CALIFORNIA WATER FIX
RELIABLE. CLEAN. WATER.

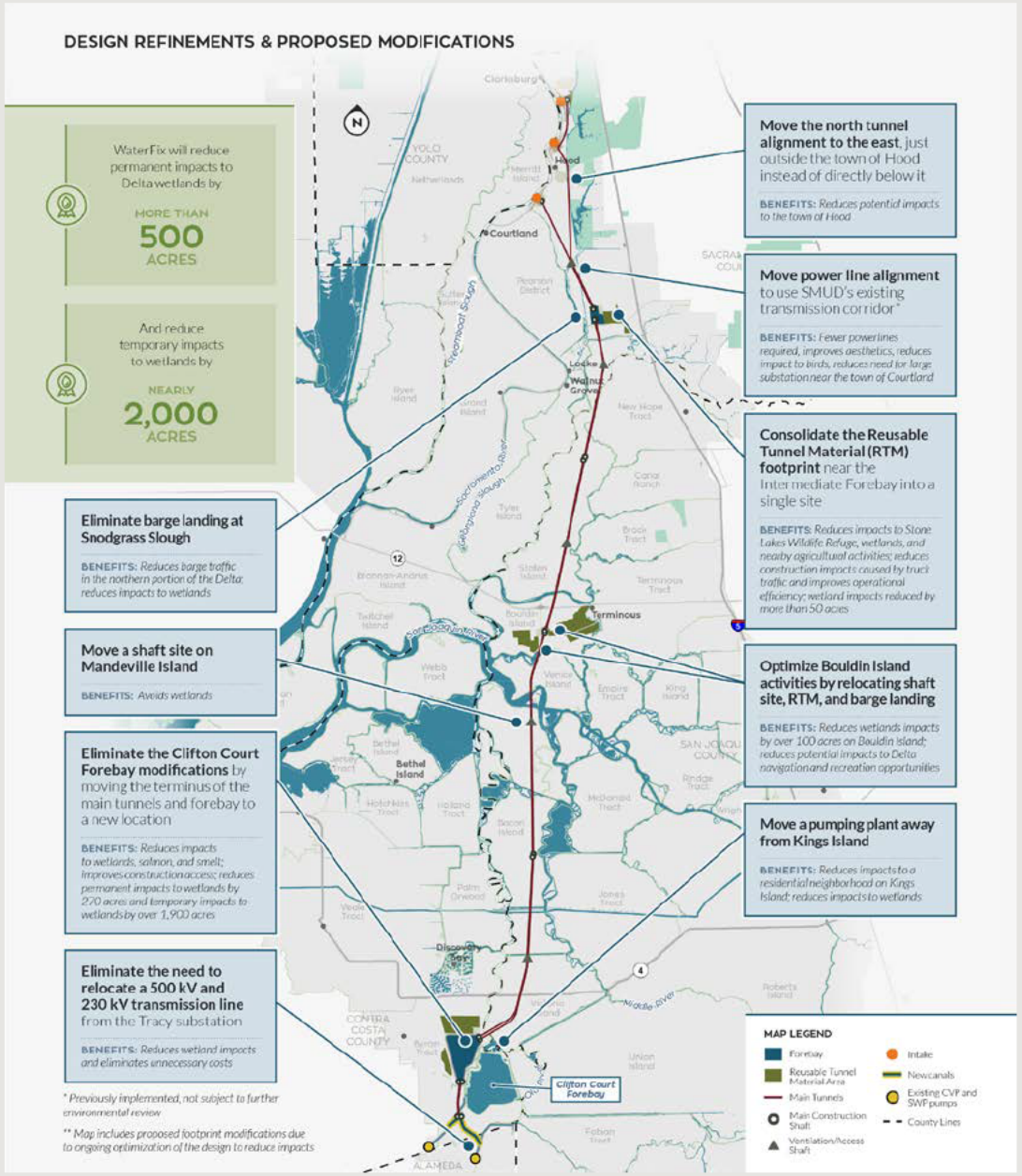
DWR-1361

# ENGINEERING PART 2 REBUTTAL TESTIMONY

# TESTIMONY OVERVIEW

- **Proposed WaterFix Refinements**
- **Noise**
- **Air quality**
- **Transportation impacts from construction**
- **Barges and barge landings**
- **Adequacy of existing engineering**
- **Seismic design criteria for tunnels**

