

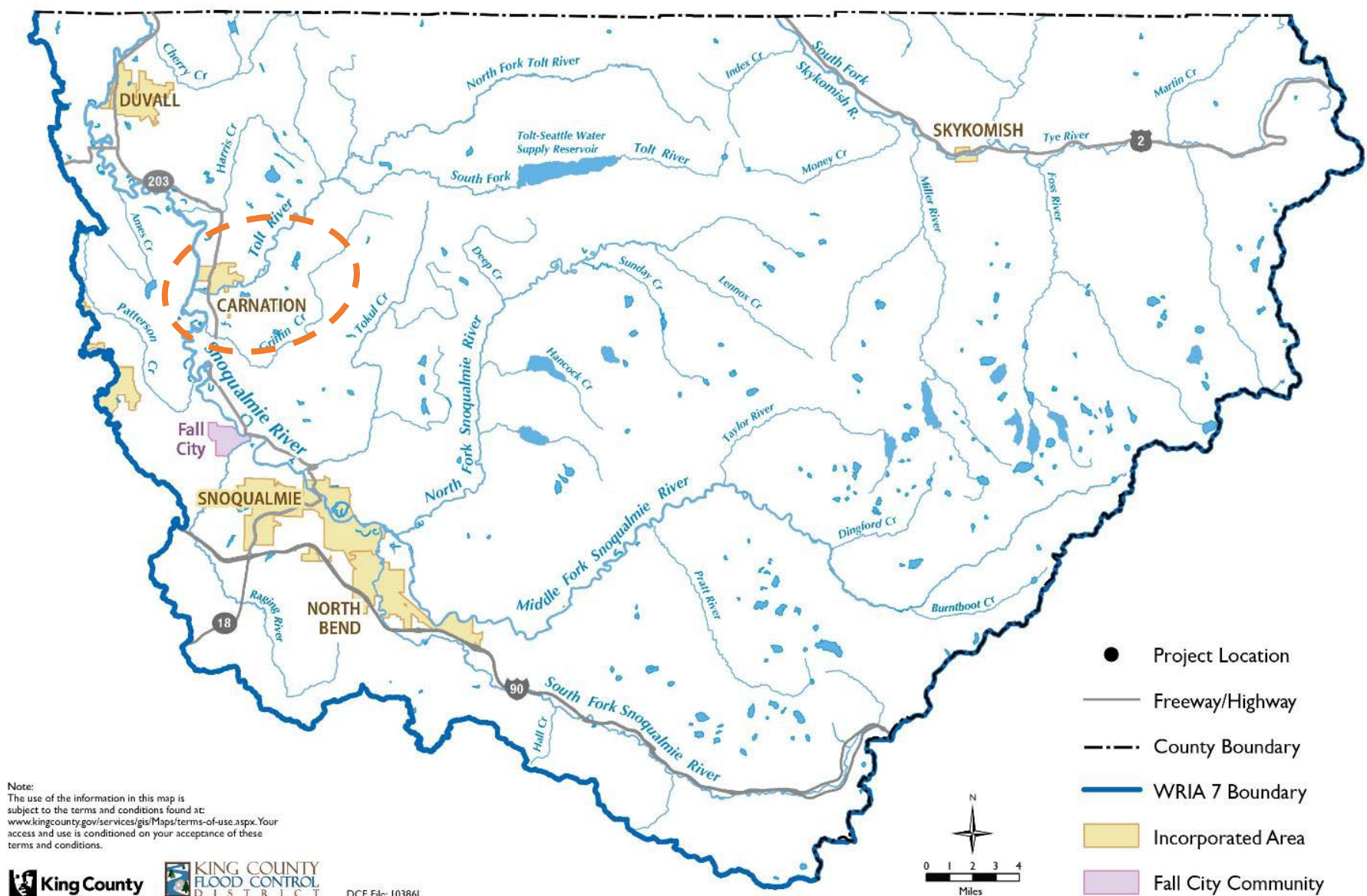
Tolt River Levee Level of Service Feasibility Study

*Presentation to the Executive Committee of
the King County Flood Control District*

