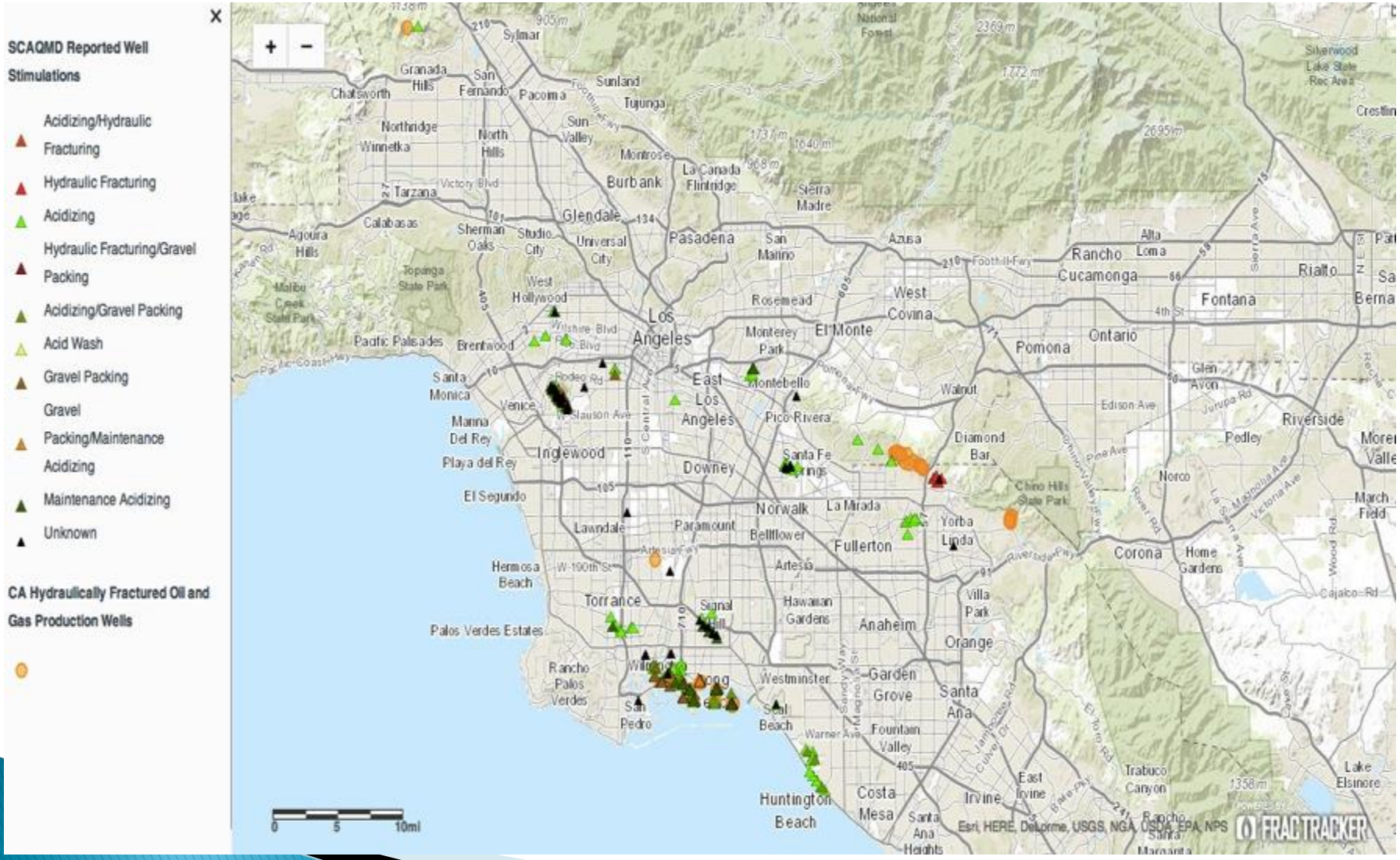
Environmental Perspectives & Environmental Justice