# CALIFORNIA WATERFIX – OVERALL PROGRAM




# DESIGN REFINEMENTS & PROPOSED MODIFICATIONS 1 OF 3

# DESIGN REFINEMENTS & PROPOSED MODIFICATIONS 2 OF 3

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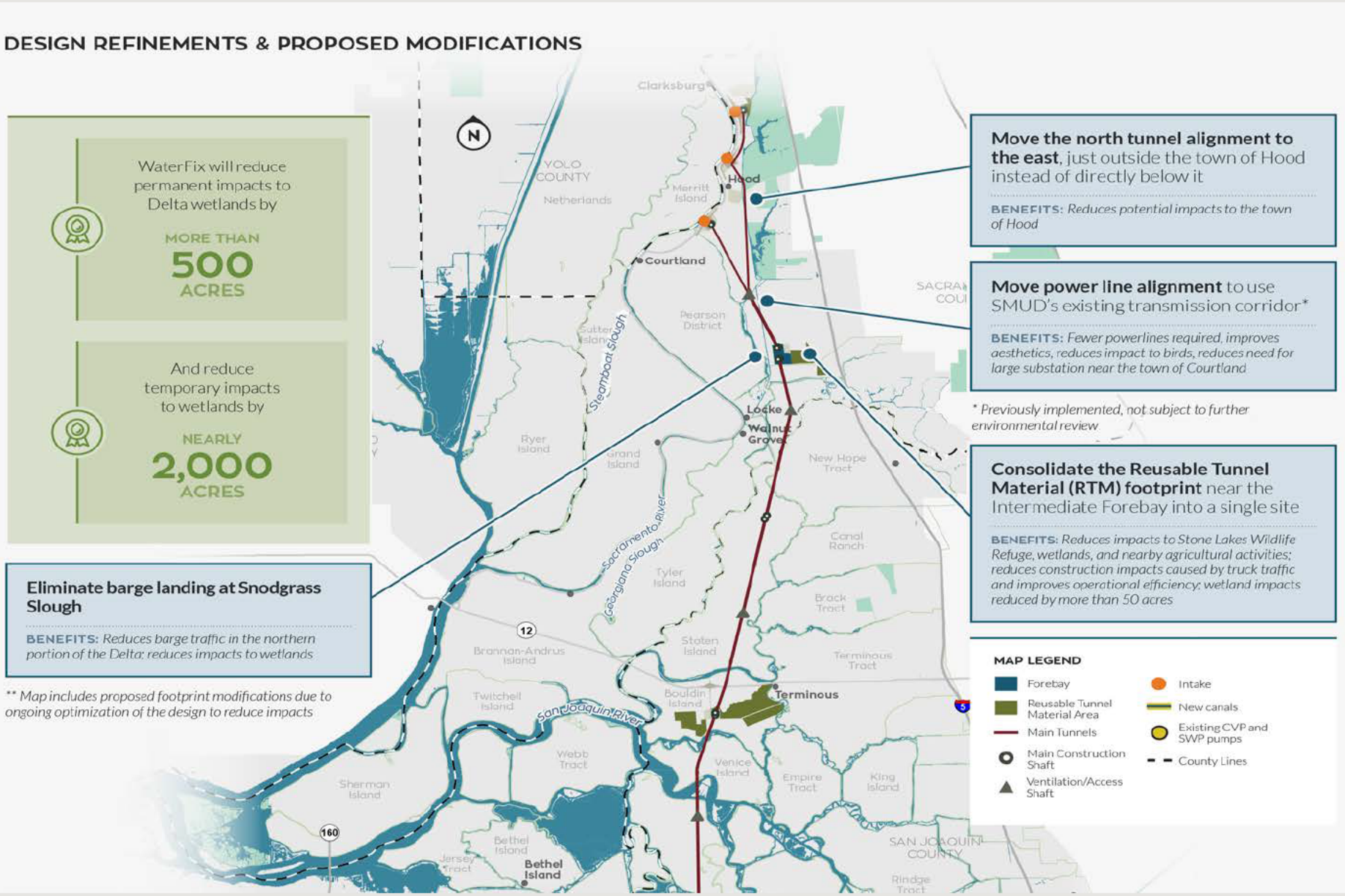


# DESIGN REFINEMENTS & PROPOSED MODIFICATIONS 3 OF 3

## DESIGN REFINEMENTS & PROPOSED MODIFICATIONS (CONT'D)

**Move a shaft site on Mandeville Island**

**BENEFITS:** *Avoids wetlands*

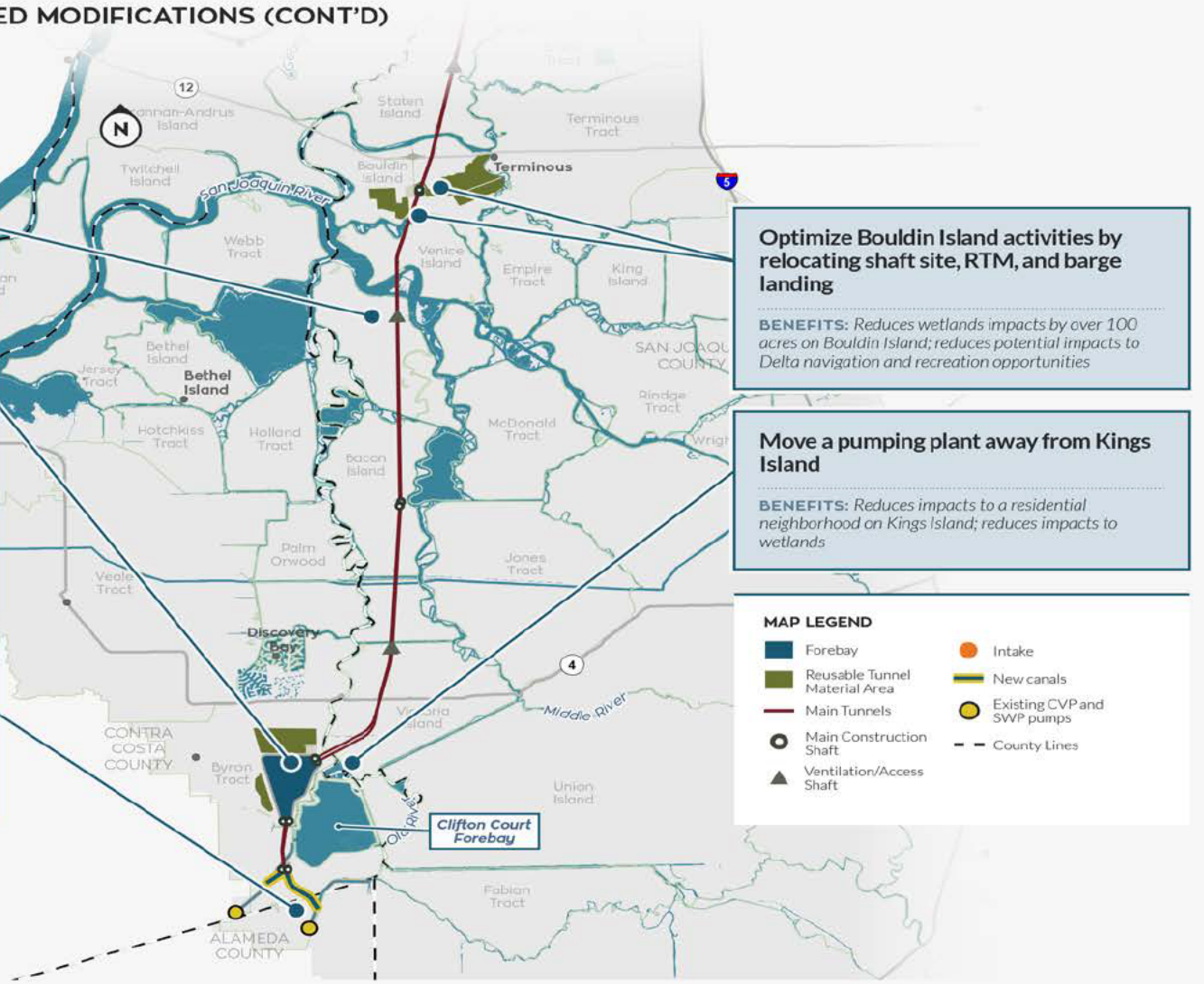
**Eliminate the Clifton Court Forebay modifications** by moving the terminus of the main tunnels and forebay to a new location