March 15, 2023

Chase Barton, Supervising Engineer, Snoqualmie / SF Skykomish Basin

Project Location

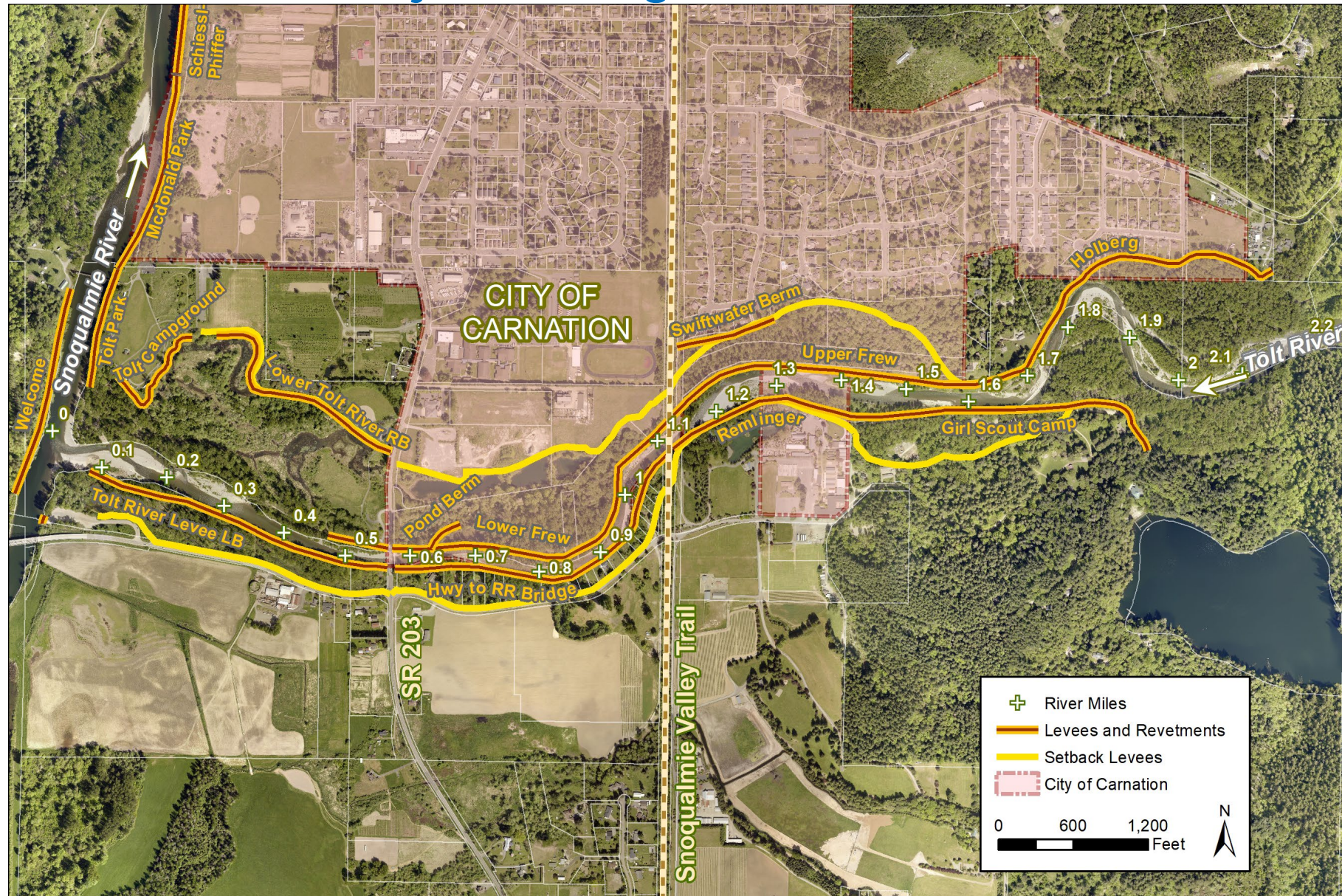


Introduction

Presentation Outline

- Background
- Hydraulic Analysis of Existing Levee Conditions
- Alternative Development
- Alternative Evaluation
- Recommended Alternative