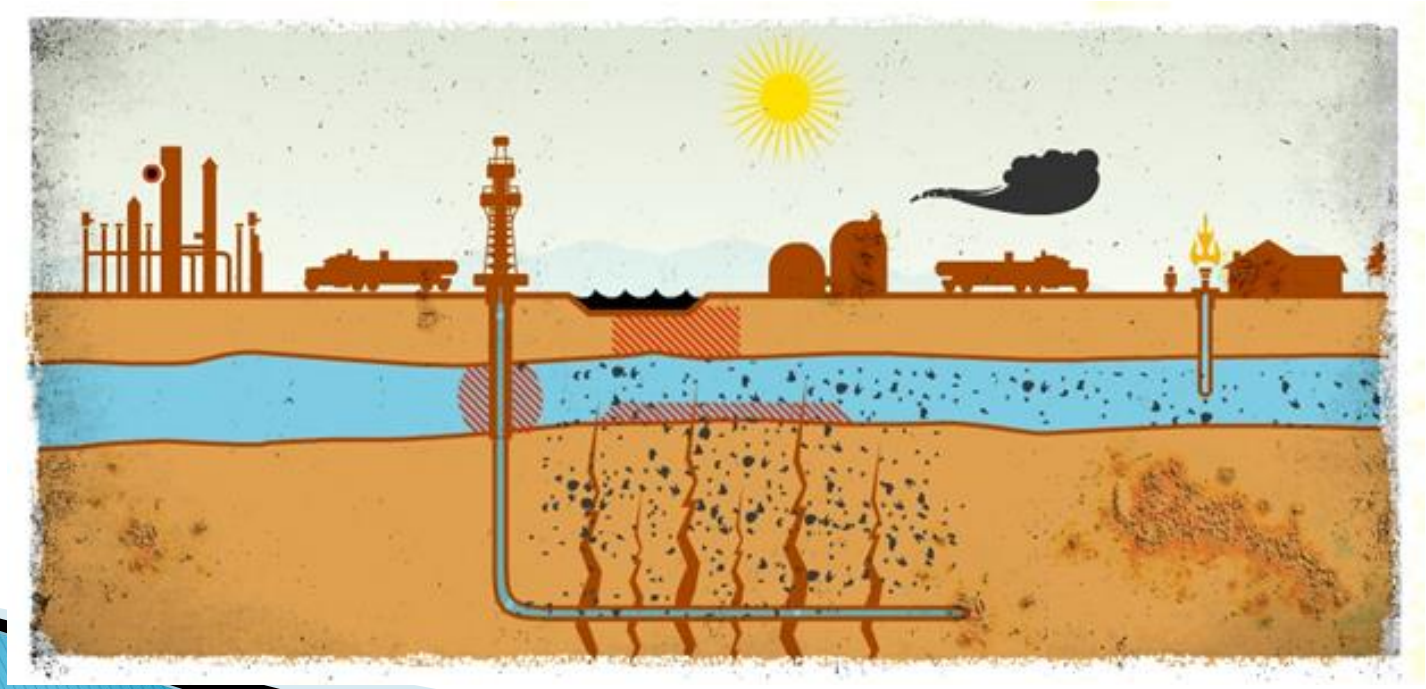
Jhon Arbelaez – Earthworks
Tatiana Gaur– Los Angeles Waterkeeper
Dr. Tom Williams – Citizens Coalition for a Safe Community
Dianne Thomas – City of Carson Resident

Where?