**BENEFITS:** *Reduces impacts to wetlands, salmon, and smelt; improves construction access; reduces permanent impacts to wetlands by 270 acres and temporary impacts to wetlands by over 1,900 acres*

**Eliminate the need to relocate a 500 kV and 230 kV transmission line** from the Tracy substation

**BENEFITS:** *Reduces wetland impacts and eliminates unnecessary costs*

*** Map includes proposed footprint modifications due to ongoing optimization of the design to reduce impacts*




**Optimize Bouldin Island activities by relocating shaft site, RTM, and barge landing**

**BENEFITS:** *Reduces wetlands impacts by over 100 acres on Bouldin Island; reduces potential impacts to Delta navigation and recreation opportunities*

**Move a pumping plant away from Kings Island**

**BENEFITS:** *Reduces impacts to a residential neighborhood on Kings Island; reduces impacts to wetlands*

# APPROVED CLIFTON COURT FOREBAY OPTION

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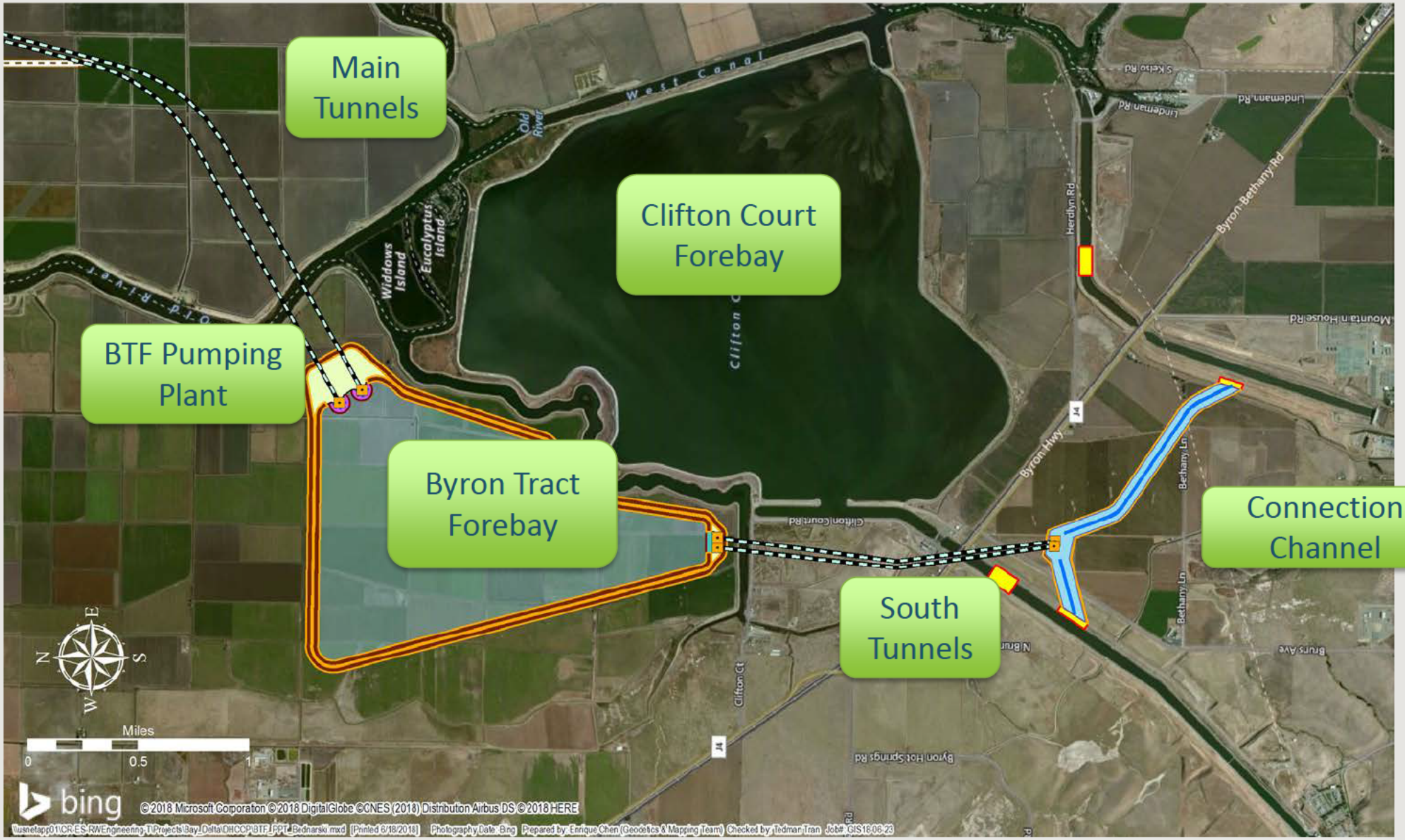
# PROPOSED BYRON TRACT FOREBAY OPTION



