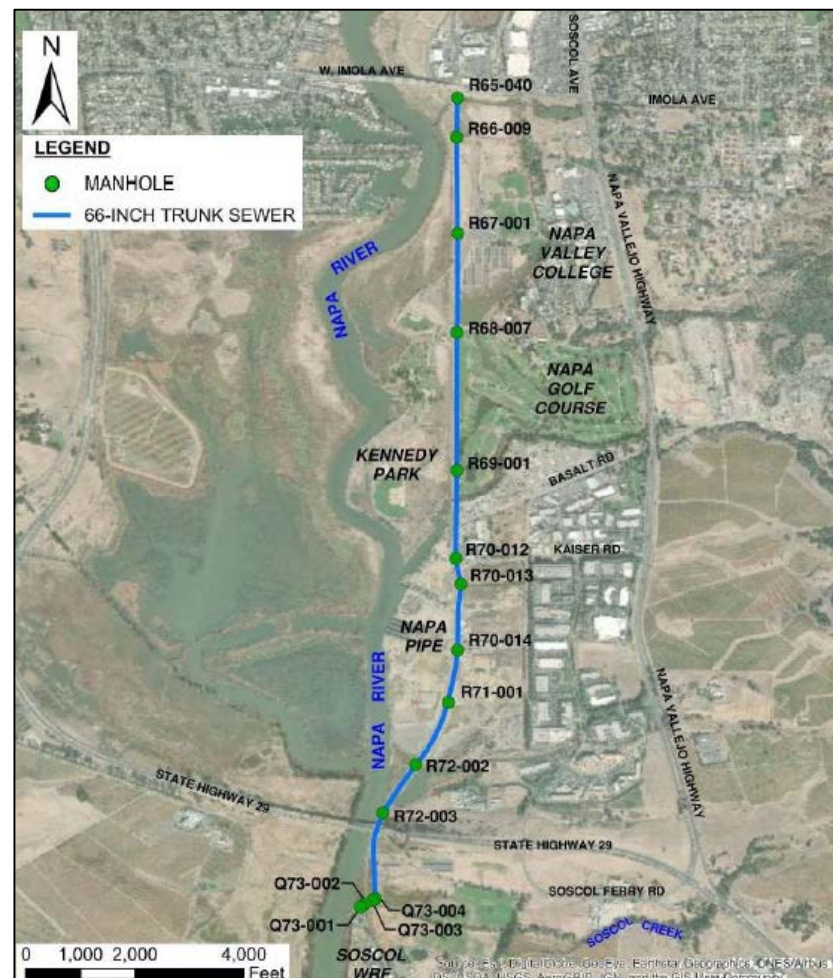
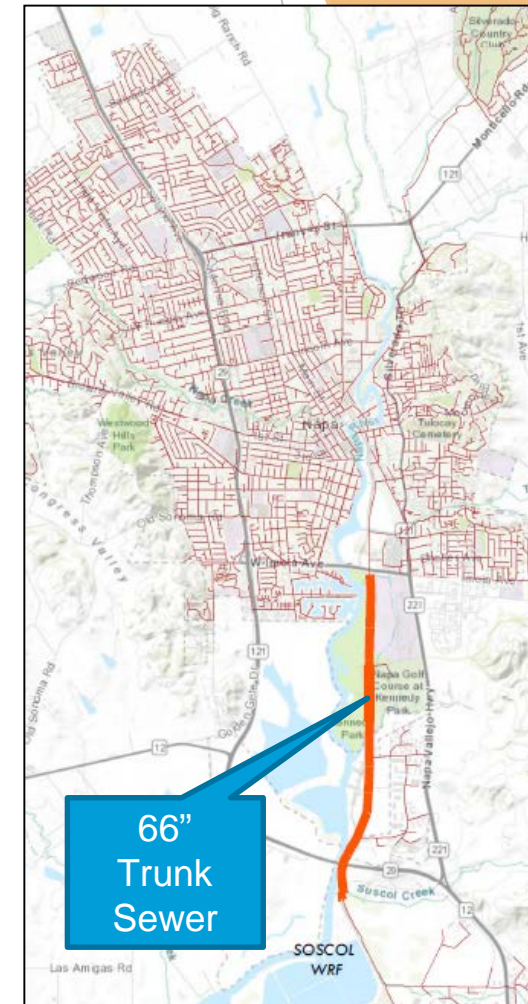


66-inch Trunk Sewer



Background

- ▶ 66" reinforced concrete pipe (unlined)
- ▶ Constructed in 1967
- ▶ 3 miles (Imola to Influent Pump Station)
 - ▶ Adjacent to Napa River