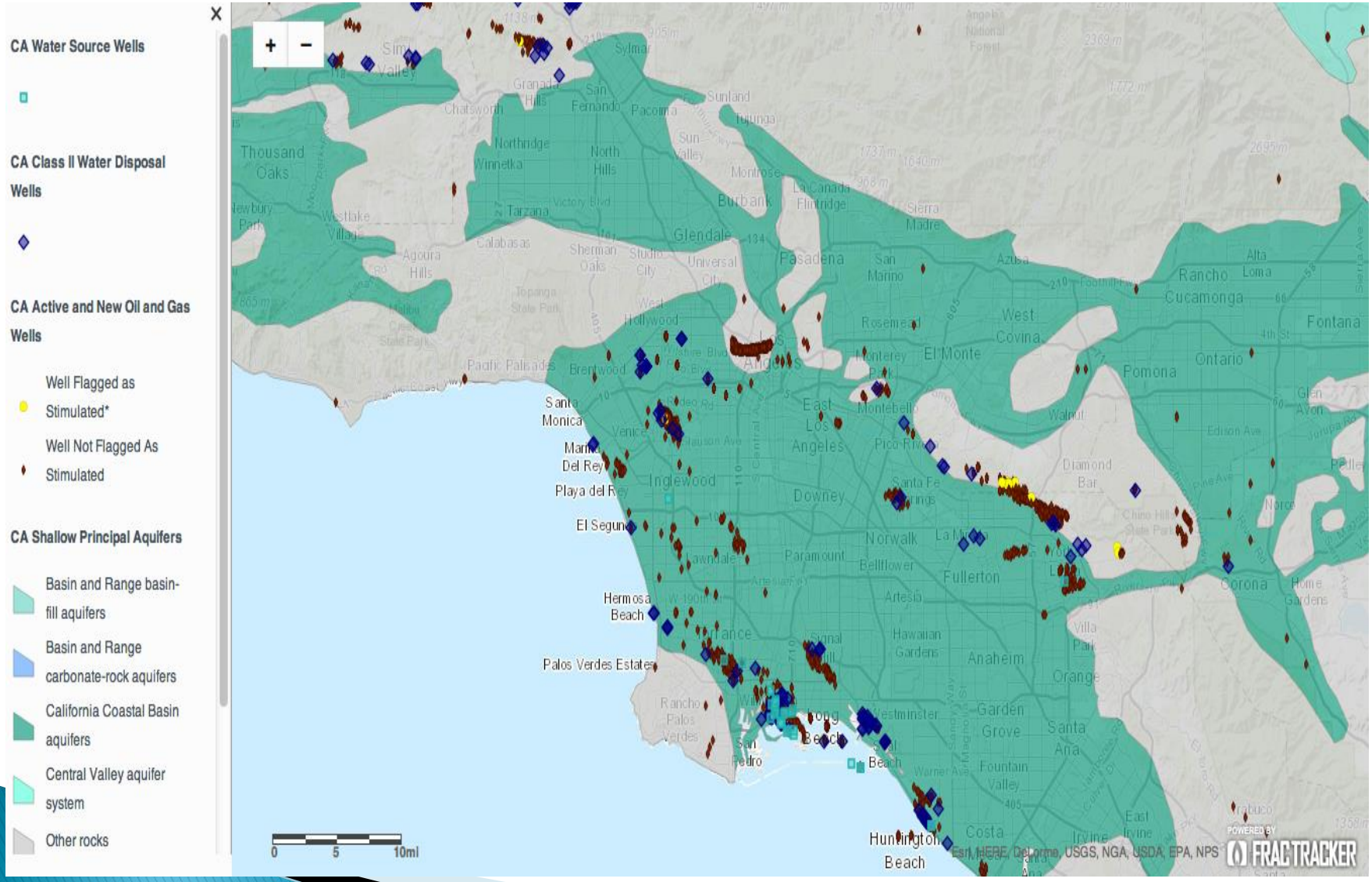

SCAQMD Reported Well Stimulations
Acidizing/Hydraulic Fracturing
Hydraulic Fracturing
Acidizing
Hydraulic Fracturing/Gravel Packing
Acidizing/Gravel Packing
Acid Wash
Gravel Packing
Gravel
Packing/Maintenance Acidizing
Maintenance Acidizing
Unknown
CA Hydraulically Fractured Oil and Gas Production Wells
Los Angeles
Pasadena
Glendale
Burbank
Pomona
Ontario
Fontana
Rancho Cucamonga
Riverside
Anaheim
Orange
Santa Ana
Huntington Beach
Torrance
Long Beach
Inglewood
Downey
Norwalk
Fullerton
Corona
Irvine
Costa Mesa
0 5 10mi
Esri, HERE, DeLorme, USGS, NGA, USDA, EPA, NPS
FRACTRACKER

Multiple Contamination Pathways: Holistic Approach Needed

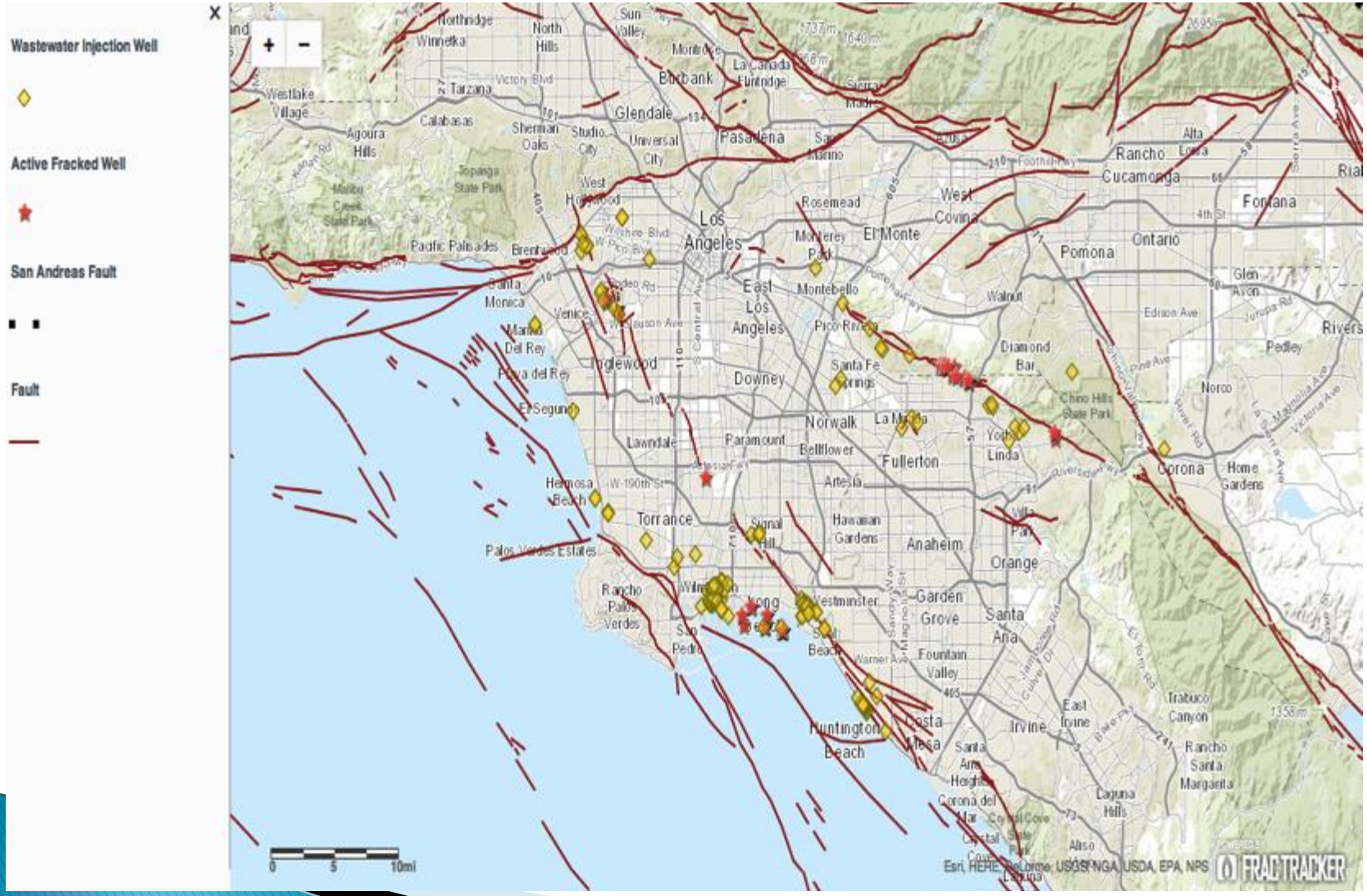
- Surface spills, leaks, runoff
- Migration through fractures/geology
- Well casing/cement failures
- Disposal