Project Location and Project Background



Background

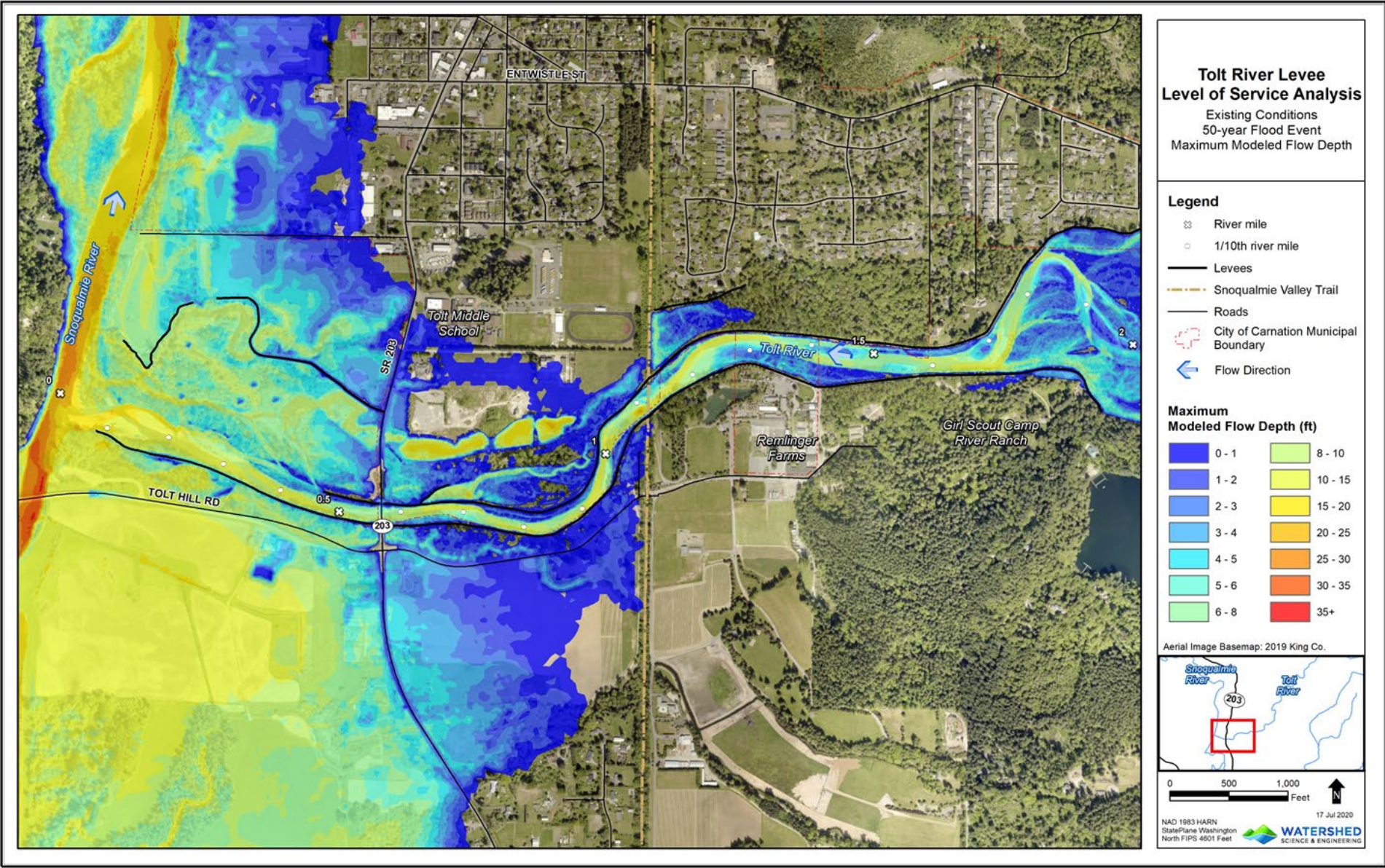
Project Need

- Inadequate and un-equal level of service; some levees overtop during floods as small as a 2-year flood (50% annual exceedance probability).
- Levees constructed in 1940s; prone to levee erosion, overtopping and breach hazards.
- Guidance for levee setback and improvement projects identified in the Tolt River CIS.

Project Deliverables

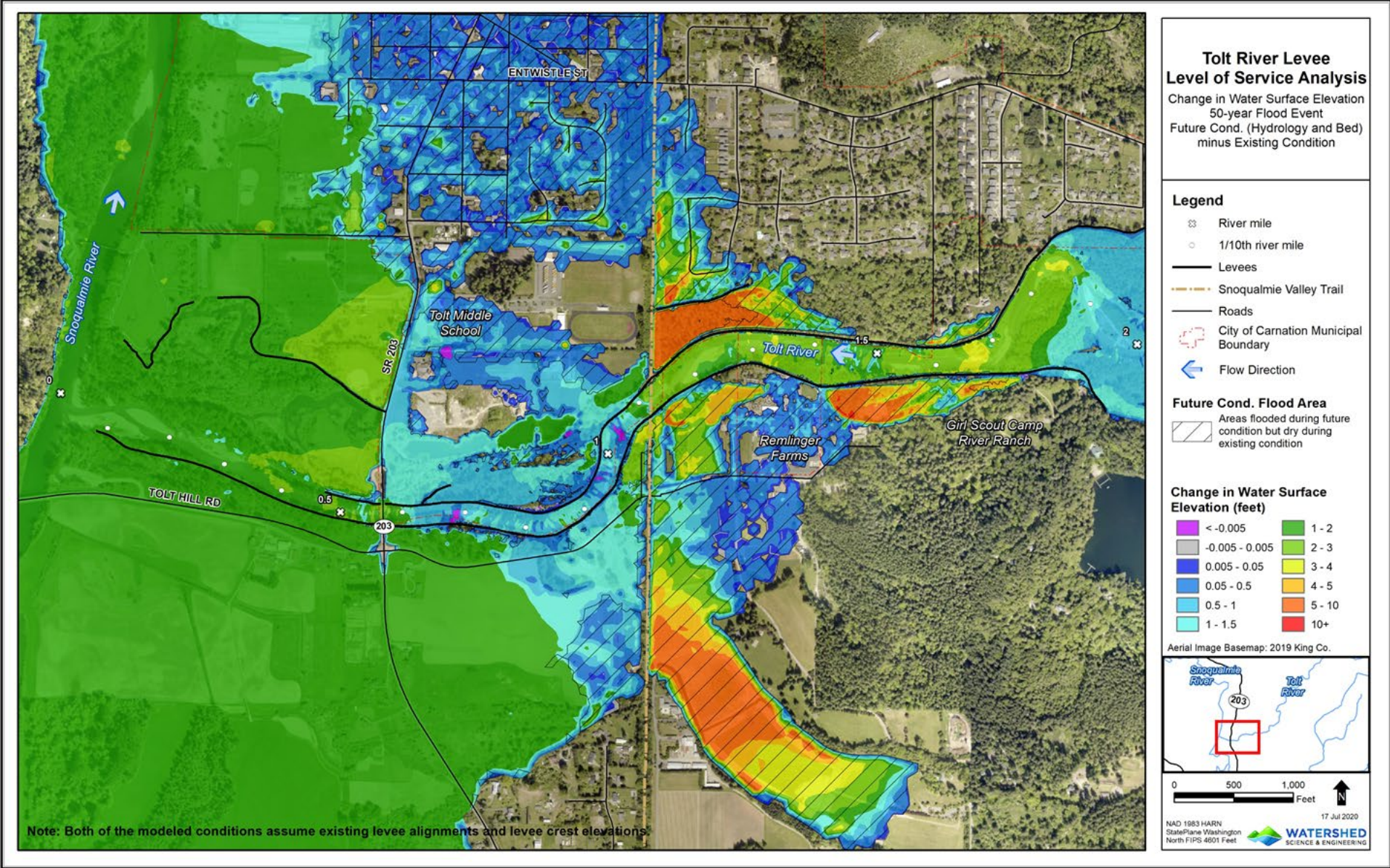
- Reach-scale level of service (LOS) for the leveed reach.
- Design criteria for future levee projects.
- Evaluation of alternative sequences for project implementation.

