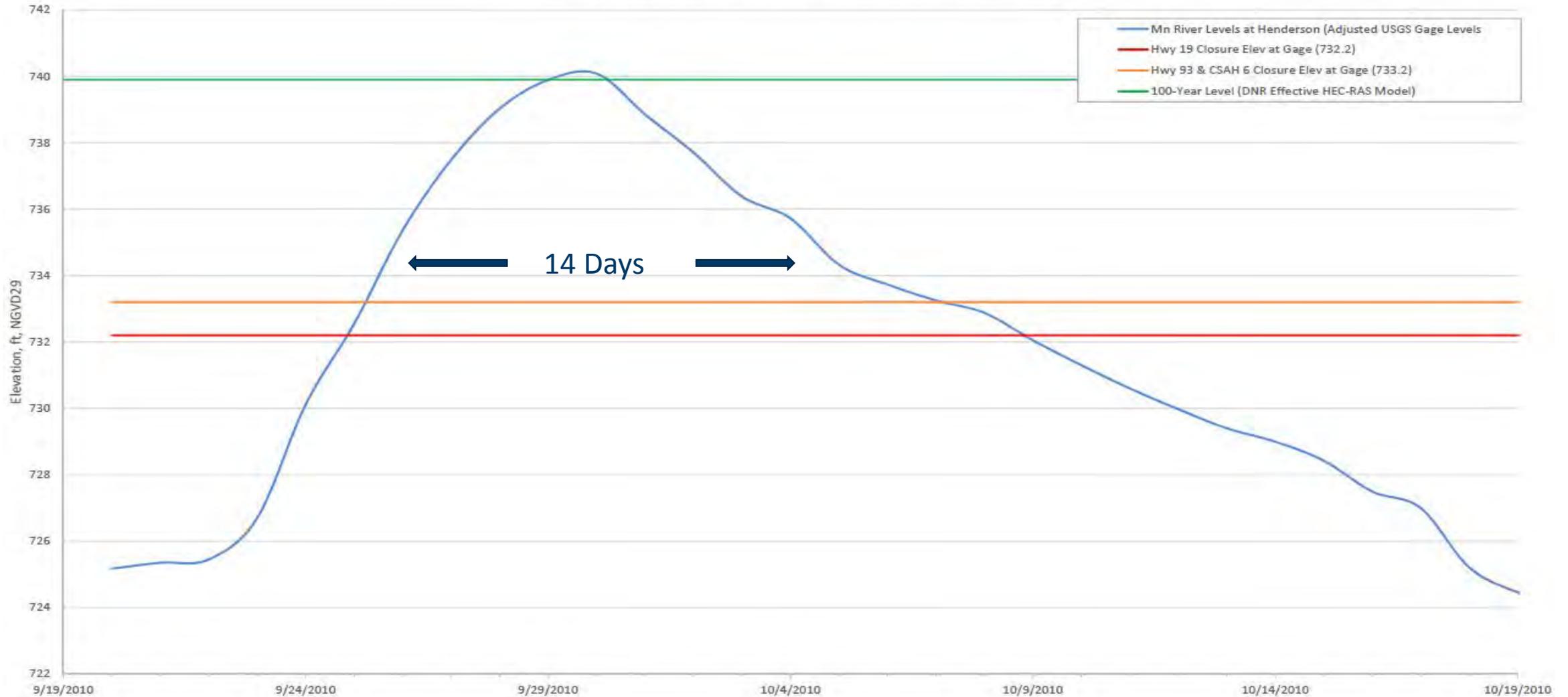
A better detour route was also studied

Henderson Flooding - 16 Closures Over 80 Years



Henderson Flooding –September 2010 Event

September/October 2010 Minnesota River Levels at Henderson



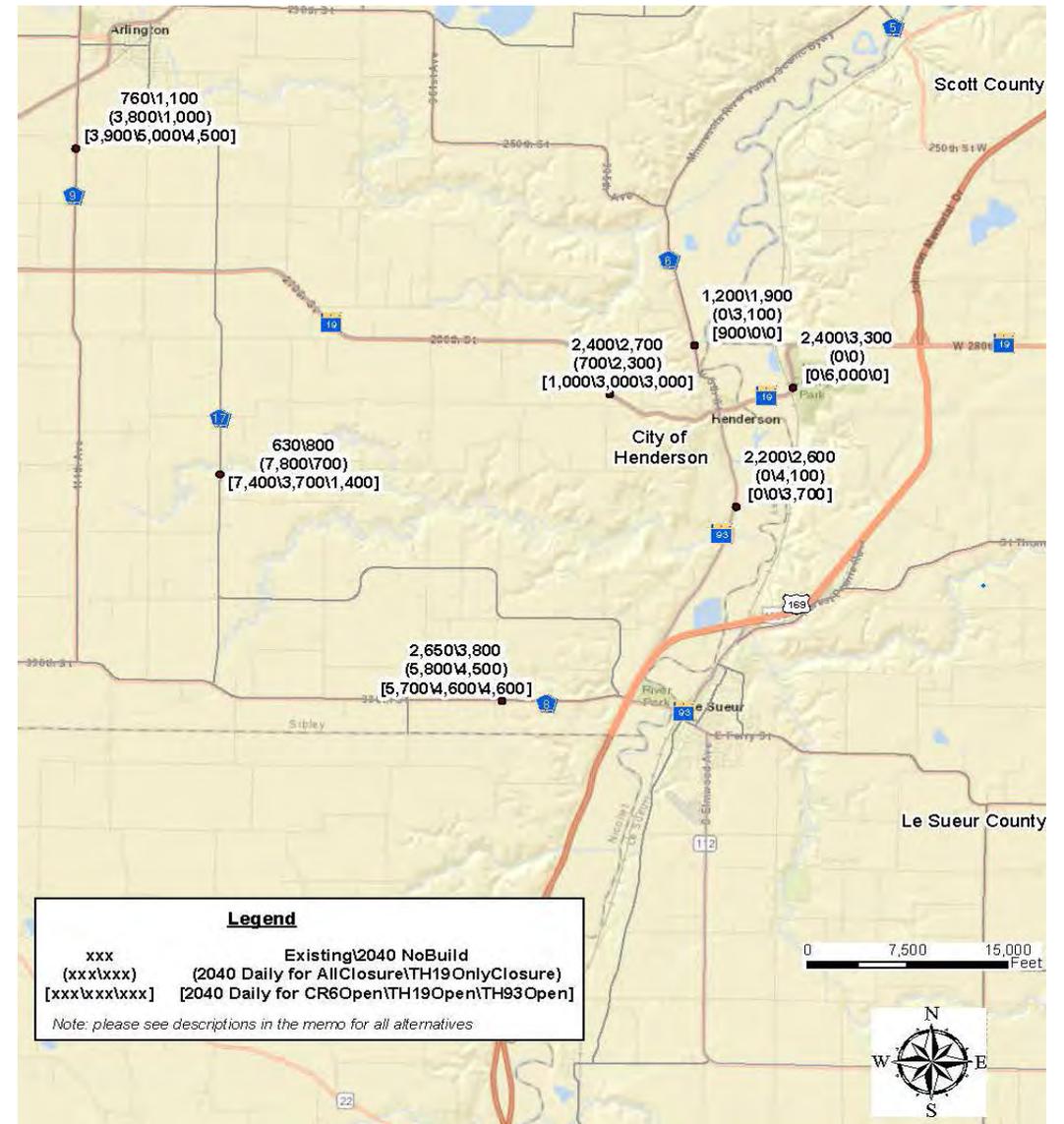
Road Elevations Below the 2010 Flood Elevation

- County Road 6 – Up to 7.4 feet of water over roadway
- Highway 19 – Up to 7.2 feet of water over roadway
- Highway 93 – Up to 7.1 feet of water over roadway



Traffic Modeling

- Utilized most recent version of the MnDOT's Collar County Travel Demand Model to develop forecast and traffic routing preferences during flood closures
- Model provides Vehicle Miles Traveled and Vehicle Hours Traveled for different scenarios
- When Highways 19, 93 and County Hwy 6 are closed, the value of the additional time and miles traveled is: \$87,000 per day in today's dollars



Highway 19 Design Summary

Bridge Length = 2680 feet

Right-of-Way = 2 acres

Wetland Impacts = 2 acres

Approximate Project Cost with Trail on Bridge = \$40 million (2017 \$)