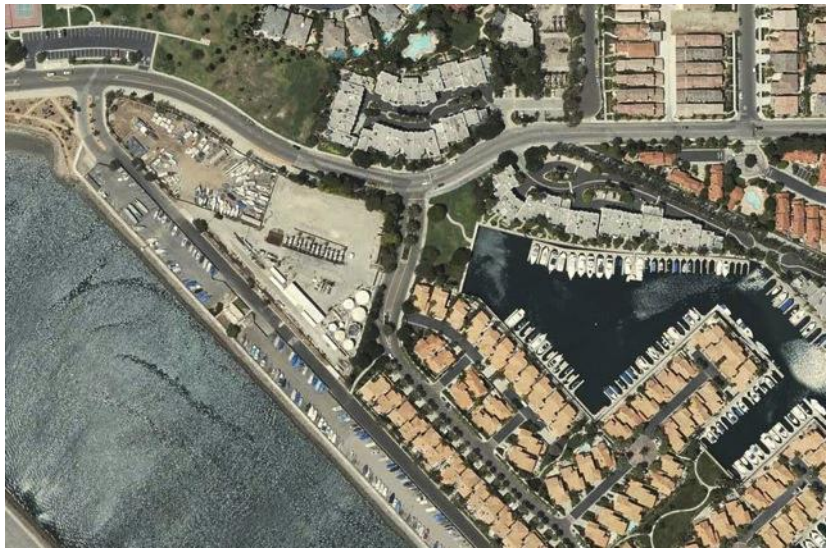
Water Sources & Wells



Fractures & Geology



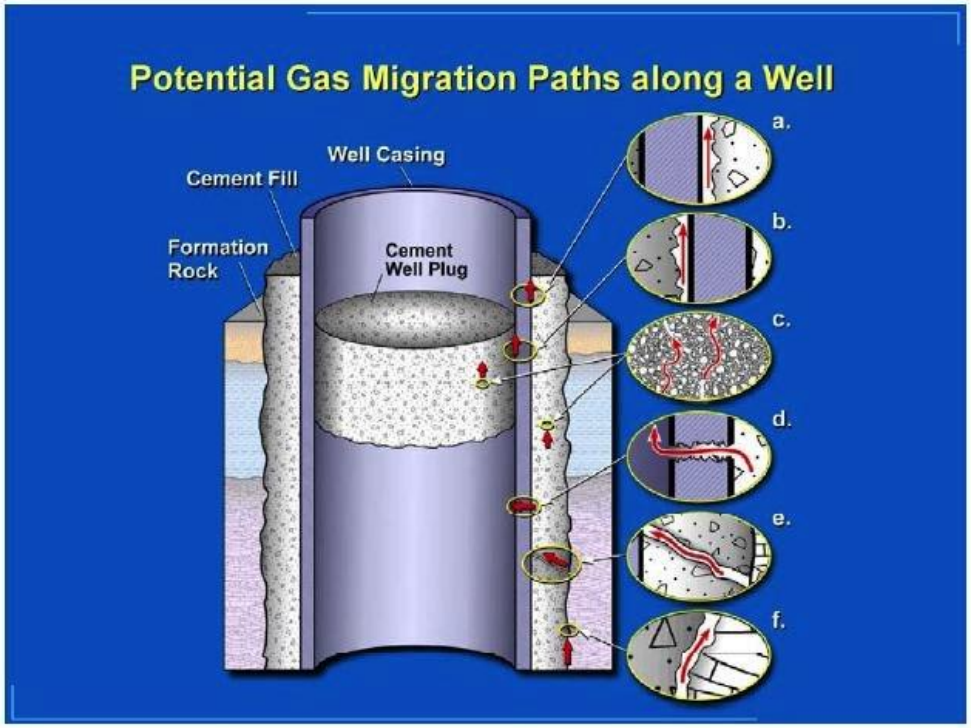
Surface Issues: Conflicting Land Uses?



Photos courtesy of Center for Land Use Interpretation

Well Casing Failures

- DOGGR has never inventoried casing failures
- Reports from other states (Ingraffea study)