Background



- ▶ Conveys over 90% of flow to WWTP
 - ▶ No redundancy
- ▶ 1967 to 1998: Partially treated wastewater
- ▶ 1998 to present: Raw sewage

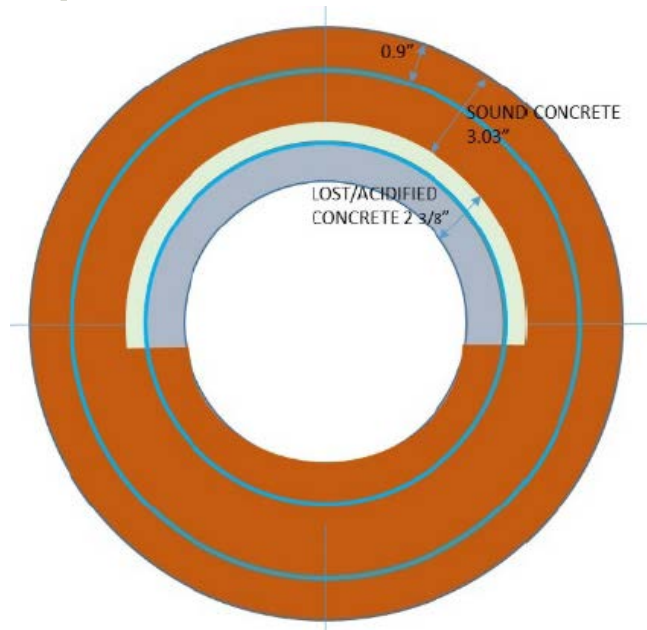
Background



- ▶ Inspections performed:
 - ▶ 2001 - routine CCTV inspection
 - ▶ 2012 - routine CCTV inspection
 - ▶ 2017 - partial CCTV by NapaSan staff showed accelerated degradation since 2012
 - ▶ 2017 - internal and external condition assessment at representative locations
 - ▶ 2018 - full-length internal condition assessment

2017 Condition Assessment

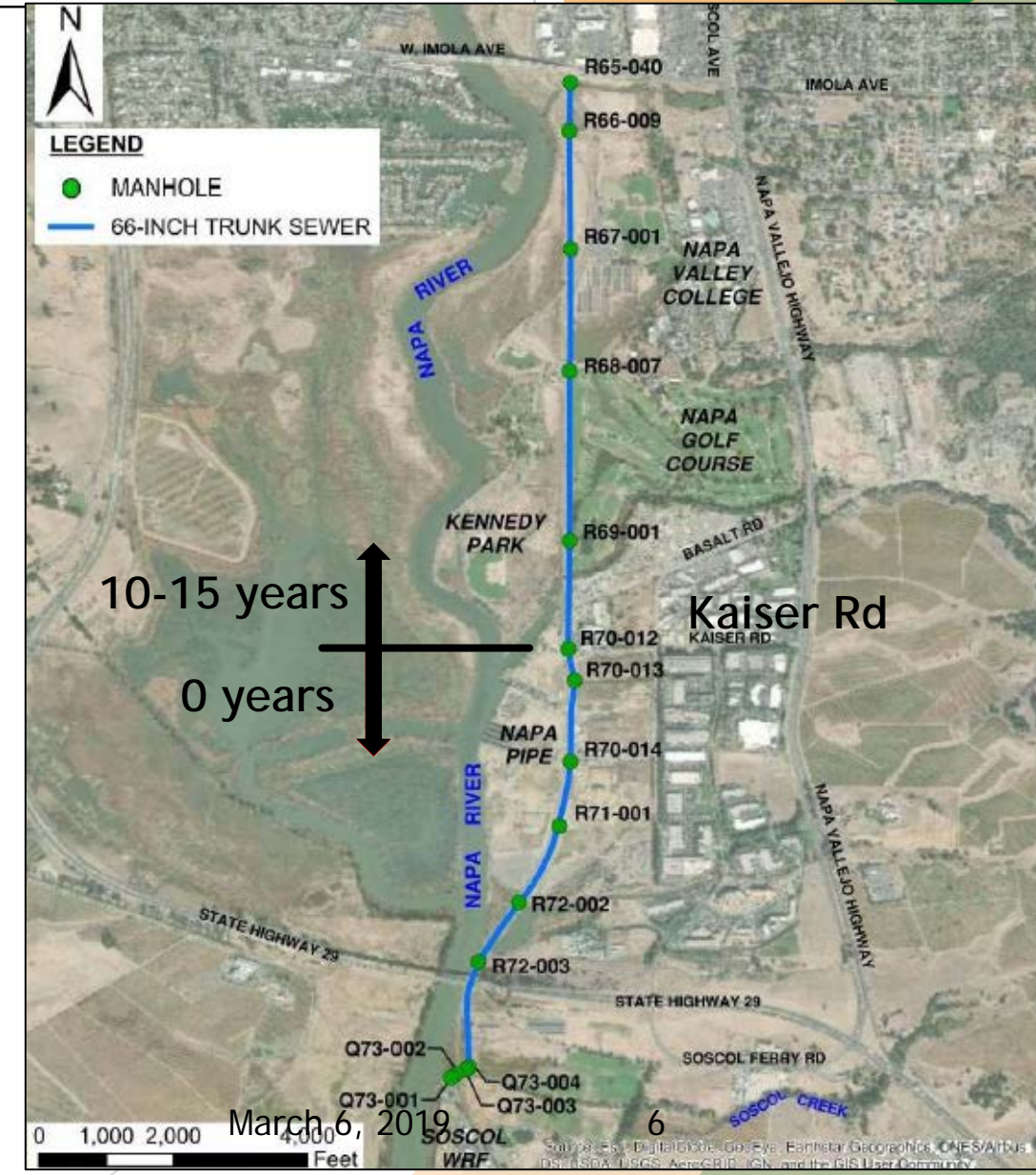
- ▶ Pipe interior has advanced deterioration
 - ▶ Concrete wall loss
 - ▶ Exposed rebar
- ▶ Pipe exterior is structurally sound



