SR 710 North Study

Technical Advisory Committee Meeting No. 16– August 13, 2014

Stakeholder Outreach Advisory Committee Meeting No. 12– August 14, 2014

Agenda

- Public Outreach Activities
- Project Report and Environmental Studies Documentation Update
  - Recap of TAC No. 15 and SOAC No. 11
  - Update on Preliminary Engineering and Environmental Technical Studies
  - Tunnel Design Considerations

Ground Rules

- Q&A after each section of the presentation
- Focus questions on information presented
- General comments and Q&A at the end

Public Outreach Activities

Outreach Activities
June through August 2014

- Briefings
  - Elected Officials
  - Legislative Briefing
  - City Managers
  - Irwindale Chamber of Commerce
  - San Gabriel Valley Economic Partnership
- Media Engagement
  - Pasadena Weekly Letter to the Editor
  - South Pasadena Review Letter to the Editor
  - Eastern Group Publications

Collateral Materials

- Materials Produced:
  - Overview Fact Sheet
  - CEQA/NEPA Process Fact Sheet
  - Contact Post Cards
  - Frequently Asked Questions
  - Fact Checks
  - Updated Community Outreach PowerPoint Presentation
  - Updating Web Page

Project Report and Environmental Studies Documentation Update

Recap of TAC No. 15 and SOAC No.11

- Public Outreach Activities
- Project Report and Environmental Studies Documentation Update
  - Recap of previous TAC/SOAC meetings
  - Update on Preliminary Engineering and Environmental Technical Studies
  - Cost-Benefit Analysis Discussion

Feedback Received During TAC No. 15/ SOAC No. 11

- Will the TAC members be included in upcoming outreach activities?
- Will there be a city council presentation at each of the affected cities?
- Will there be visual simulations/renderings for all alternatives?
- Will consultants/technical advisors be available at outreach meetings to answer technical questions?
- Where will the funding come from for the preferred alternative, once it is selected?

Feedback Received During TAC No. 15/ SOAC No. 11

- Will the Cost-Benefit Analysis (CBA) be made available at time of the EIR/EIS release?
- Is the CBA using the most updated SCAG and Census data?
- Is tunnel maintenance and operation part of the CBA?
- How do you analyze or include emissions/pollution into the CBA?
- Will you be releasing basic information as the studies are finalized?
  - Requested to release complete information
- Will the results of historic resources evaluation be made available before the Draft Environmental Document?

Update on Preliminary Engineering and Environmental Technical Studies

Alternatives Being Studied in the EIR/EIS Phase

1. No Build
2. Transportation System Management (TSM)/ Transportation Demand Management (TDM)
3. Bus Rapid Transit (BRT) with TSM/TDM and bus feeder service
4. Light Rail Transit (LRT) with TSM/TDM and bus feeder service
5. Freeway Tunnel
   - Freeway with TSM/TDM* (dual bore tunnel)
   - Freeway with TSM/TDM and tolls* (single and dual bore tunnel)
   - Freeway with TSM/TDM and Express Bus through the tunnel* (single and dual bore tunnel)

   **With and without trucks studied*

Metro

Caltrans

Preliminary Engineering Update

- Addressing Metro and Caltrans comments on Alternatives design
- Conceptual construction schedule & equipment needs
- Finalizing construction and O&M cost estimates
- Coordinating with environmental team for technical studies
- Submitted Draft Project Report for review

Traffic Update

Draft Transportation Technical Studies Have Been Completed

- Transportation Technical Report (TTR)
  - Key analysis reference
  - 2020/2025 and 2035 analysis of alternatives (TSM/TDM, LRT, BRT, Freeway Tunnel)
- Traffic and Transportation EIR/EIS section
  - Summarizes TTR, with a focus on impacts/mitigation
- Cost-Benefit Analysis Technical Study
  - Based on modeling analysis
  - Includes cost, travel time/VMT, safety, and environmental analysis
  - Draft report in progress

Environmental Study Update

Environmental Technical Studies

Final Review by CT/Metro	Caltrans District 7 and Metro Review Complete	
Historic Properties Survey Report	Paleontological	Archaeological Survey
Health Risk Assessment	Drainage Report	Visual Impact Assessment
Traffic	Location Hydraulics	Noise Study
Biological and Wetland Resources	Floodplain Report	Vibration Report
Noise Abatement Decision Report	Geologic Hazards	Community Impact
Relocation Impacts	Water Quality	Economic and Fiscal Impacts
	Hazardous Waste Assessment	Cumulative Impacts
	Energy Report	
	Air Quality	

Technical Studies Update – Cumulative Impacts

- *Cumulative impacts* refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.
- A cumulative impact analysis considers changes from the project when added to other closely related past, present, and reasonably foreseeable future projects.