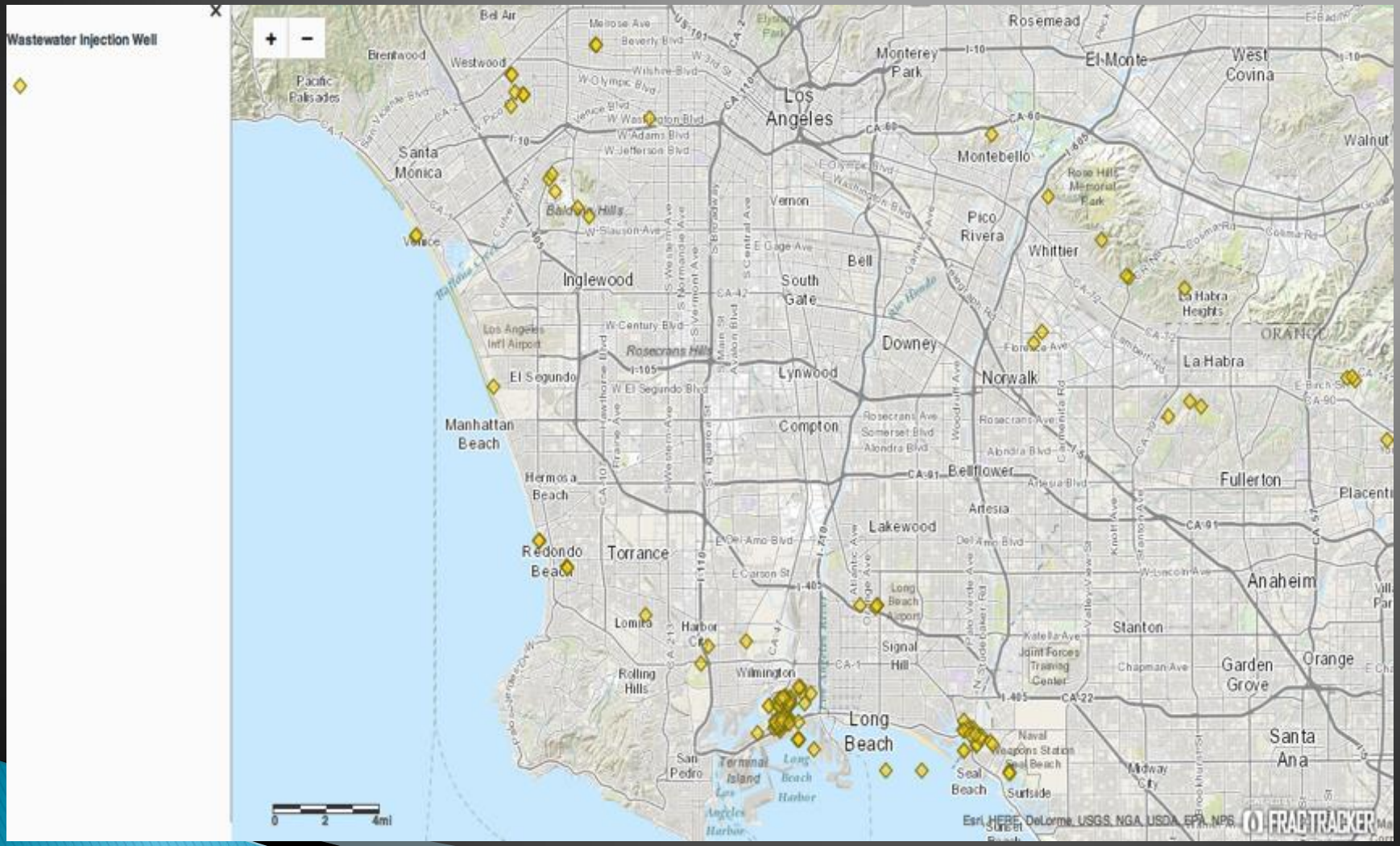


Source: Alberta Energy Utilities Board

Waste Disposal

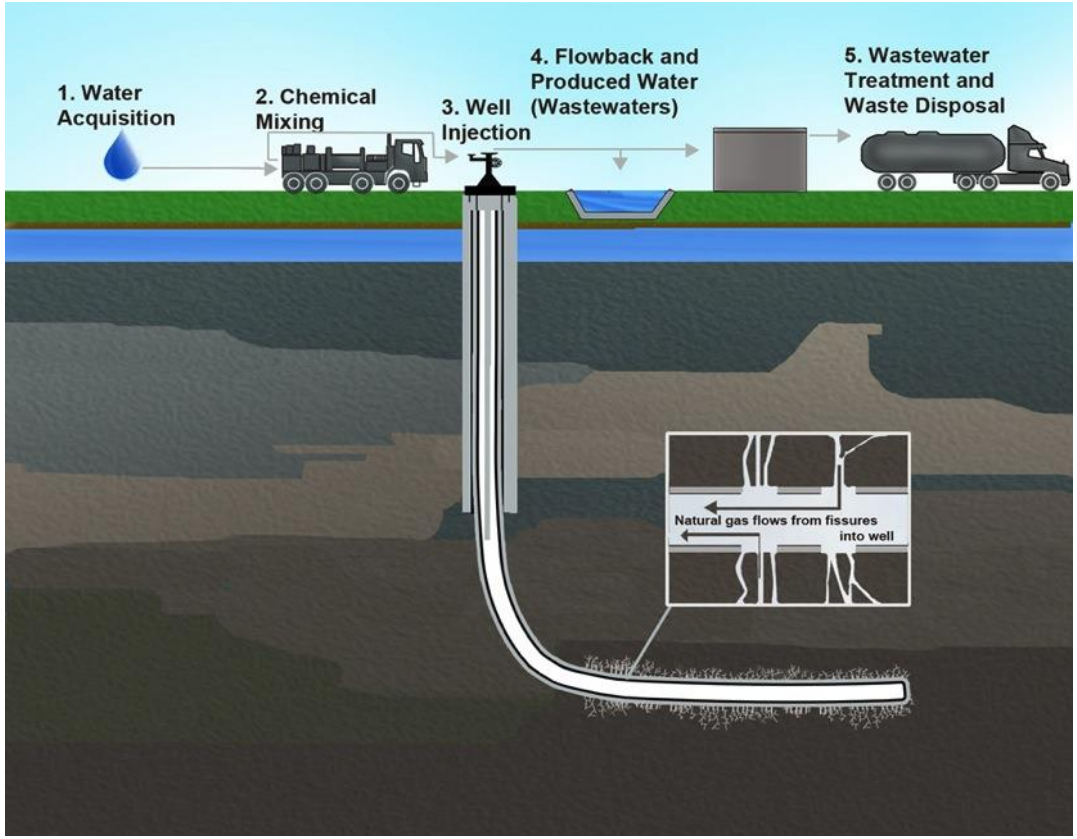
- UIC wells need monitoring
  - 130 billion gallons of produced water annually
  - Recent problems with UIC
  - Aquifer Exemption for UIC is problematic and may not be properly enforced
  - Hundreds of violations annually (DOGGR reports to EPA)

Waste Disposal



Impacts on Water Resources

- Water Supply – fracking is water intensive!
- Water Quality
  - Groundwater impacts
    - Well integrity failure; spills and leaks of fluids; contamination from underground water injection wells used to dispose waste water
  - Surface water impacts
    - Improper treatment and/or disposal of fracking fluids; spills and leaks to surface waters