50-Yr Maximum Depth – Existing Flow and Channel Bed Conditions



Existing Levee Conditions

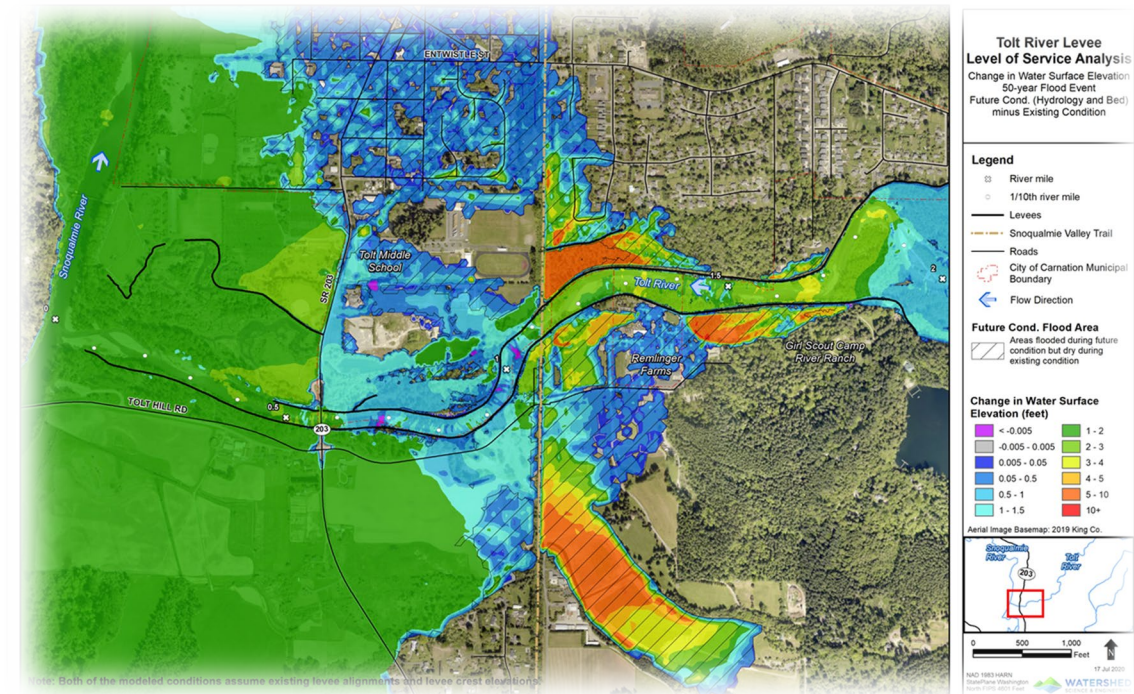
50-Yr Change in Depth – Future Flow and Channel Bed Conditions