Benefit /Cost = 0.19

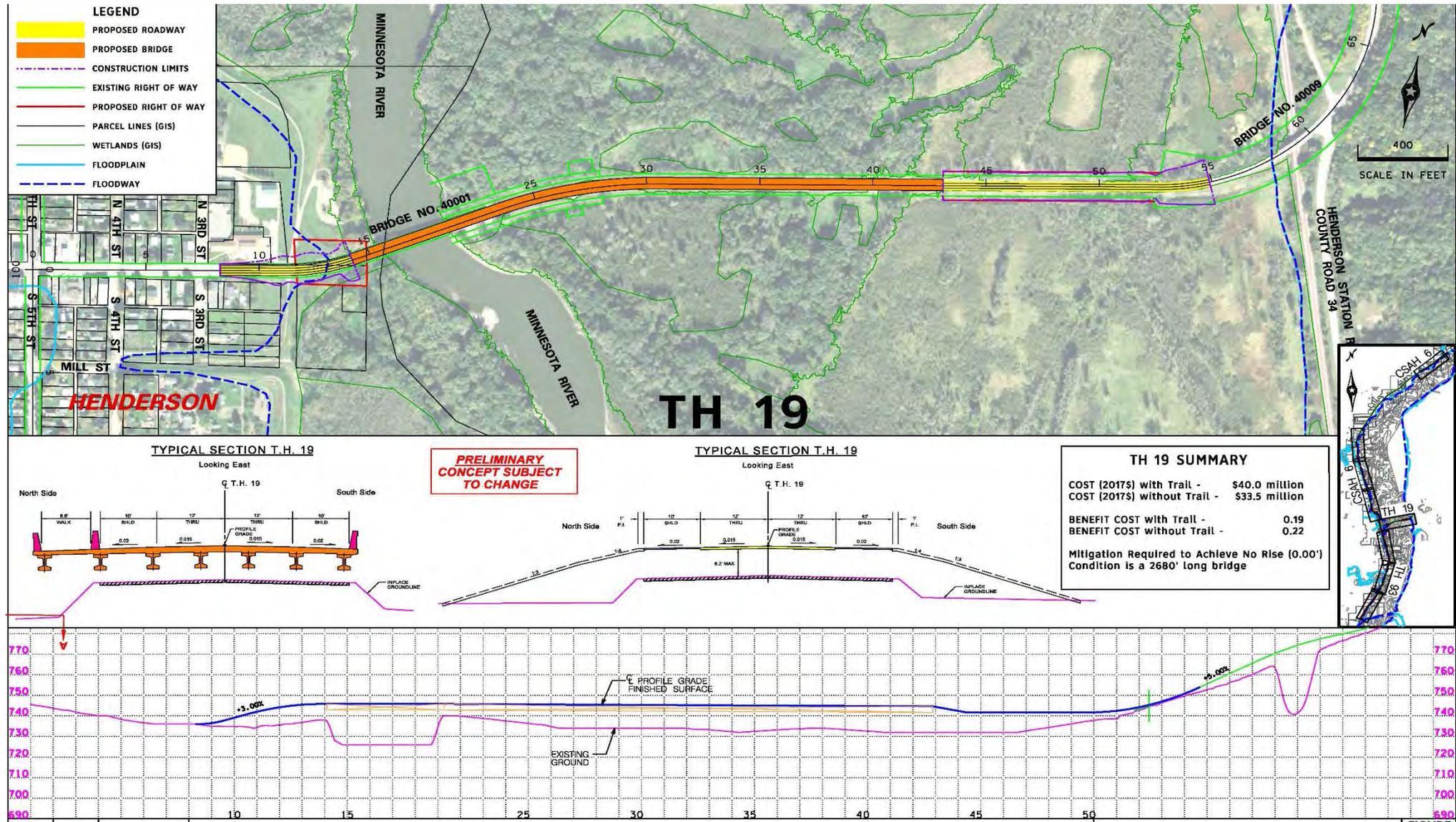
Approximate Project Cost with no Trail on Bridge = \$36 million (2017 \$)

Benefit /Cost = 0.22

Pros/Cons

- Serves the highest level of traffic by providing the most direct travel route
- Provides another crossing of the river during flood years
- Restores natural floodplain conditions
 - Permitting agency support
- Highest Cost