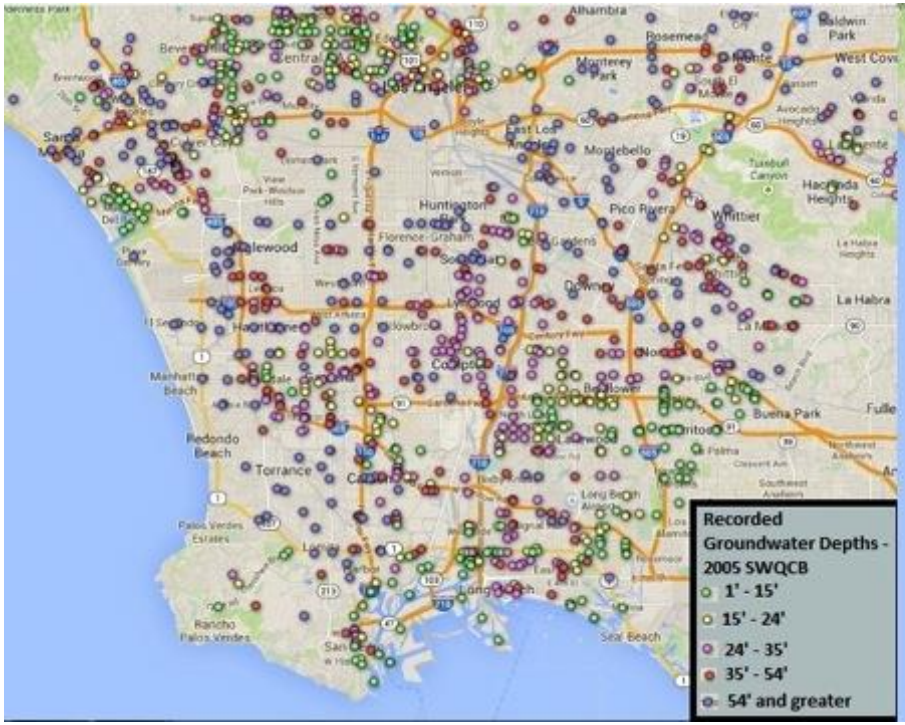


Los Angeles County Oil Fields

PLAINS EXPLORATION & PRODUCTION COMPANY

Figure ES-2
Location of Los Angeles Basin Oil Fields
09 | 21 | 12

Well Stimulation and Groundwater in Los Angeles County



LA County Water Resources

- Impaired Surface Waters – Ballona Creek, LA River and tributaries, San Gabriel River, Santa Clara River, coastal waters, including San Pedro Bay, LA/LB Harbor and Santa Monica Bay

- Groundwater – four groundwater basins: Santa Monica, Hollywood, West Coast and Central Basin; all, except a small portion in West Coast Basin underlying El Segundo seaward of the basin's seawater intrusion and the Ports of LA and Long Beach, are designated as existing municipal and domestic water supply.

Spills Do Happen

Visual Browse

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OPINION

LIFESTYLE

TRAVEL

AUTOS

REAL ESTATE

JOBS

10,000-gallon crude oil spill in Atwater Village looked 'like a lake'

10,000 gallons of crude oil from a burst pipeline spilled over a half-square-mile area in Atwater Village on Thursday.