Technical Studies Update – Cumulative Impacts

Eight-Step Approach for Developing a Cumulative Impact Analysis:

1. Identify Resources to Consider in the Cumulative Impact Analysis
2. Define the Study Area for Each Resource
3. Describe the Current Health and Historical Context for Each Resource
4. Identify Direct and Indirect Impacts of the Proposed Project that Might Contribute to a Cumulative Impact

Technical Studies Update – Cumulative Impacts

Eight-Step Approach continued:

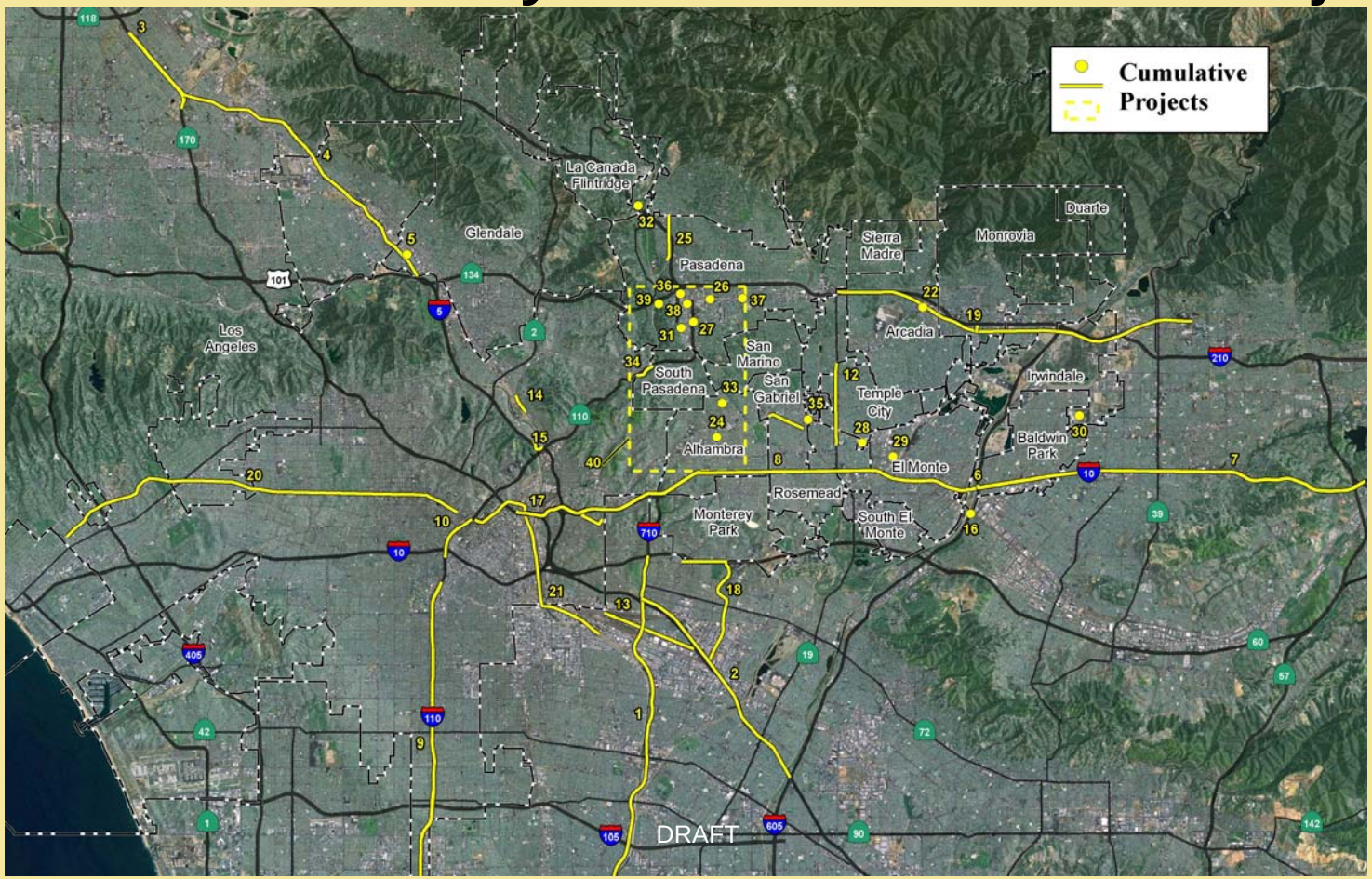
5. Identify Other Reasonably Foreseeable Actions that Could Affect Each Resource
6. Assess Potential Cumulative Impacts
7. Report the Results
8. Assess the Need for Mitigation

Technical Studies Update – Cumulative Impacts

- 40 Projects identified for consideration of cumulative impacts.
- Examples:
  - I-710 Corridor Project (Ocean Blvd to SR-60)
  - Metro Gold Line Foothill Extension
  - Devil's Gate Reservoir Sediment Removal and Management Project
  - 100 West Walnut Planned Development