# DELTA MENDOTA CANAL CONTROL STRUCTURE

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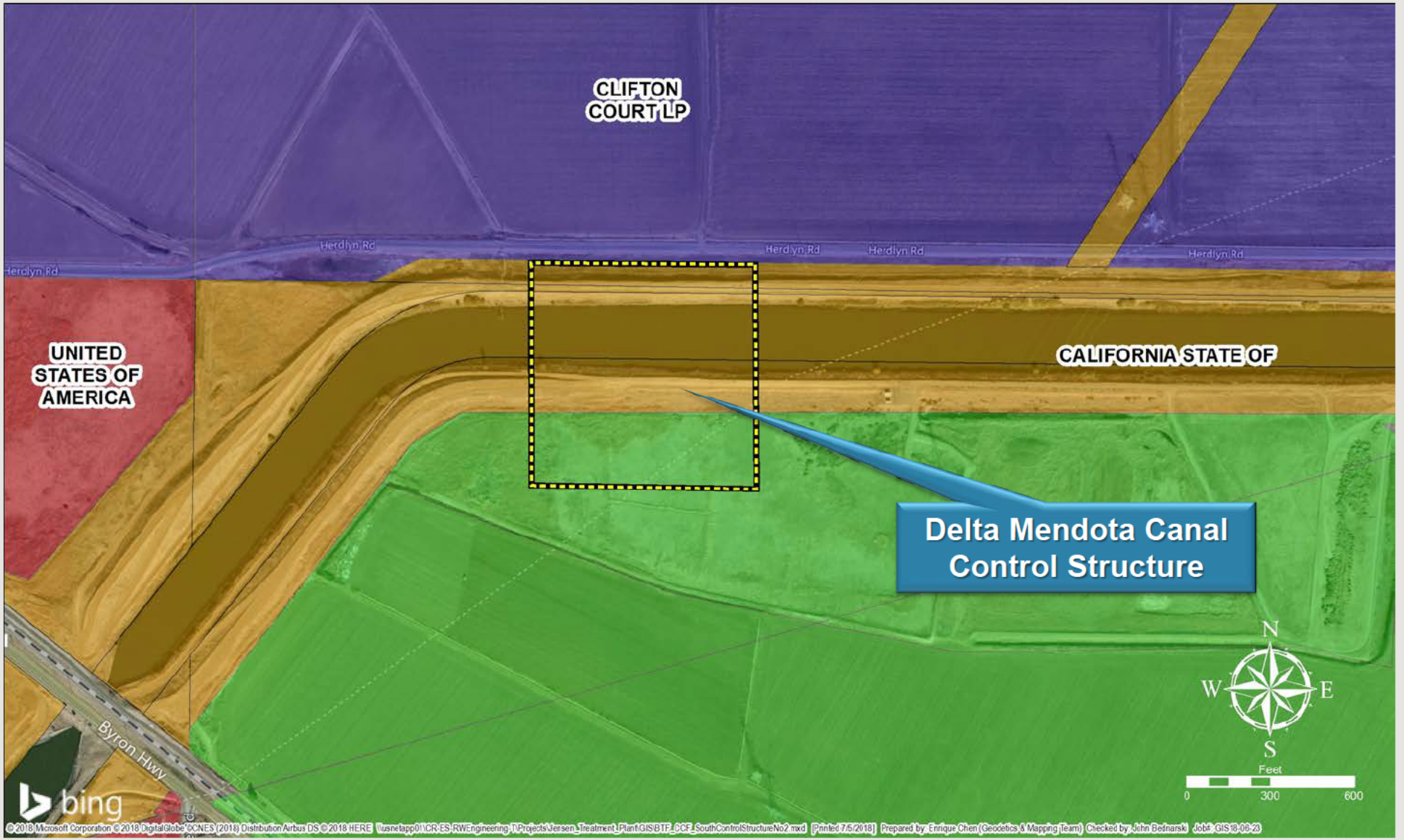


# NOISE FROM IMPACT PILE DRIVING

- **Noise level calculations based on FTA guidance**
- **Final EIR/EIS**
  - Used maximum source levels for impact pile drivers based on FTA guidance
  - Impact pile drivers are disclosed as worst-case
- **DWR has committed to non-impact pile driving where feasible**
  - Multiple alternative methods may be possible
  - Need complete geotechnical data
- **DWR has committed to noise abatement plan**
  - Enclosures around noise-generating equipment

# AIR QUALITY

- **Revisions made to the Construction Equipment Exhaust Reduction Plan**
- **Ongoing air district coordination for criteria pollutant offset mitigation**
- **Revisions made to Mitigation Measure AQ-9 to reduce localized particulate matter (PM) concentrations**
- **Analysis conducted of Valley Fever and commitments to reduce public exposure to *Coccidioides immitis***

# TRANSPORTATION IMPACTS

- **Analysis in the FEIR/FEIS examined "worst-case" traffic scenario**
- **Analysis used traffic engineering methodologies**
  - Applied San Joaquin, Sacramento and Yolo County standards
- **Proposed Project:**
  - reduces number of vehicle trips by nearly 29% when compared to Approved Project
  - reduces number of impacted roadway segments by nearly 11% compared to Approved Project
  - reduces number of unacceptable pavement conditions by nearly 11% when compared to Approved Project.