2018 Condition Assessment



- ▶ Pipe from Imola to Kaiser Road is deteriorated (about 10-15 years remaining life)
- ▶ Pipe from Kaiser Road to IPS is severely deteriorated (needs to be scheduled for repair ASAP)



Why has degradation increased ?



- ▶ Raw sewage conveyance since 1998
- ▶ Degradation accelerates as more material is lost
- ▶ Water conservation during the drought leads to higher BOD and TSS concentrations which increases H₂S gas
- ▶ The pipe has an expected 50-year lifespan

Pipe Condition vs. Capacity

- ▶ The condition assessment established that the pipe needs to be repaired
- ▶ The capacity analysis will determine if additional capacity is required



Capacity Analysis



- ▶ The CSMP was moved forward 1 year to analyze the capacity of the 66" trunk
- ▶ The capacity analysis is in process but draft results are available
- ▶ Draft results indicate:
 - ▶ Rehabilitating the pipe will improve flow characteristics
 - ▶ The I/I reduction program will reduce future peak flows
 - ▶ In the future it may still be necessary to add capacity
 - ▶ The complete CSMP will provide a full analysis

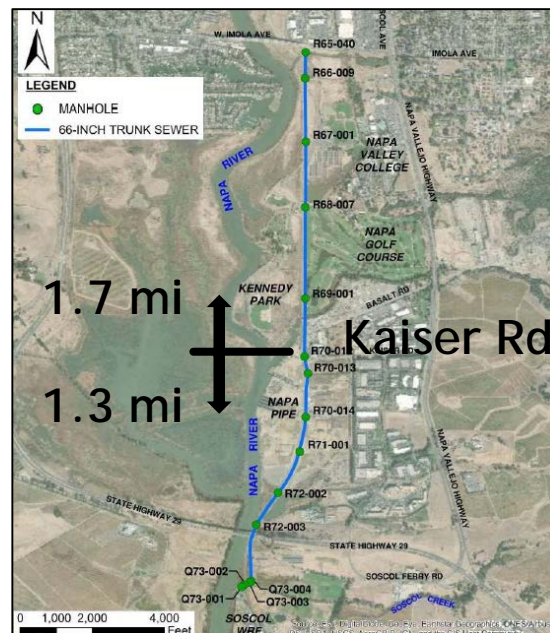
66" Trunk Repair Options



| | Rehabilitate (E) Trunk | Construct New Trunk |
|-----------------------|------------------------|-----------------------|
| Cost | \$25M | \$100M+ |
| Environmental Impacts | Low-Moderate | High |
| Construction Schedule | 2021 & 2029 | 2022-2023 & 2029-2030 |
| Capacity | ??? | Adequate |

Summary

- ▶ The 66" trunk is a critical asset without redundancy
 - ▶ 1.3 miles have no remaining useful life
 - ▶ 1.7 miles have about 10-15 years remaining useful life
- ▶ The pipe needs to be scheduled for rehabilitation or replacement



Anticipated Next Steps



- ▶ Complete the CSMP
- ▶ Rehabilitate the 66-inch trunk with CIPP
 - ▶ Downstream portion in 2021 (Kaiser to treatment plant)
 - ▶ Upstream portion in about 10 years (Imola to Kaiser)
 - ▶ Budget for this scenario in the 10-year CIP
- ▶ Staff recommends including the 66" trunk in the strategic plan due to its criticality and budget impact