Technical Studies Update – Cumulative Impacts

SR 710 North Study Area Cumulative Projects



Typical Content of Draft ED

- Executive Summary
- Chapter 1 – Proposed Project
- Chapter 2 – Alternatives
- Chapter 3 – Affected Environment, Environmental Consequences, Avoidance, Minimization and Mitigation Measures
- Chapter 4 – CEQA Evaluation
- Chapter 5 – Comments and Coordination
- Chapter 6 – List of Preparers
- Chapter 7 – Distribution List
- Appendices

CEQA/NEPA Process

- Technical Study review/approval (in progress)
- Administrative Draft EIR/EIS review/approval (in progress)
- Draft EIR/EIS circulate for public review in February 2015
- Public Hearings to be held during public review period – Between March and April, 2015
- Public Participation - provide comments during public review period and at Public Hearings

CEQA/NEPA Process

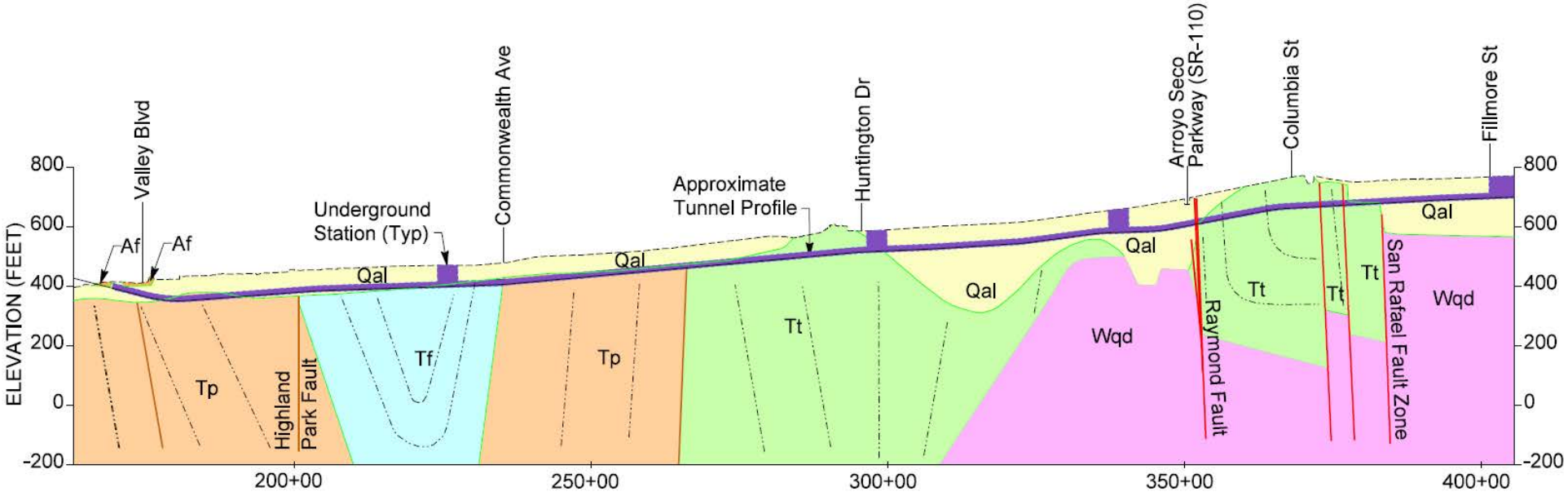
- Final EIR/EIS
  - Response to Comments
  - Identification of Preferred Alternative
- Final EIR/EIS distributed
- Notice of Determination (CEQA)
- Record of Decision (NEPA)

Tunnel Design Considerations

Tunnel Design Considerations

- Tunnel Ground Characterization
- Key Geotechnical Considerations
  - Mixed Face Conditions
  - Control of Ground Movements
  - High Groundwater Pressures
  - Natural Occurring Gas
- Fault Crossing Concepts
- Excavation Support Systems