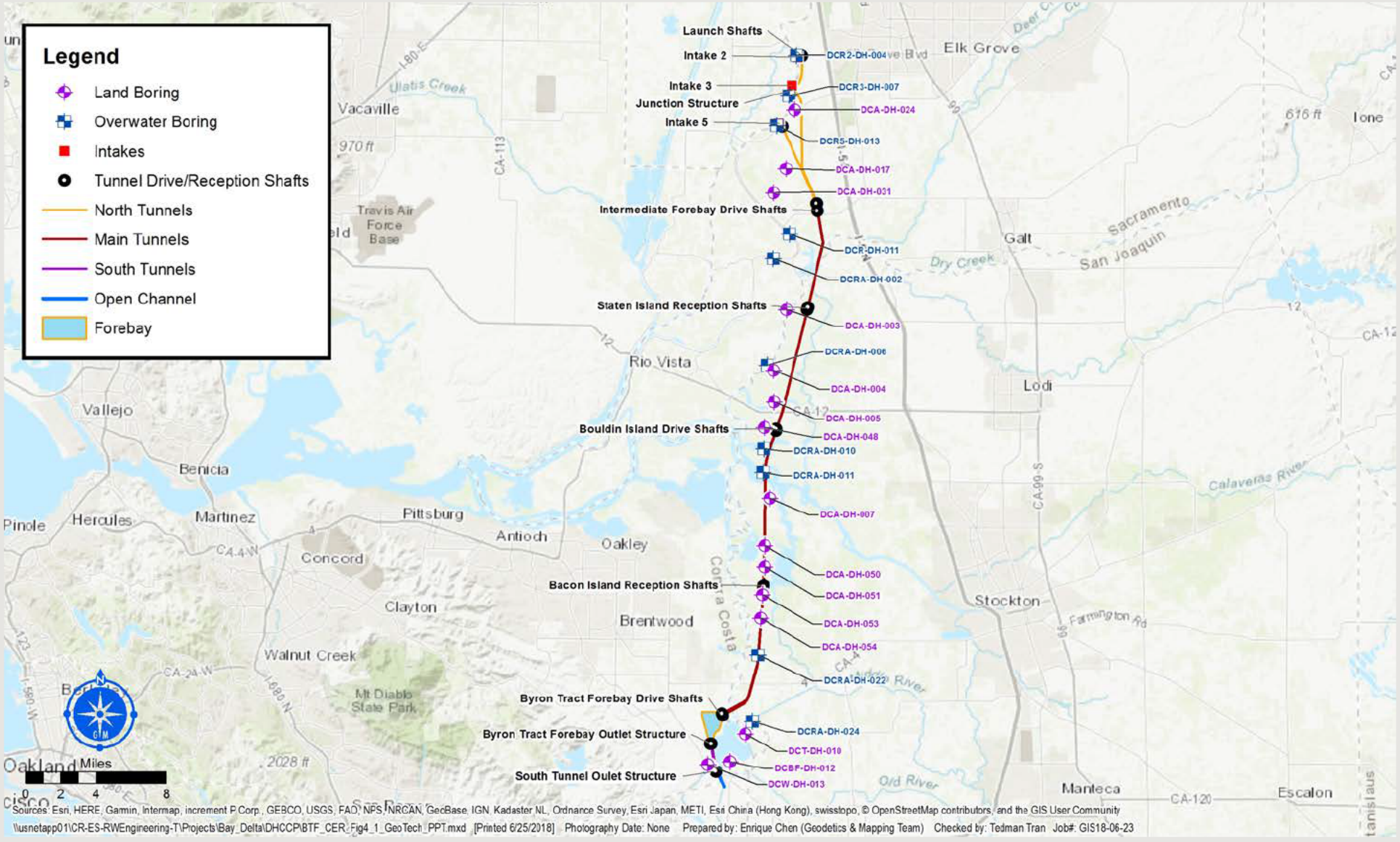
# BARGES AND BARGE LANDINGS

- **Proposed removal of temporary barge landings at Snodgrass Slough and West Canal**
  - No change to barge deliveries  of segments to Bouldin Island
  - Byron Tract will now receive segment deliveries that were previously planned for Clifton Court
- **Size and location of temporary barge landings**
  - Are appropriate for adjacent waterways
- **Water traffic and potential bridge openings**
  - Impact on vehicular traffic will be mitigated
  - Existing traffic mitigation measures Trnas-1a, Trans-1b, and Trans-1c