Highway 19 Alternative



Highway 93 Design Summary

Reconstructed Roadway Length = 3.4 miles

Includes replacement of Rush Creek Bridge

Mitigation for fill in floodplain is to lower portions of Highway 19 without increasing flood frequency

Approximate Project Cost Estimate = \$14 million (2017 \$)

Right-of-Way = 25 acres

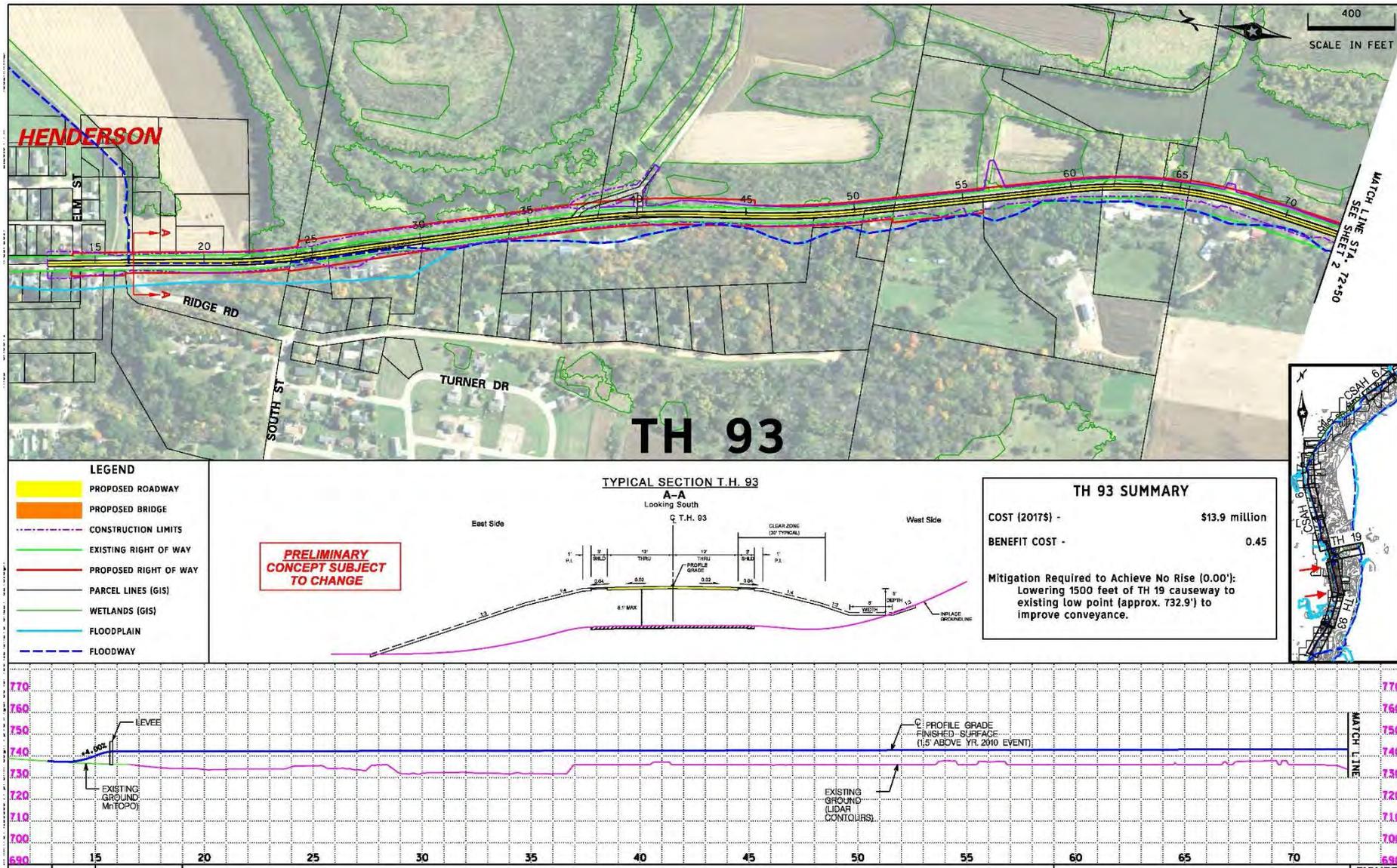
Wetland Impacts = 5 acres

Benefit /Cost = 0.45

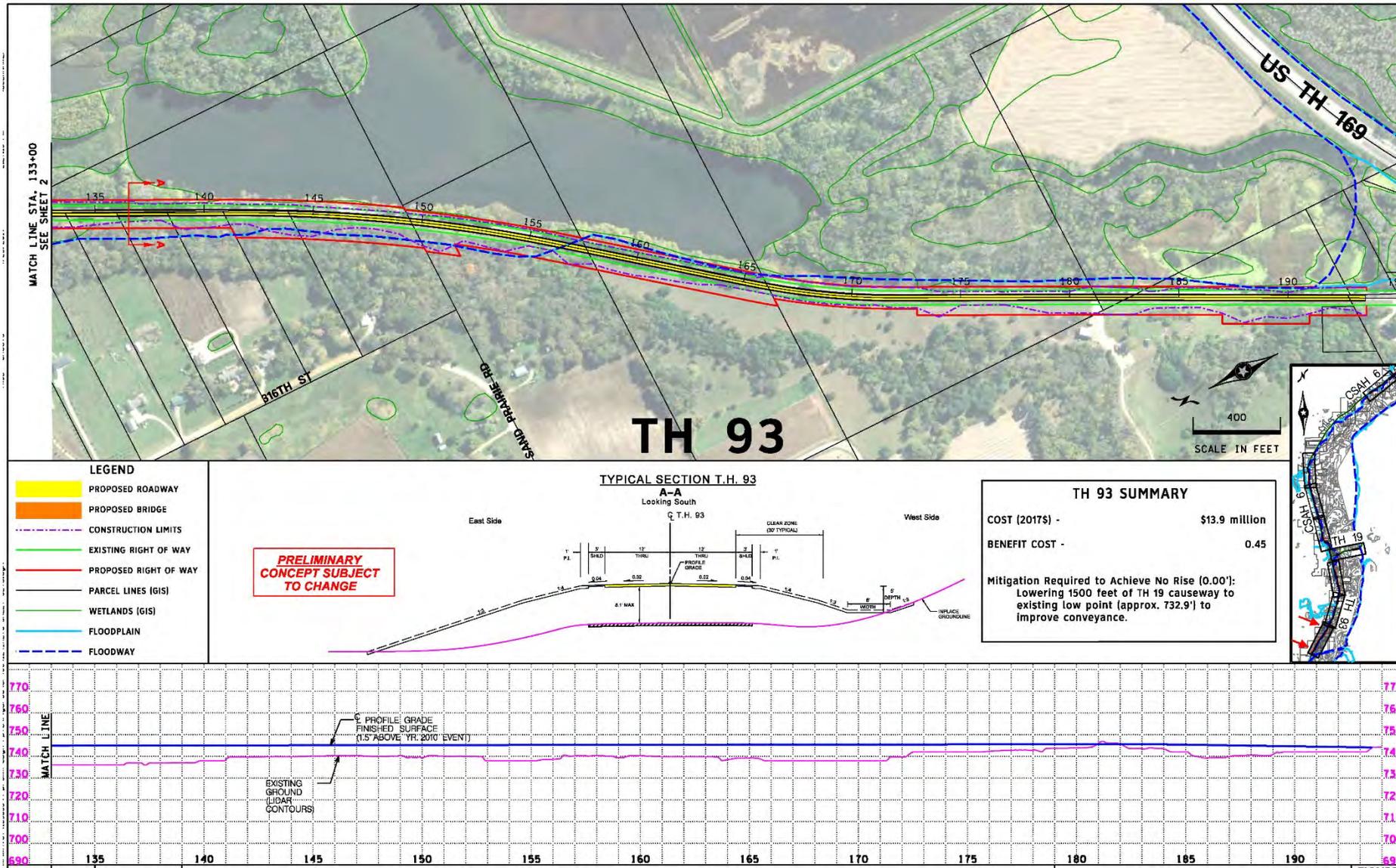
Pros/Cons

- Serves the second highest level of traffic
- Lowest Cost
- Highest Benefit/Cost Ratio
- Acquires the most property
- Would also have construction impacts on Highway 19