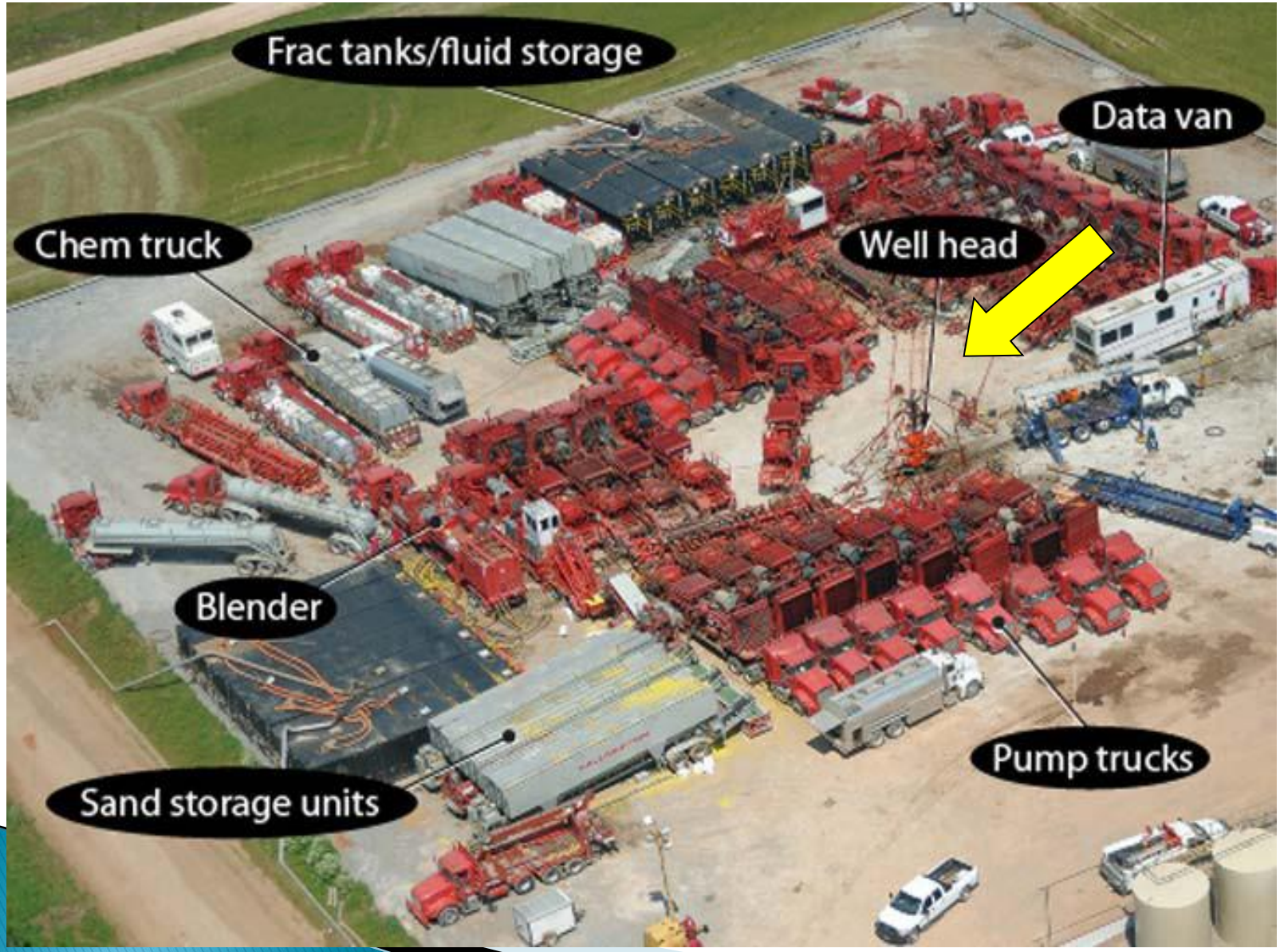
By JASON WELLS

contact the reporter

NEEDS FOR WATER MONITORING IN OIL & GAS E&P AREAS Los Angeles

Dr. Tom Williams. Senior Technical Advisor
Citizens Coalition for a Safe Community
Los Angeles County, CA

REAL FRACK JOB



SORRY, JUST A LITTLE FRACK

YEAH, BAD FRACK DAY

DON’T WORRY–TRADE SECRET

OPERATORS

WELL – POOL – FIELDS – Counties/Districts

UIC–Produced Water Plan–WHAT,WHEN,& WHERE?

- Produced Water Characterization – Natural Tracers
- Boron/Barium/Bromine,TPH,&TDS=Natural Tracers
- Sensors pH/TDS>Monitor–Sample/Test or Which??

RISKS

- 10, 100, 200, 500, 1000ft of alluvium
- Private, Corporate, and Public Wells
- Barren, Rural, Suburban, or Urban

WHAT RISKS?
GrdWtr-Recycle/City/People?

GROUNDWATERS

Alluvial – Base of Extent/# Samples

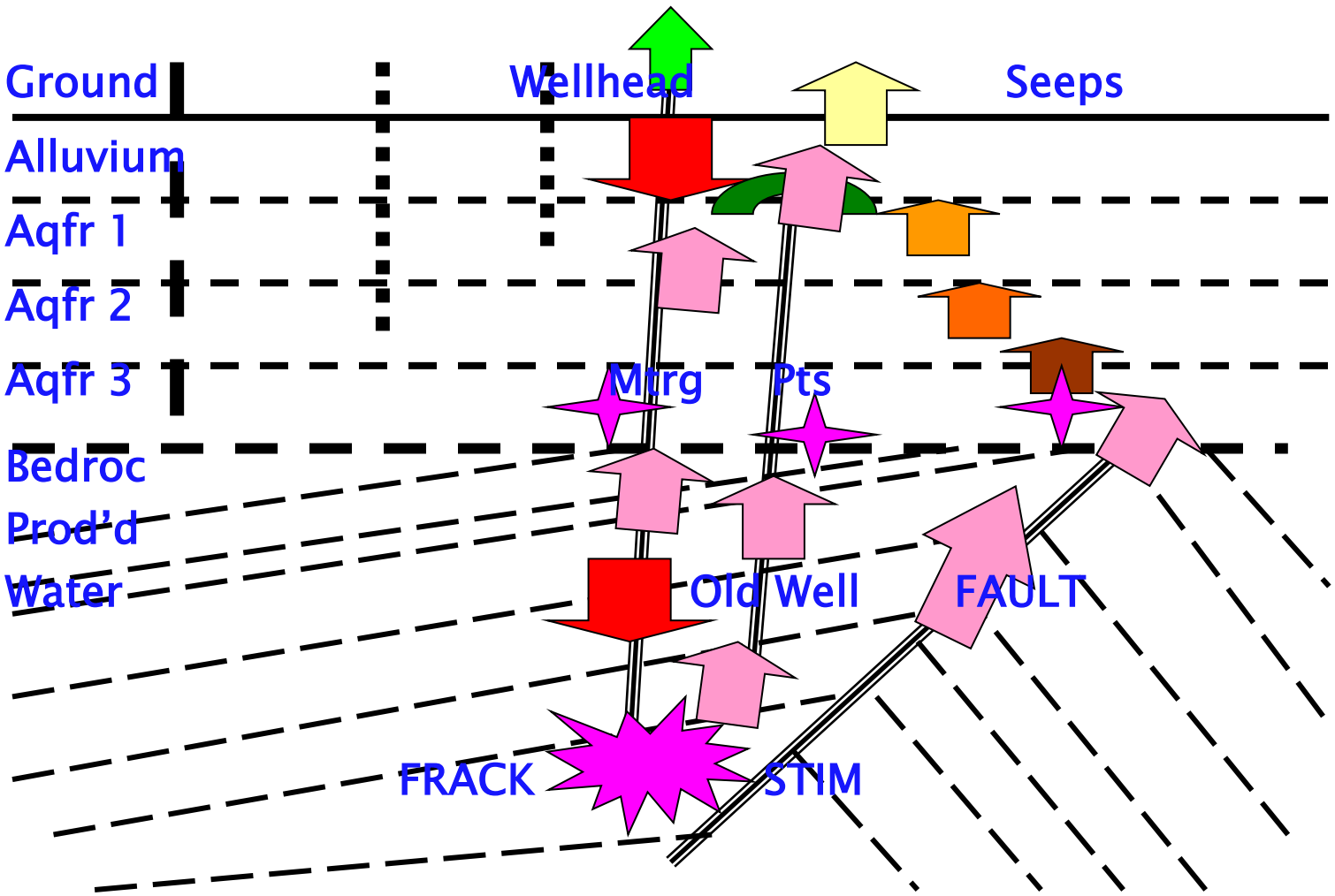
- Direct Potable – 1000ppm
- Base of Fresh Water – 2000ppm
- Protected Waters<10,000 (Excl.Org.Co. Coast)
- Recharge> Storage> Discharge Basins–