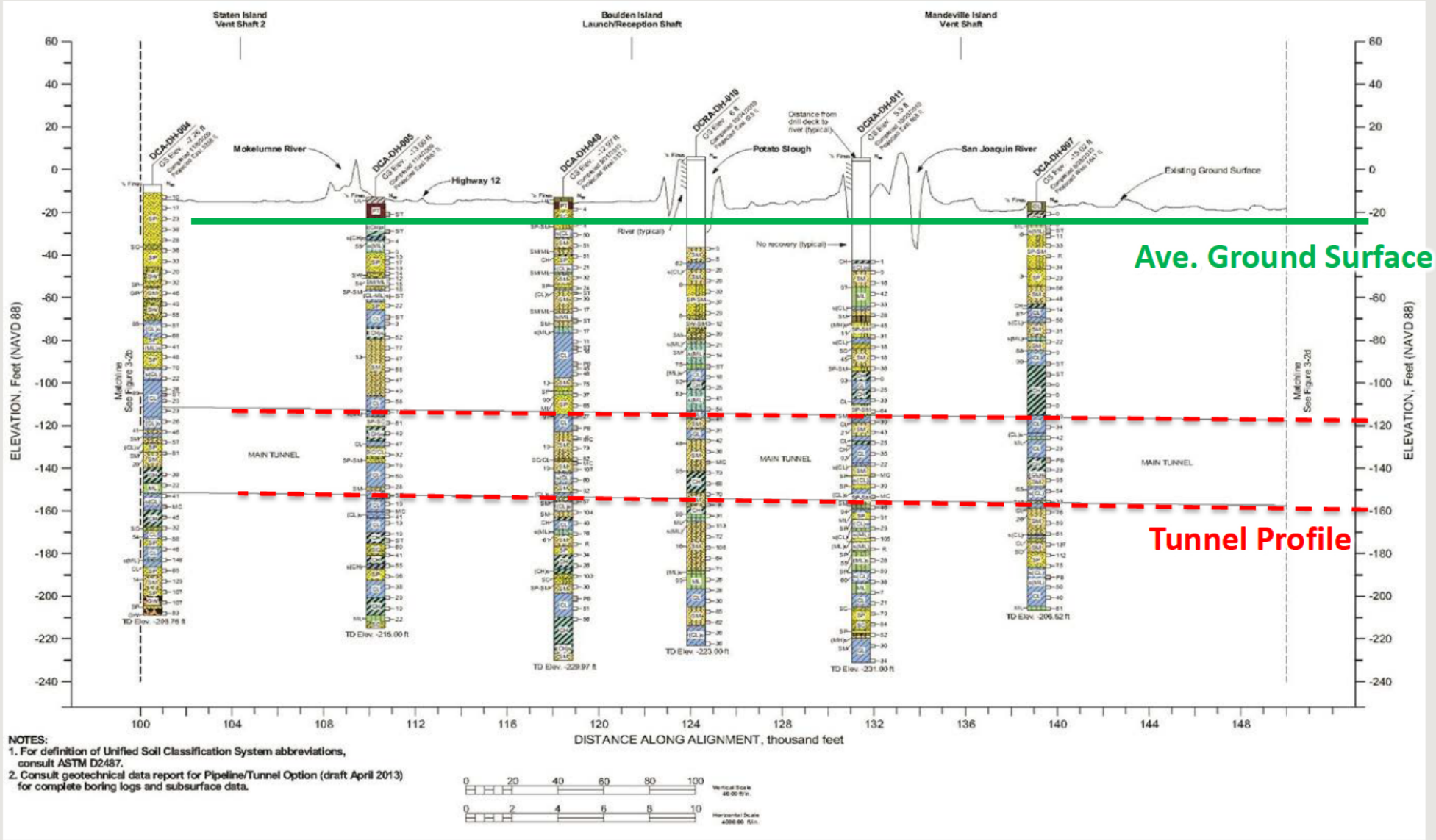
# ADEQUACY OF EXISTING INFORMATION

- **Existing engineering data and investigations**
  - Appropriate for conceptual-level design (±10% design complete)
  - Appropriate for EIR/EIS process
- **Geotechnical data**
  - Appropriate for conceptual tunnel design
  - Current data will be supplemented with upcoming 2-phase investigation program
  - Soils at tunnel depth are suitable for proposed tunneling methods
- **Gas Wells**
  - Tunnel alignment avoids all active gas wells
- **Levee monitoring programs**
  - Will be developed in upcoming design phases
  - Will be coordinated with reclamation districts and other stakeholders