Highway 93 Alternative



Highway 93 Alternative



County Highway 6 Design Summary

Reconstructed Roadway Length = 4.3 miles

Mitigation for fill in floodplain is to excavate an area from within the floodplain and to lower a portion of County Road 5 to offset the fill to raise County Road 6

Approximate Project Cost Estimate = \$16 million (2017 \$)

Right-of-Way = 11 acres

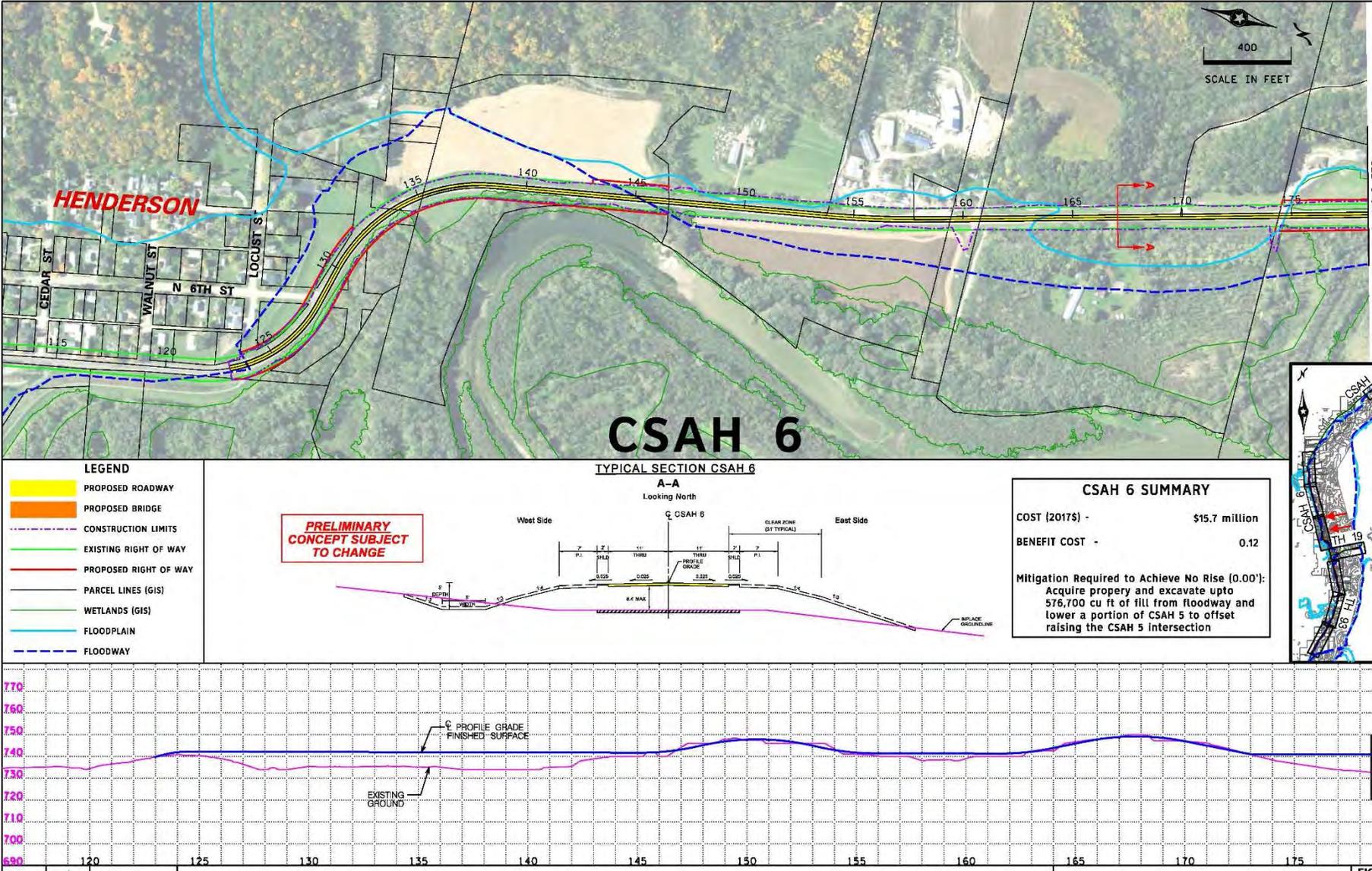
Wetland Impacts = 8 acres

Benefit /Cost = 0.12

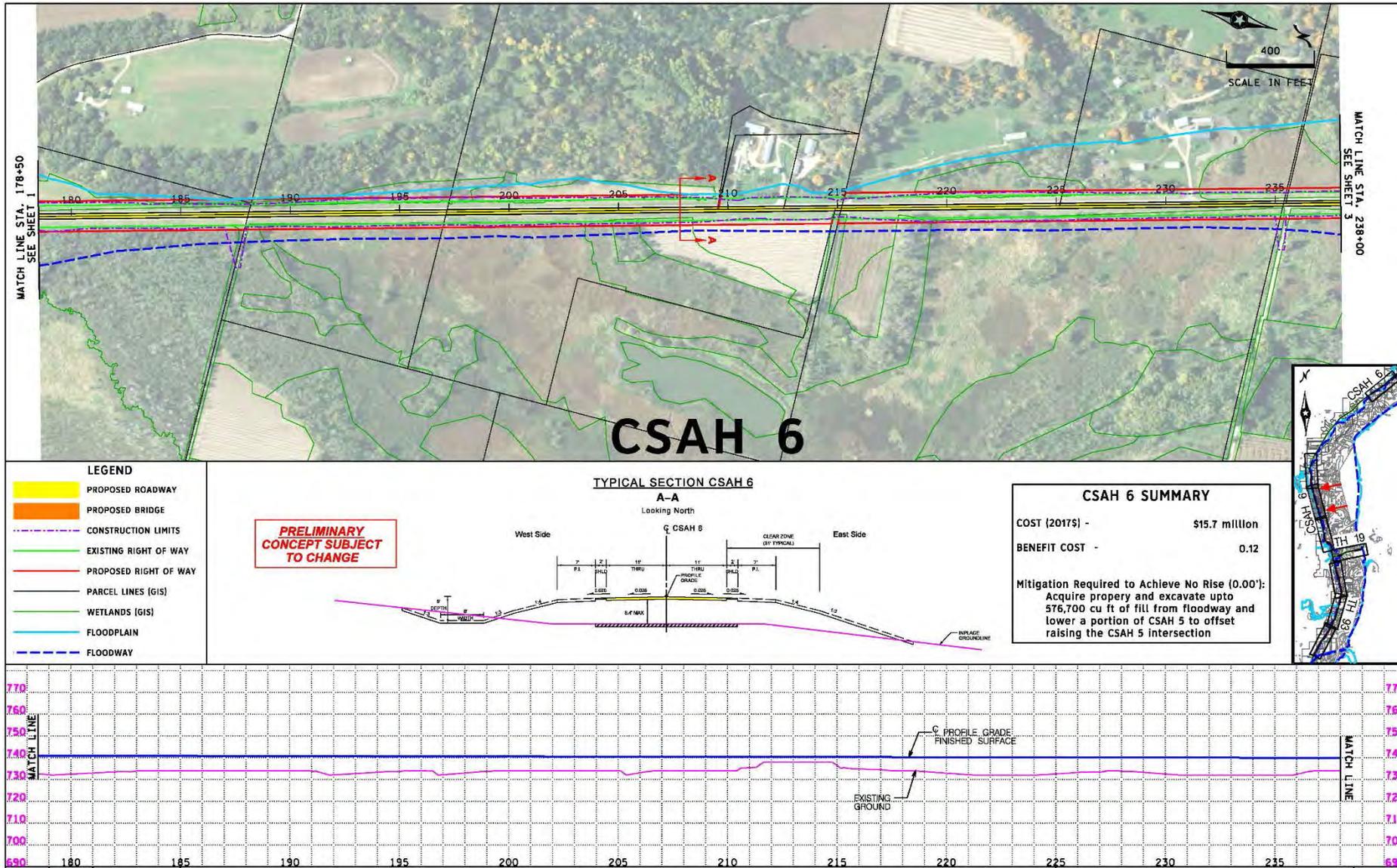
Pros/Cons

- Serves the fewest vehicles
- Lowest Benefit/Cost
- Project would lower the overtopping elevation of County Road 5
- More challenging to implement given the mitigation requirements involving the floodplain excavation