LRT: Geologic Conditions

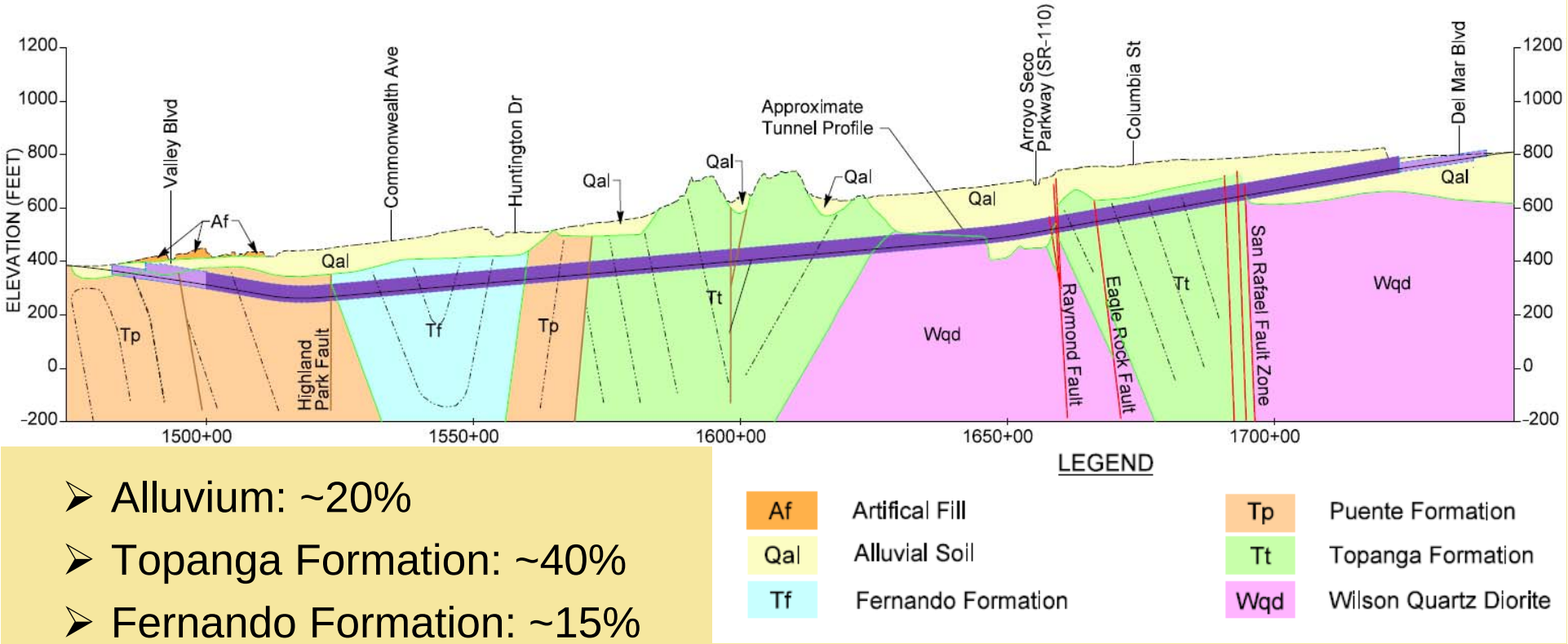


LEGEND

Af	Artifical Fill	Tp	Puente Formation
Qal	Alluvial Soil	Tt	Topanga Formation
Tf	Fernando Formation	Wqd	Wilson Quartz Diorite

- Alluvium: ~60%
- Topanga Formation: ~25%
- Puente/Fernando Formation: ~15%

Freeway: Geologic Conditions

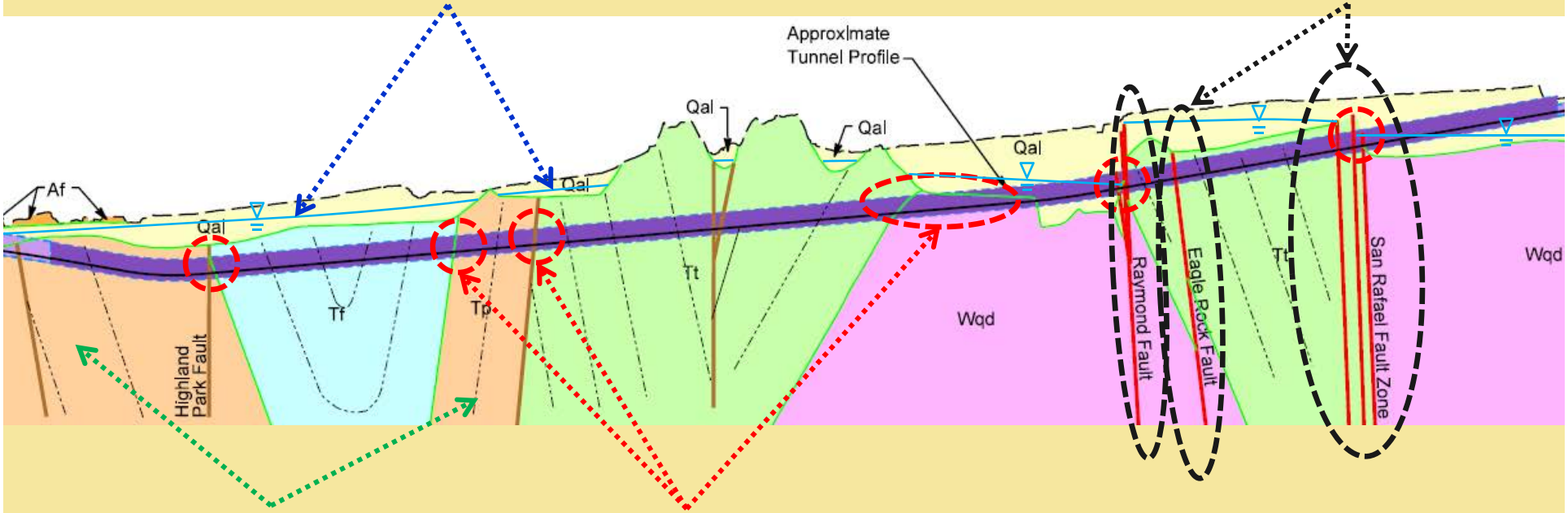


- Alluvium: ~20%
- Topanga Formation: ~40%
- Fernando Formation: ~15%
- Puente Formation: ~20%
- Basement Rock (Quartz Diorite): ~5%