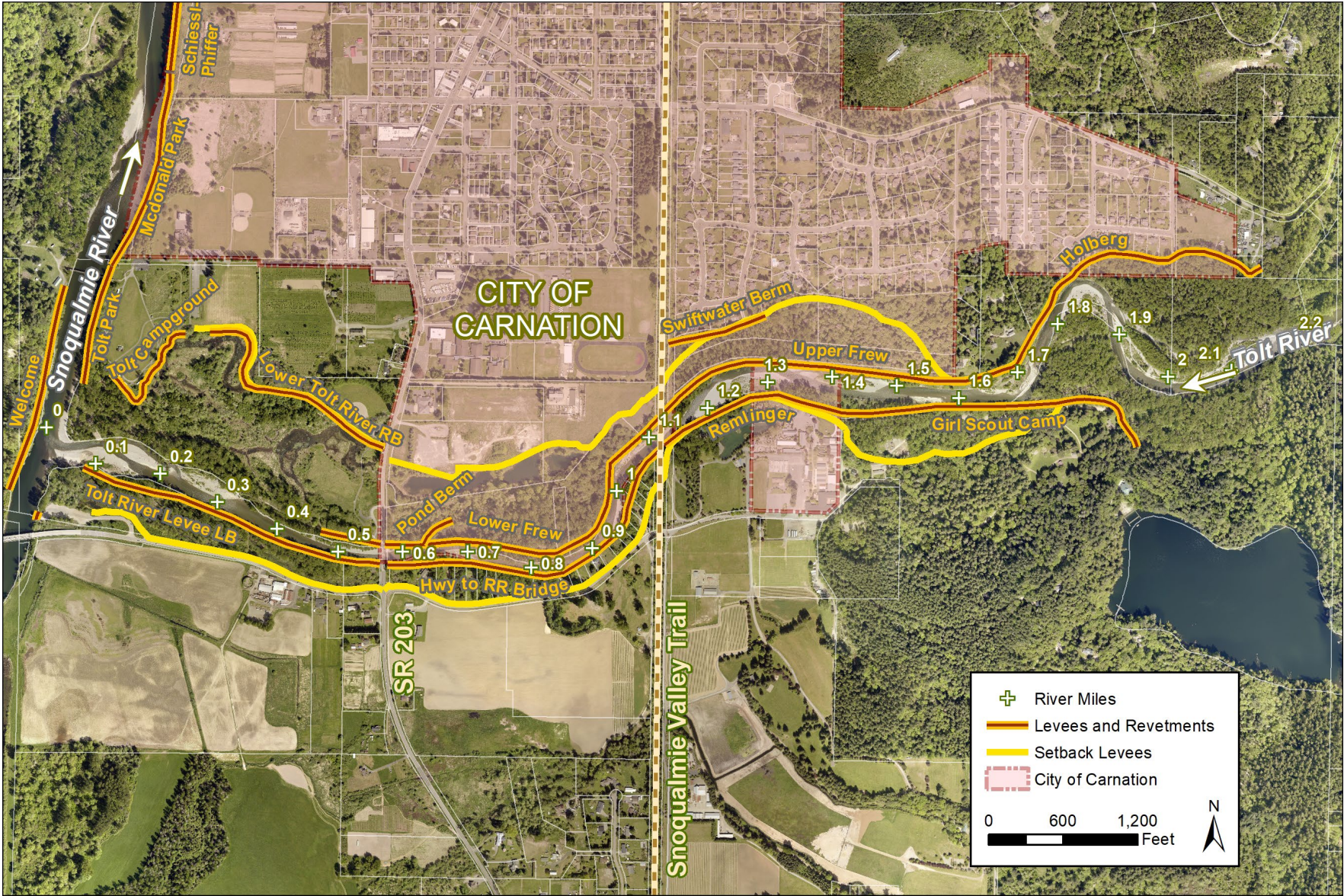
Existing Levee Conditions

Important Considerations in Development of LOS Alternatives

- Increased flood risk under future conditions
- Provide resilient flood protection to address future changes
- More development in right bank floodplain
- Un-equal flood protection on both banks
- Impacts to SR 203