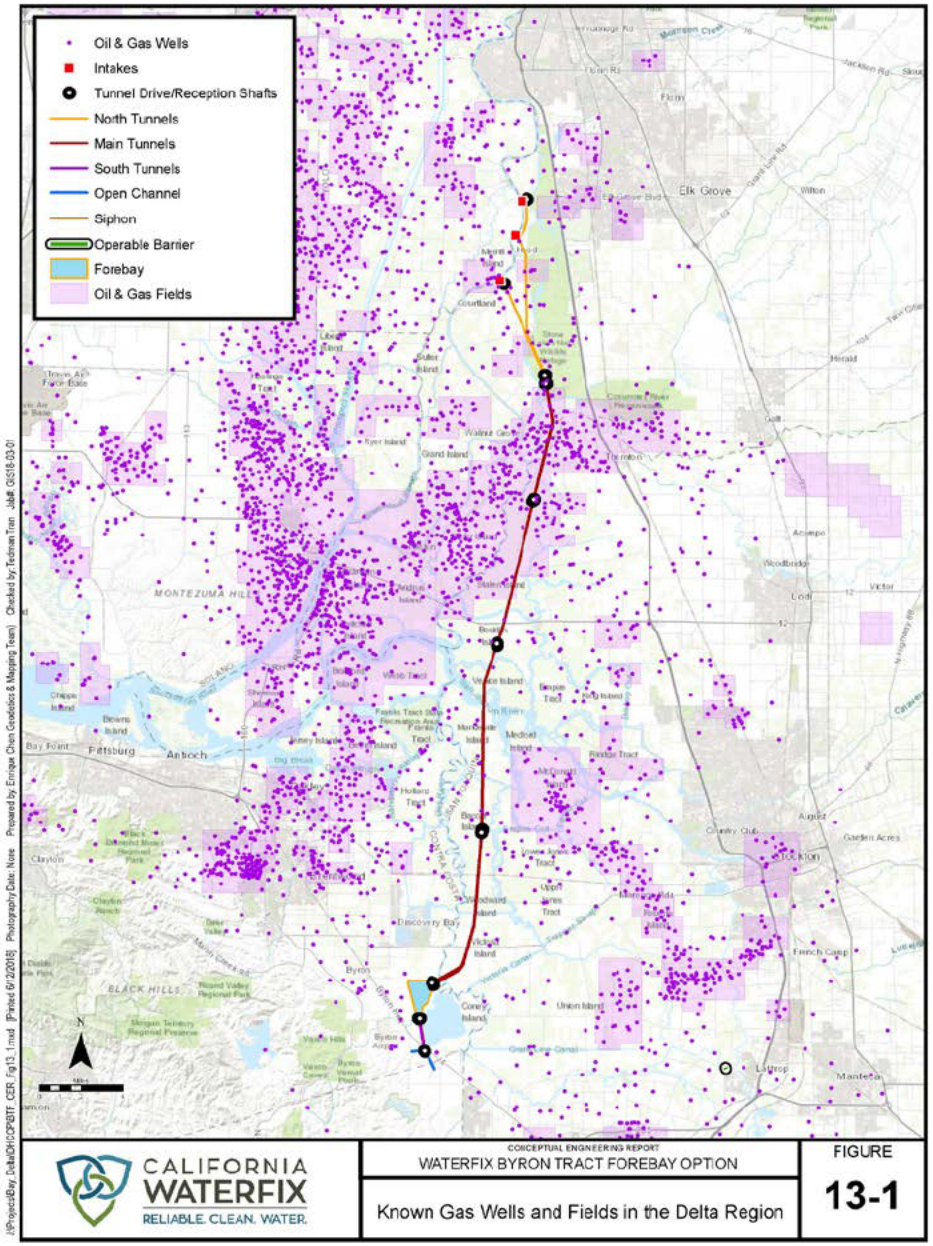
# SUMMARY OF GEOTECHNICAL INVESTIGATIONS