Key Geotechnical Considerations

High Groundwater Pressures

Fault Crossings



Potential For Naturally-Occurring Gas

Mixed Face Conditions

LEGEND

Af	Artifical Fill	Tp	Puente Formation
Qal	Alluvial Soil	Tt	Topanga Formation
Tf	Fernando Formation	Wqd	Wilson Quartz Diorite

Mixed Face Conditions

- Weak sedimentary rock; hard rock (gneiss); and alluvium
- Challenge to maintain line and grade
- Ground behavior/stability
- Pressurized TBM needed to address these challenges

Control of Ground Movements Project Examples

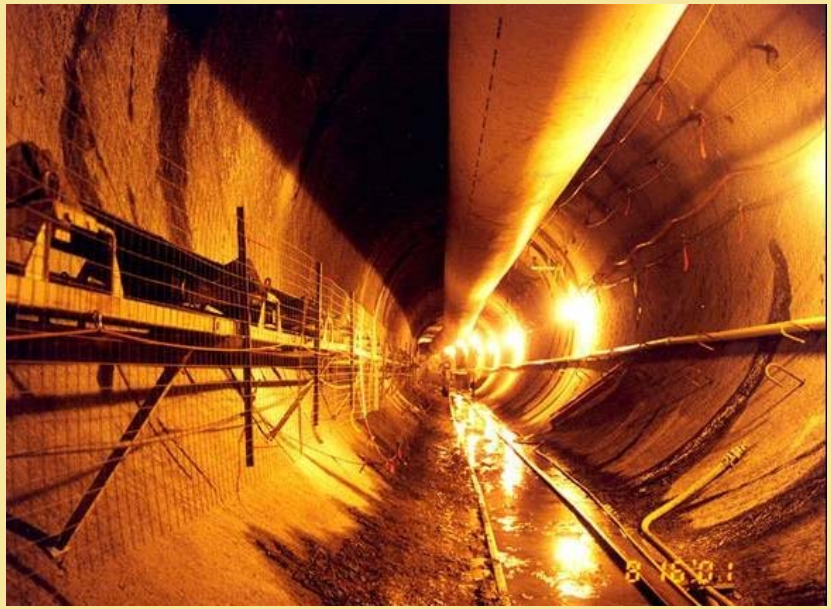
- Ground successfully controlled on large and smaller diameter tunnels using TBM technology
  - M30, Madrid (50ft diameter)
    - Maximum Settlement recorded 0.4 inches
  - Metro Gold Line Eastside Extension, Los Angeles
    - Maximum Settlement recorded 0.2 inches
  - Sound Transit Light Rail (U230), Seattle
    - Maximum Settlement recorded 0.3 inches

High Groundwater Pressures

- Potential for high groundwater inflows in Alluvium and fractured/faulted rock zones
- Groundwater depth varies, especially on either side of some fault zones
- Water controlled at the face with Pressurized TBM
- Water inflows controlled behind the TBM with precast concrete gasketed segments

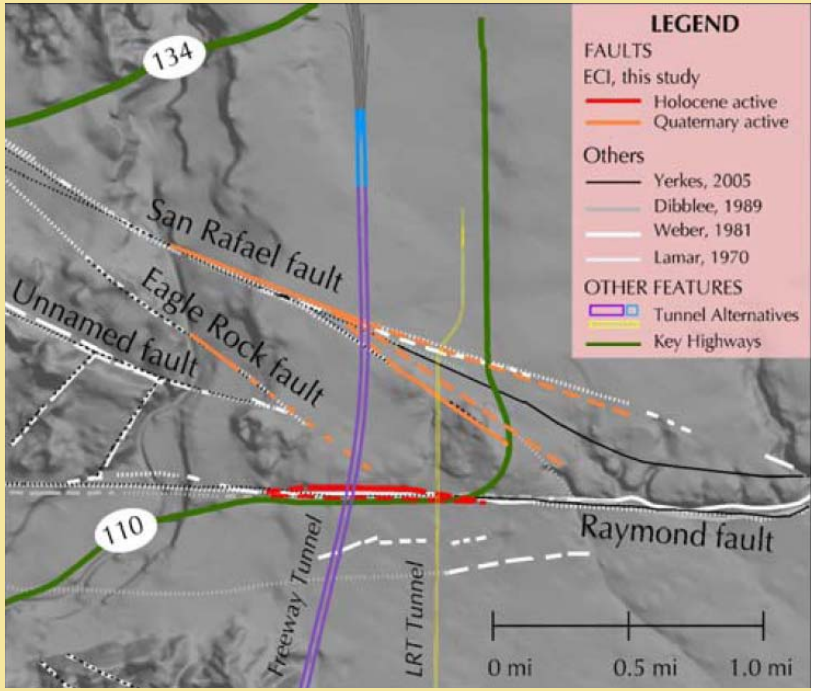
Naturally-Occurring Gas

- Potential for naturally-occurring gas in Puente Formation based on design team's experience on City of LA's Northeastern Interceptor Sewer
- Proper safety precautions must be followed
- Regulated by Cal/OSHA