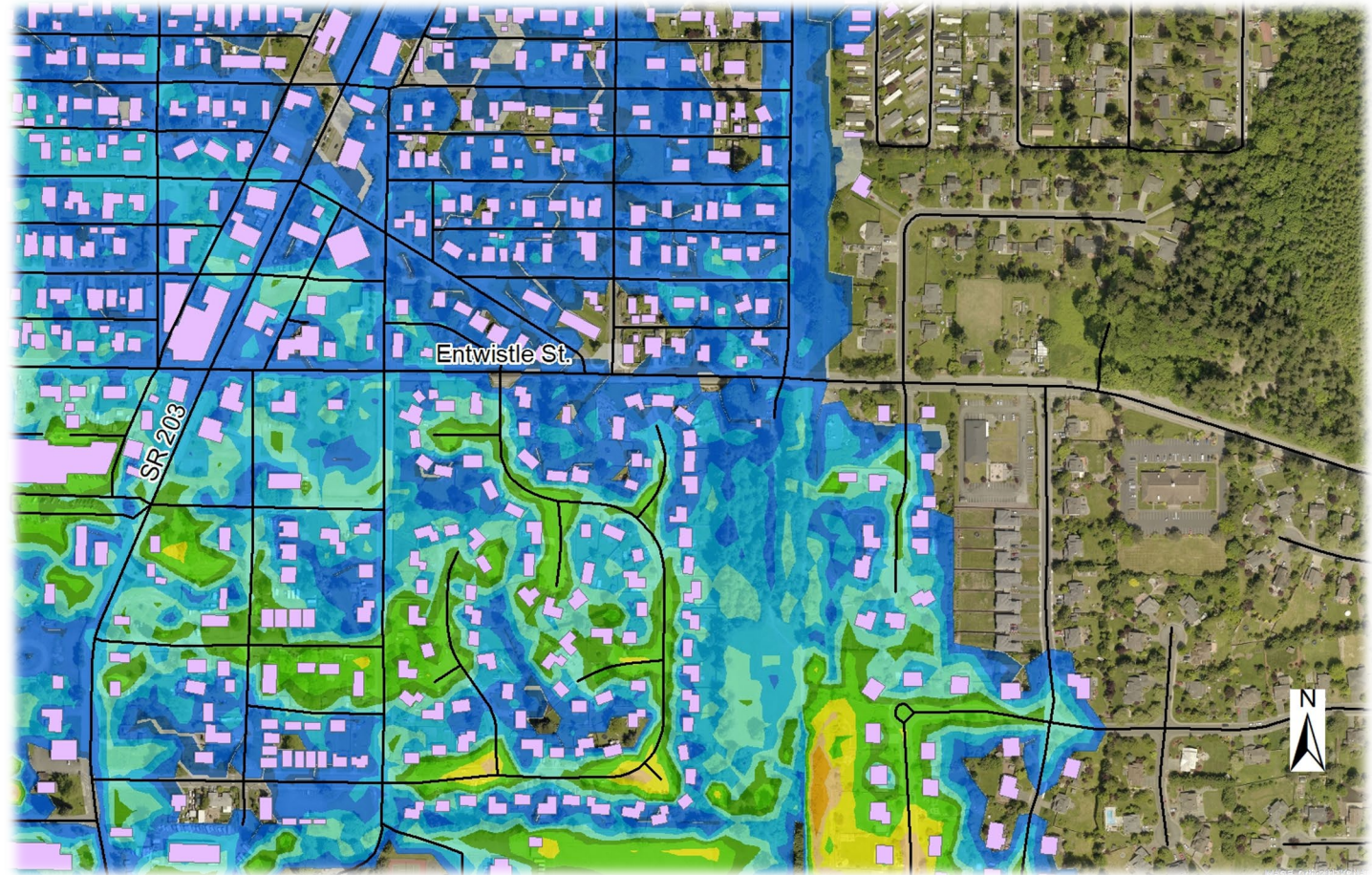
Level of Service Alternatives



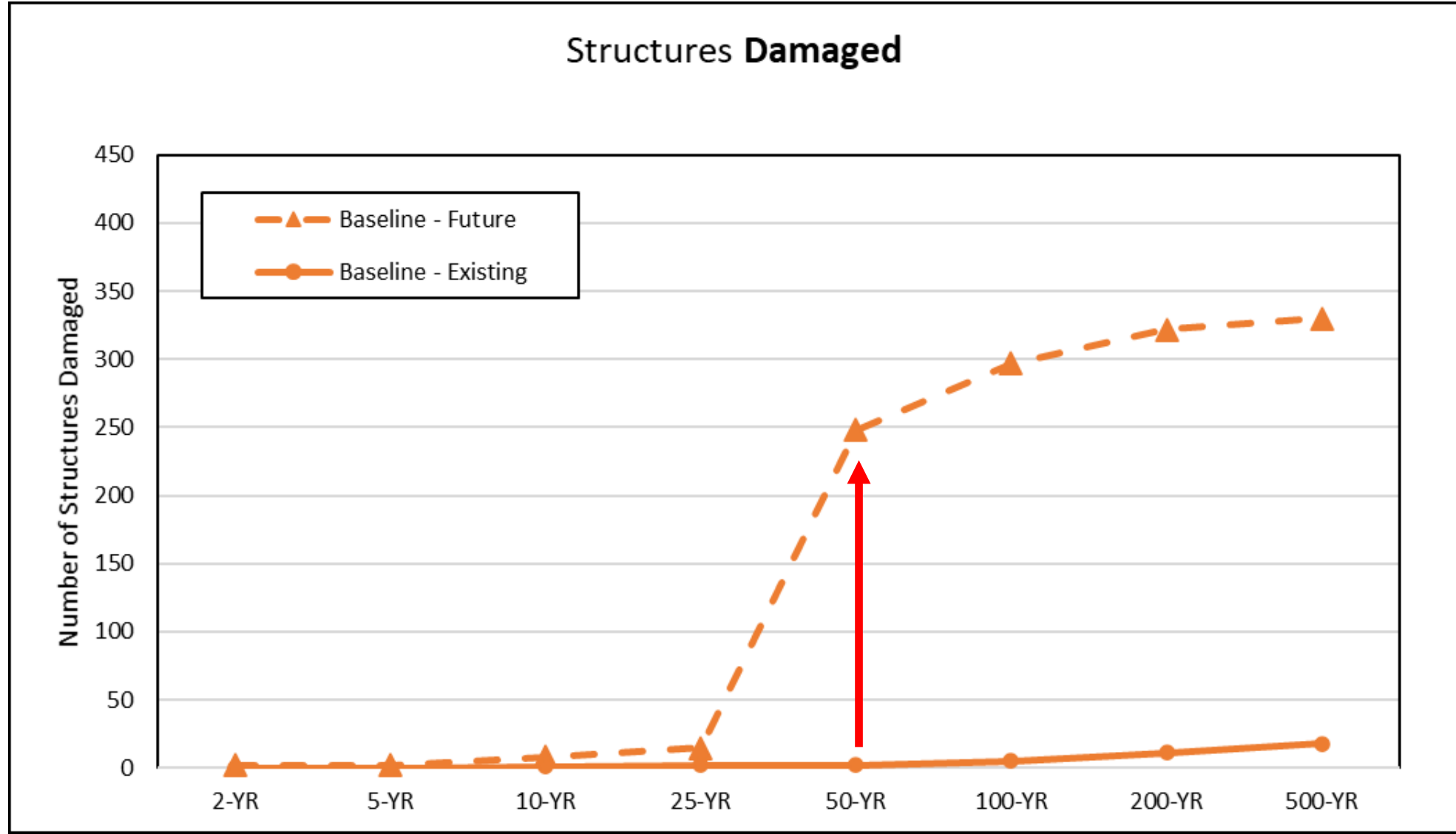
LOS Alternative Development

Structures at Risk

- Counted Structures
- Impacted vs. Damaged
- Structure Categories

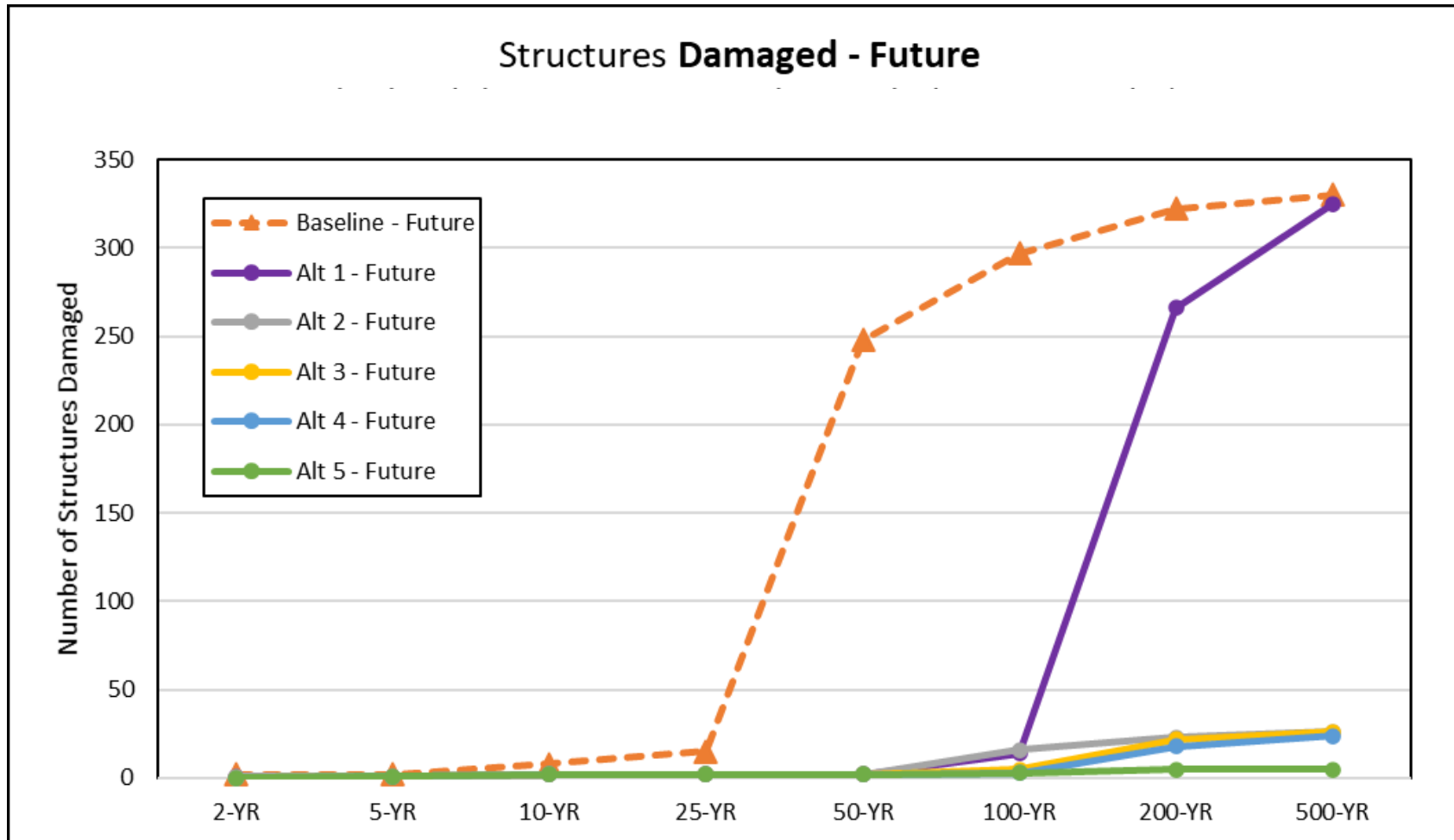


Structures at Risk – Existing Levee Conditions



Tolt LOS Alternative Evaluation

Structures at Risk – LOS Alternative Conditions



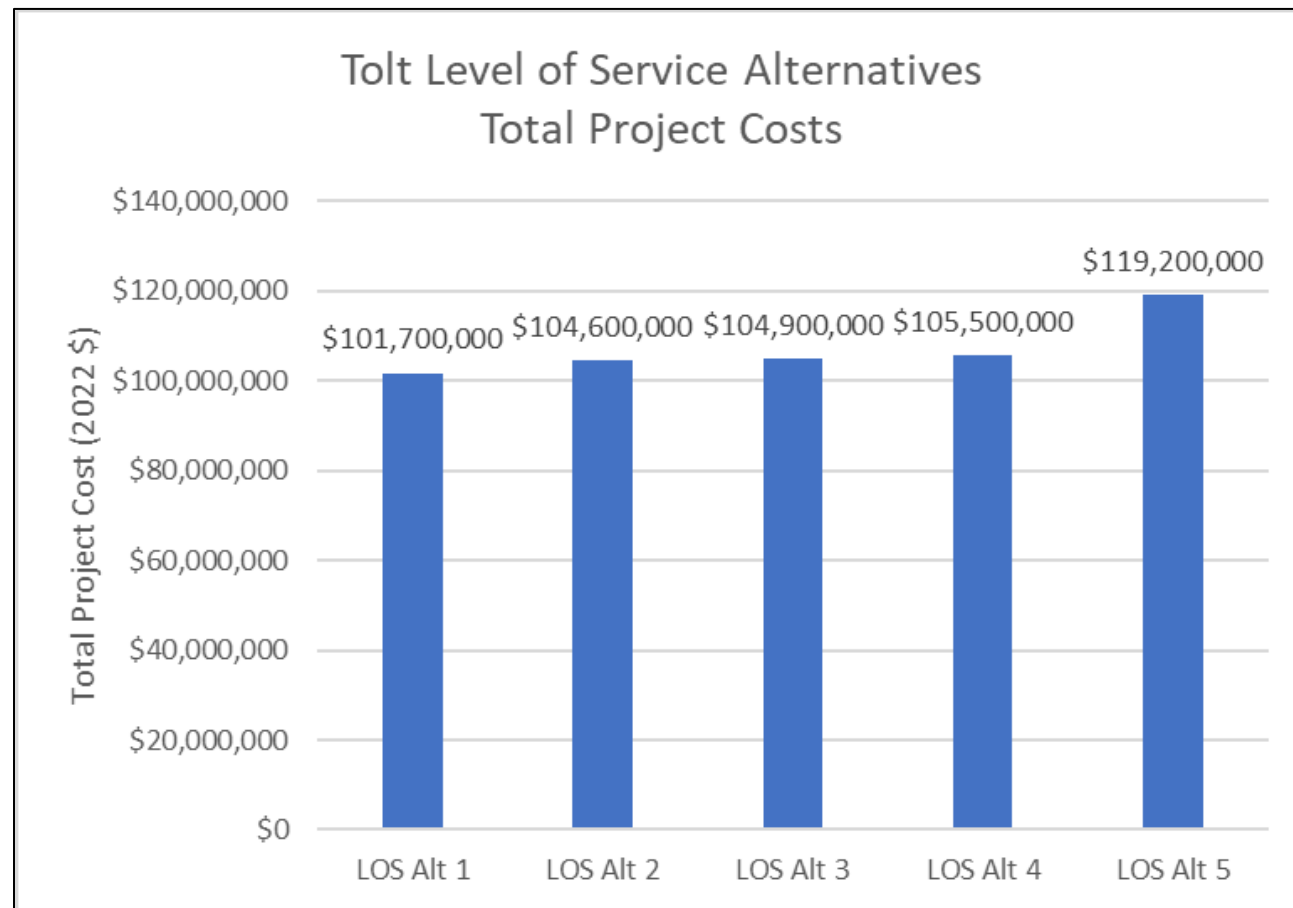
Future Flow and Channel Bed Conditions

Tolt LOS Alternative Evaluation

Cost Estimates

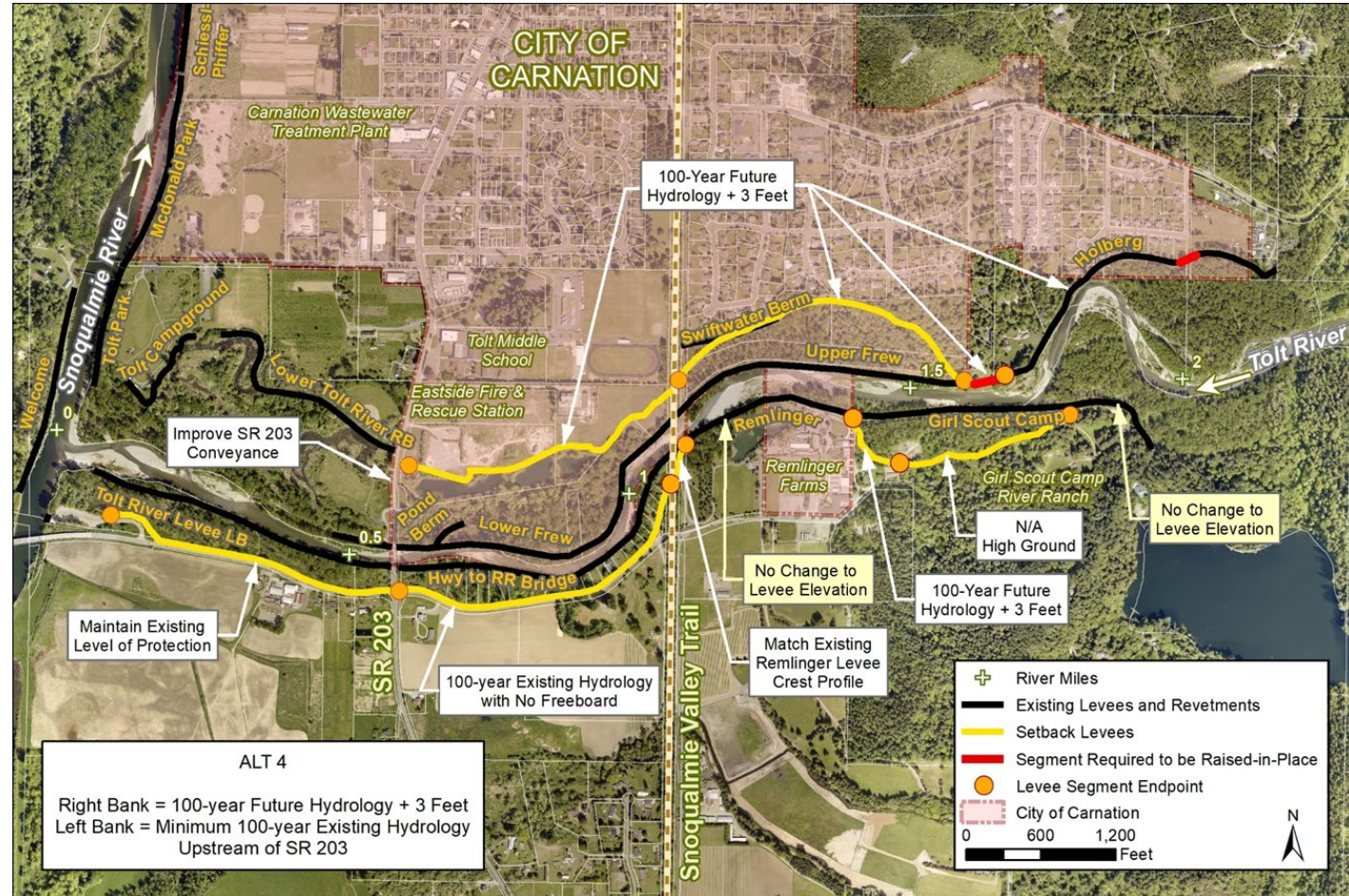
Total Project Costs Include:

- Contingency
- Sales Tax
- Planning, Engineering and Design
- Construction Management
- King County Staff Time
- Acquisition



Alternative 4 – Recommended Alternative

- Right Bank Levees
 - Contain 500-year for existing and future conditions
- Highway to Railroad Bridge
 - 100-year existing
 - 2-year to 5-year future
- Remlinger and Girl Scout Camp
 - Contain 500-year existing
 - Protect developed portion of Remlinger Farms up to the 100-year future



Recommendation

Recommended LOS Alternative – Alternative 4 Summary

- Resilient flood protection for developed right bank floodplain
 - 500-year Existing and Future
- Significantly improved flood protection for left bank floodplain
 - 500-year Existing LOS for Remlinger Farms
 - 100-year Future LOS for Remlinger Farms
- Significant reduction in number of structures that may be impacted and damaged by flooding
- Cost effective
- Adaptable to future conditions

Recommendation



Chase Barton

Supervising Engineer

River and Floodplain Management Section

chase.barton@kingcounty.gov

206-477-4854

kingcounty.gov/rivers

Be prepared!

Visit kingcounty.gov/PrepareForFlooding