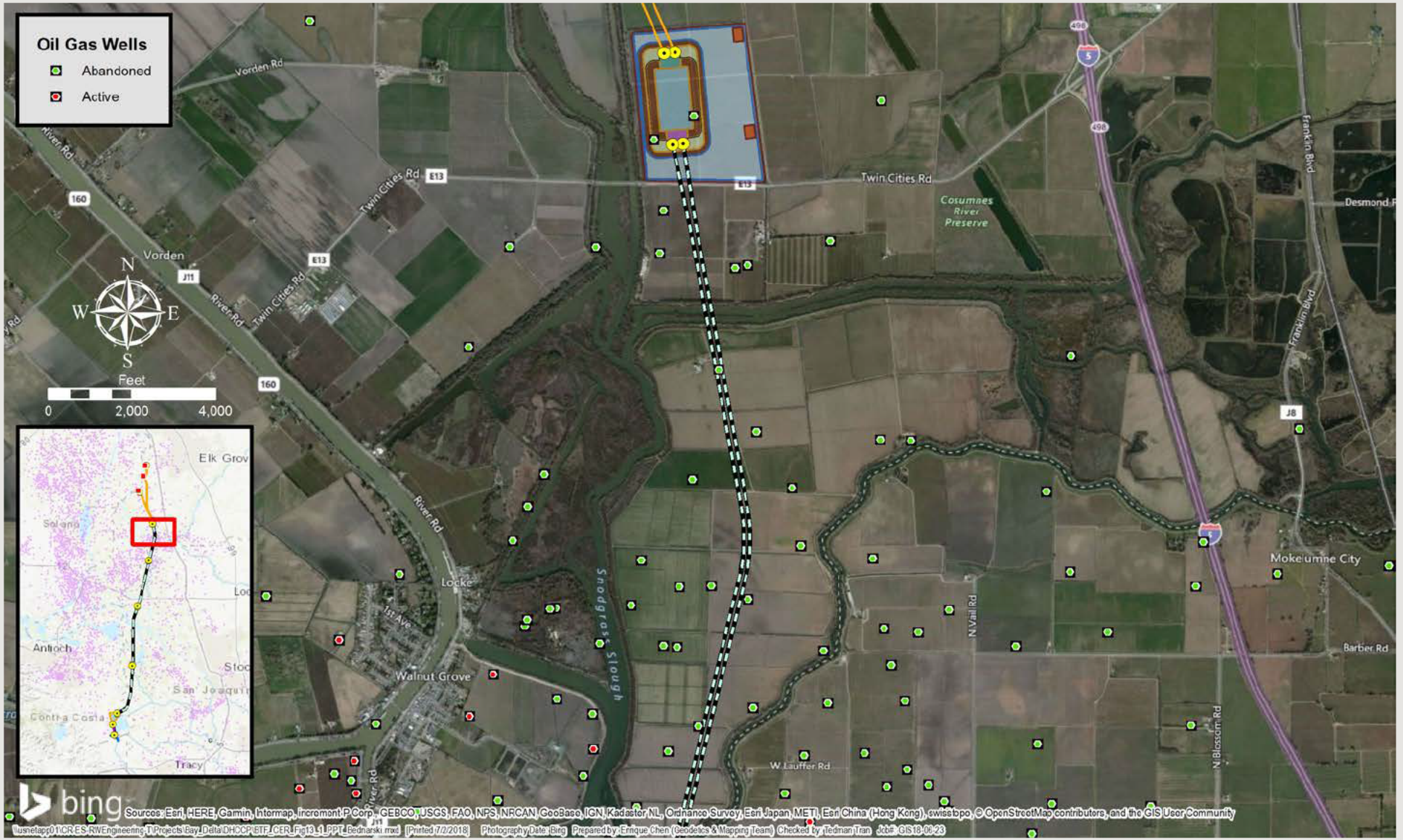
# GEOTECHNICAL PROFILE AT TUNNEL DEPTH



# KNOWN GAS WELLS AND FIELDS IN DELTA REGION



# GAS WELLS – DETAIL AT INTERMEDIATE FOREBAY



# GAS WELLS – DETAIL AT BOULDIN ISLAND

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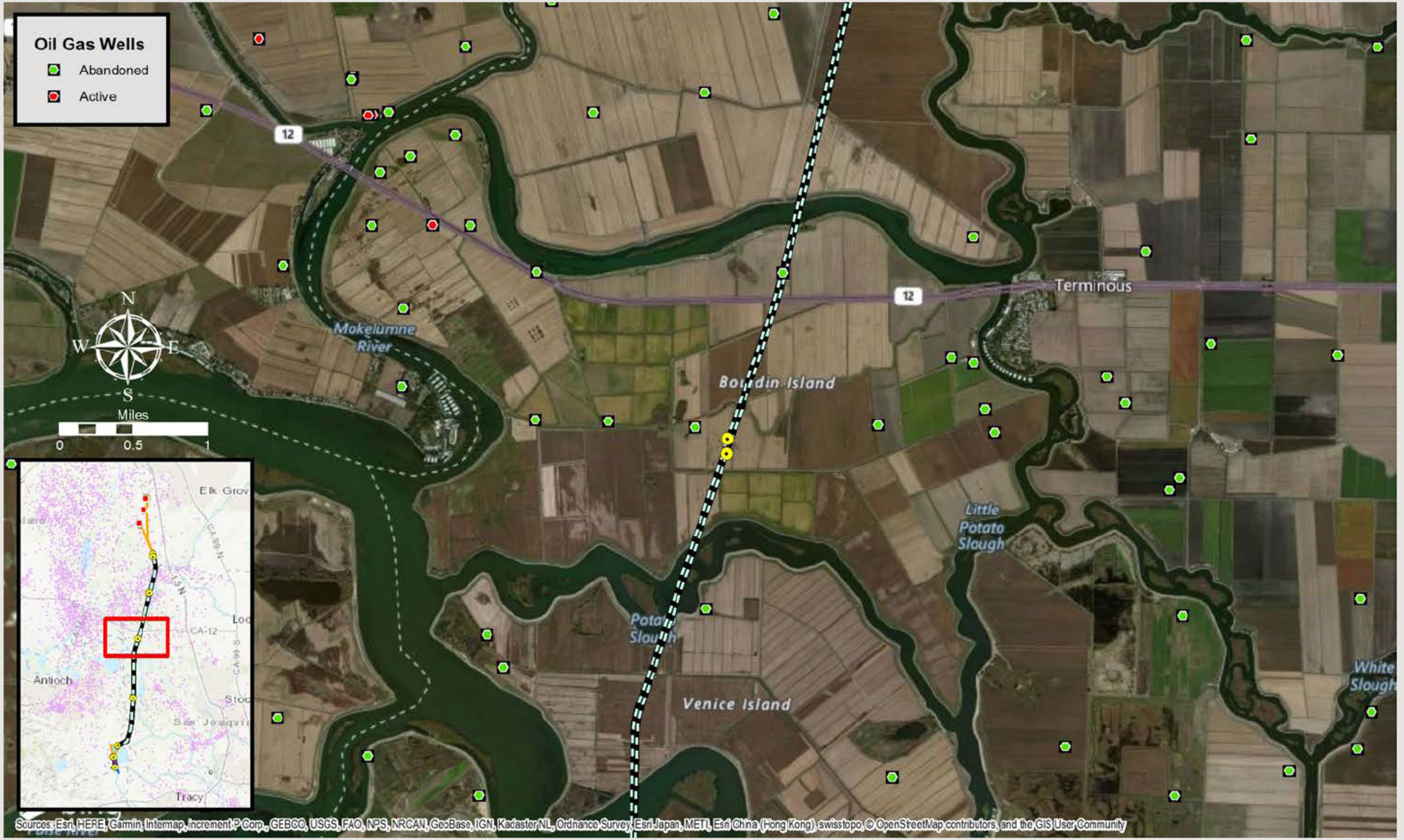

# SEISMIC DESIGN CRITERIA FOR TUNNELS

- **Concerns expressed by protestants over original seismic event criteria**
  - Protestants incorrectly cited ASCE 7-10 as the appropriate seismic event criteria for tunnels (2,475-year return period)
  - Original DWR criteria was correct
  - 975-year return event, specified in DWR 2012 Seismic Loading Criteria Report
- **Maximum criteria revised to the 2,475-year return event**
  - Consistent with DWR intent in 2012 Seismic Loading Criteria Report
  - Matches High Speed Rail tunnel criteria
- **Protestants wrongly claimed that CWF tunnels would not withstand the larger event**
  - Specialized studies confirm good performance of CWF tunnels

# SEISMIC ASSESSMENT STUDY – ARUP 2018

- **Evaluated enhanced Seismic Design Criteria**
- **Findings: Current tunnel design can withstand 2,475-year event**
  - No structural failures
  - No leakage from tunnels
  - No increased design or construction costs to achieve seismic criteria