Designing for Fault Offset

Fault	Width	Offset (Horizontal/Vertical)	
		Freeway	LRT
Raymond	80 feet	1.6/0.3 ft	3.2/0.6 ft
San Rafael	160 feet	1.6/0.8 ft	1.6/0.8 ft
Eagle Rock	160 feet	1.6/0.8 ft	N/A



Designing for Fault Offset

- Design Objectives
  - Meet agency design criteria – no collapse
  - Prevent ingress of ground
  - Facilitate repairs post-event to open for service
- Design Concepts
  - Create oversized excavation to accommodate movements or
  - Special Lining to accommodate fault offset
  - After ground movement occurs, roadway or track can be re-aligned to restore functionality

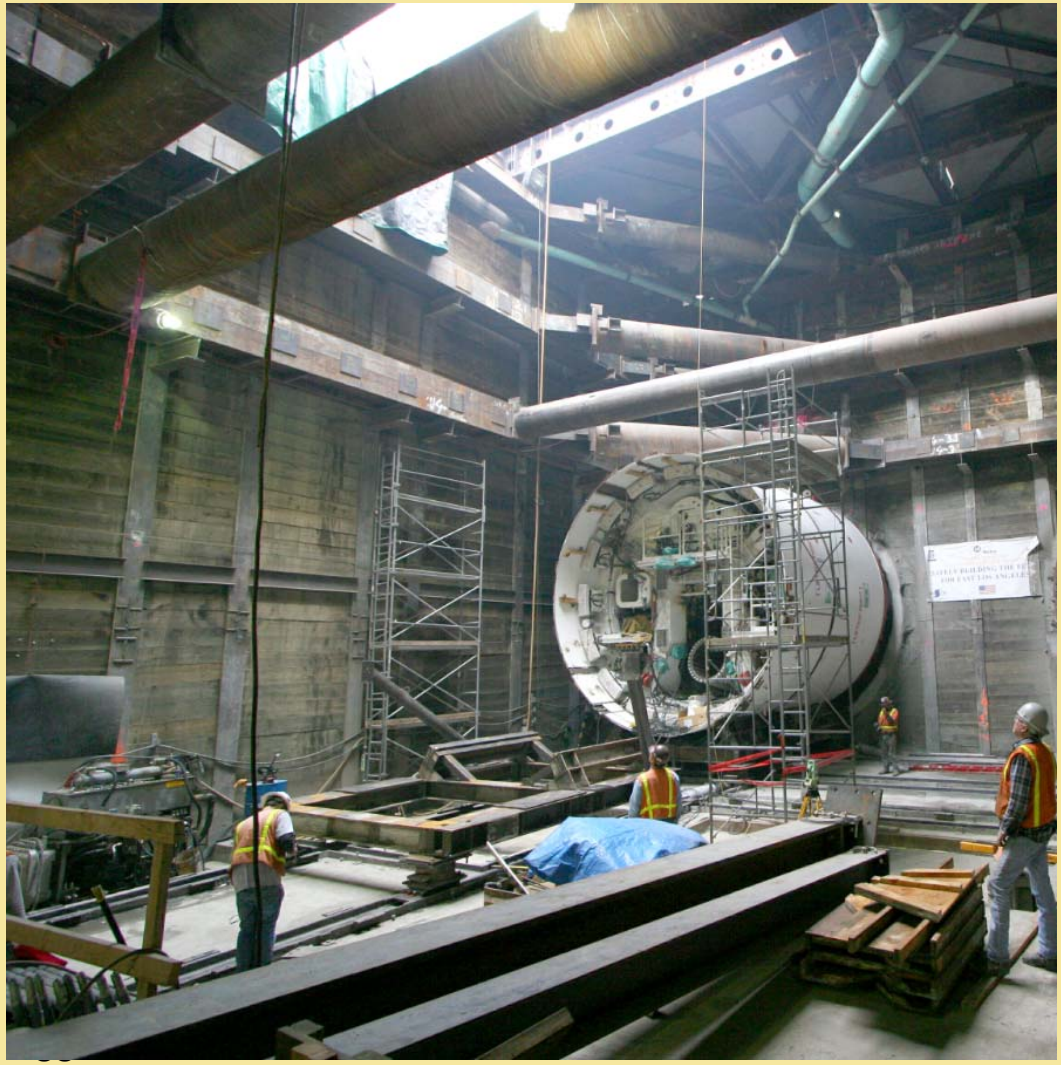
Project Examples

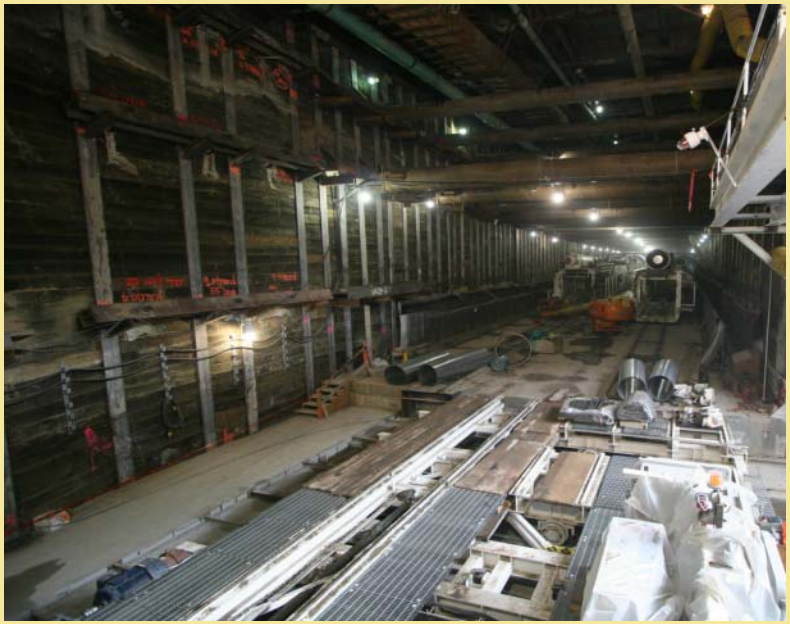
- Claremont Tunnel Seismic Upgrade
- BART Berkeley Hills Tunnels
- Metro Red Line Tunnels

LRT Station
Excavation and Support

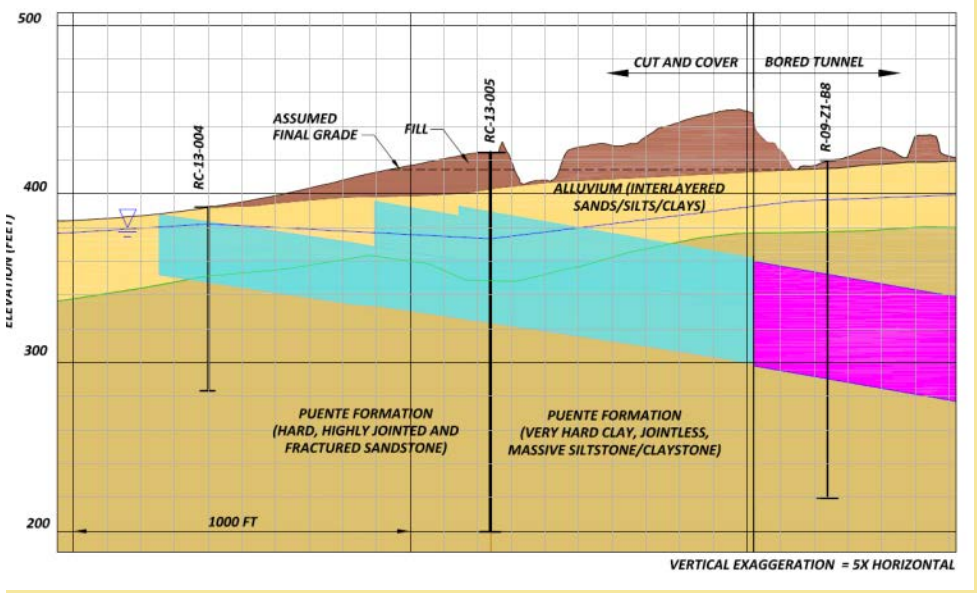
- Portal and Stations mostly in Alluvium above Groundwater Water Table (GWT)
- Localized dewatering if necessary
- Soldier Piles/Lagging with tiebacks or cross struts for stations
- Ground improvement behind headwall for break-in/-out