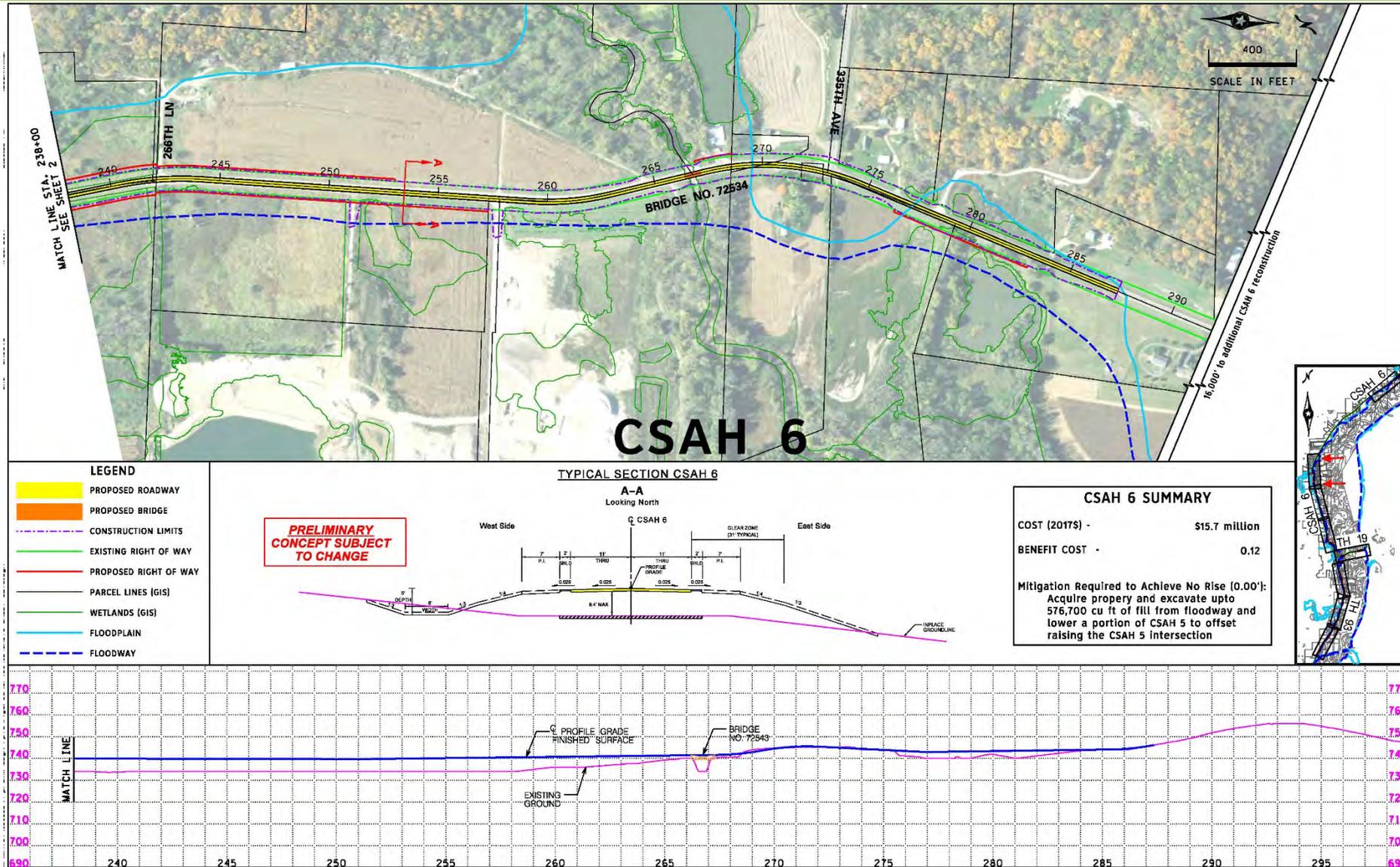
County Highway 6 Alternative



County Highway 6 Alternative



County Highway 6 Alternative



County Highway 6 Alternative