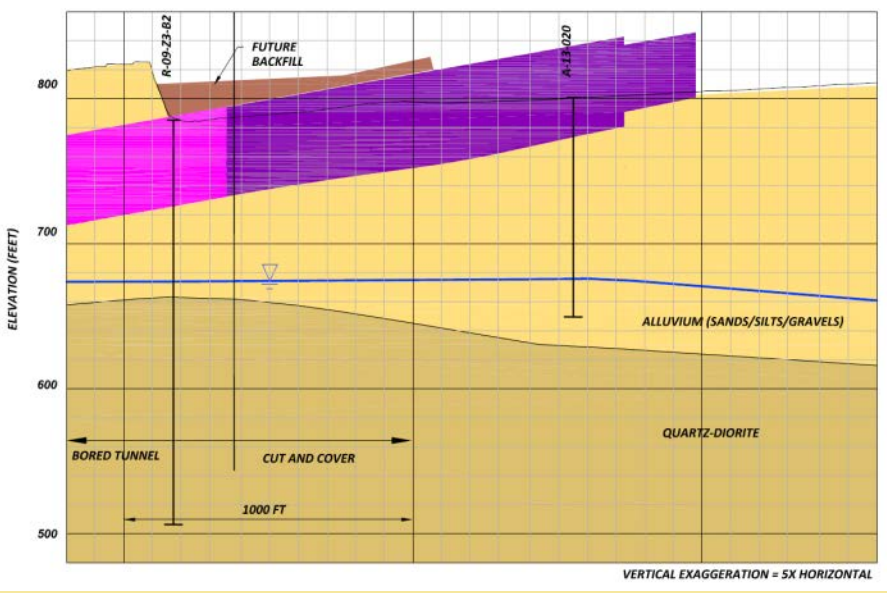
LRT Station
Excavation and Support





Freeway Tunnel Portal Excavation and Support





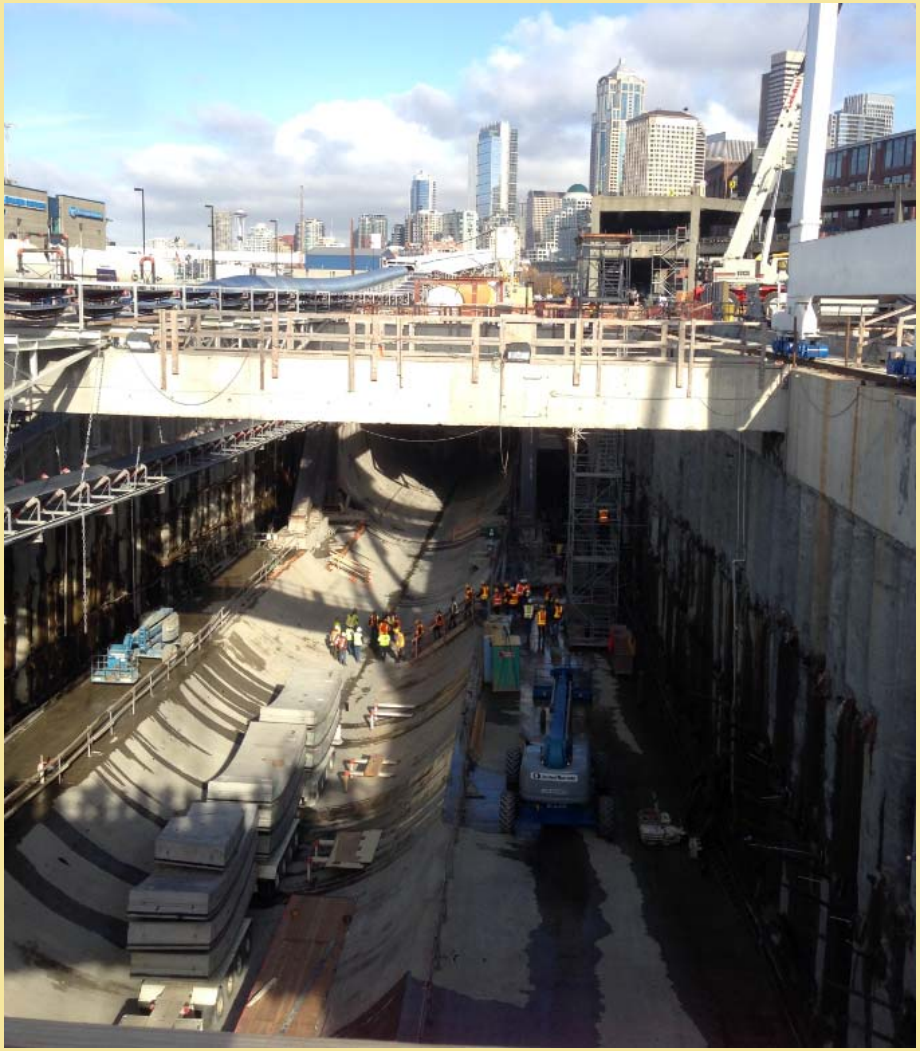
South Portal

- Alluvium/Puente, below GWT
- Slurry walls with tiebacks

North Portal

- Alluvium, above GWT
- Soldier Piles/Lagging with tiebacks

Portal Excavation and Support



Summary

- Both LRT and Freeway Tunnel alternatives present challenges
- Technology exists to address these challenges
- Has been done successfully in Los Angeles, California, and around the world

Summary

Paris A86 Tunnel

Single Bore – 2 lanes each level
Diameter 36 feet
Length – 6.2 miles

Madrid M30 Tunnel

Dual Bore – 3 lanes upper level, 2 emergency vehicle lanes below
Diameter 50 feet
Length – 4.5 miles (south bypass)

Next Steps

Next Steps

- Finalize technical studies
- Finalize preliminary engineering and reports
- Continue preparation of Draft Environmental Document
- Expected release of Draft EIR/EIS – February 2015

Tentative Meeting Dates for TAC/SOAC

2014 TAC/SOAC Meeting Schedule:

- November 12/13

Open Discussion