Bedrock

- Base of Fresh Water – Surface Casing
- Useful/Usable Water – 1–Pass RO
- Beneficial Water – 1–Pass RO

Water Districts/Companies – Aquifers

OPERATORS – PATHWAYS/PLAN



FIELD OR REGION

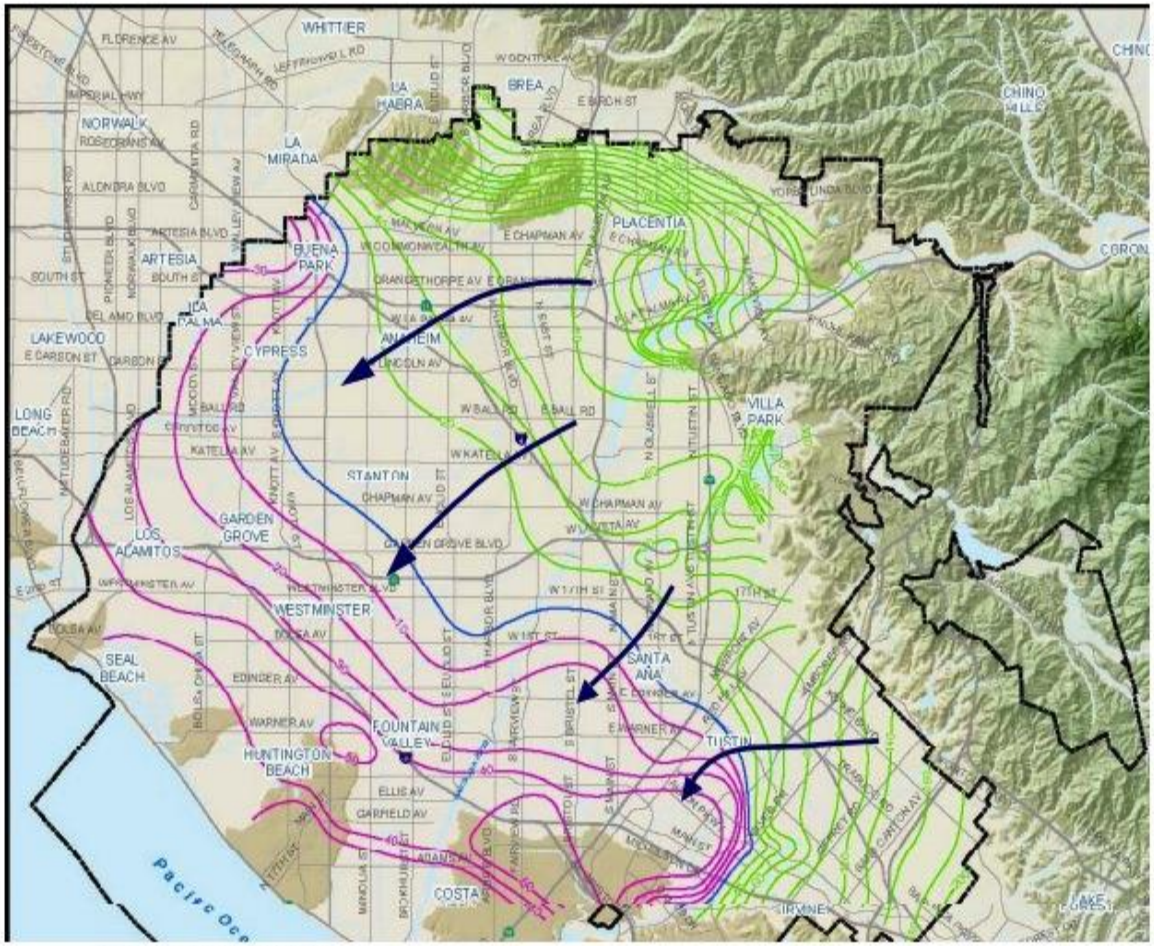
Field – WHAT, WHEN, WHERE, & WHO?
UIC requires Characterization of Produced Water
TDS/Temp./pH/Sensors>Action-Trigger>Samples
Boron/Barium/Bromine, TPH, Metals
New Field/Pool Characterizations
Monitor = 3-Tier Sensors > Sample/Test
NOW >> 700d Baseline >> Upgrade

Basin-Source/Recharge >Path/Storage >Discharge
>100 wells Township (6x6mi)

- Agriculture/Water Company
-Ag Coops – Producing Aquifers 10Kgal/d
- Water Districts

GROUNDWATER FLOWS

Figure 10-8
Groundwater Elevation Contours – November 2005



Source: Herndon, 2006

REGIONALS

Region or Basins – WHAT, WHEN, WHERE, & WHO?

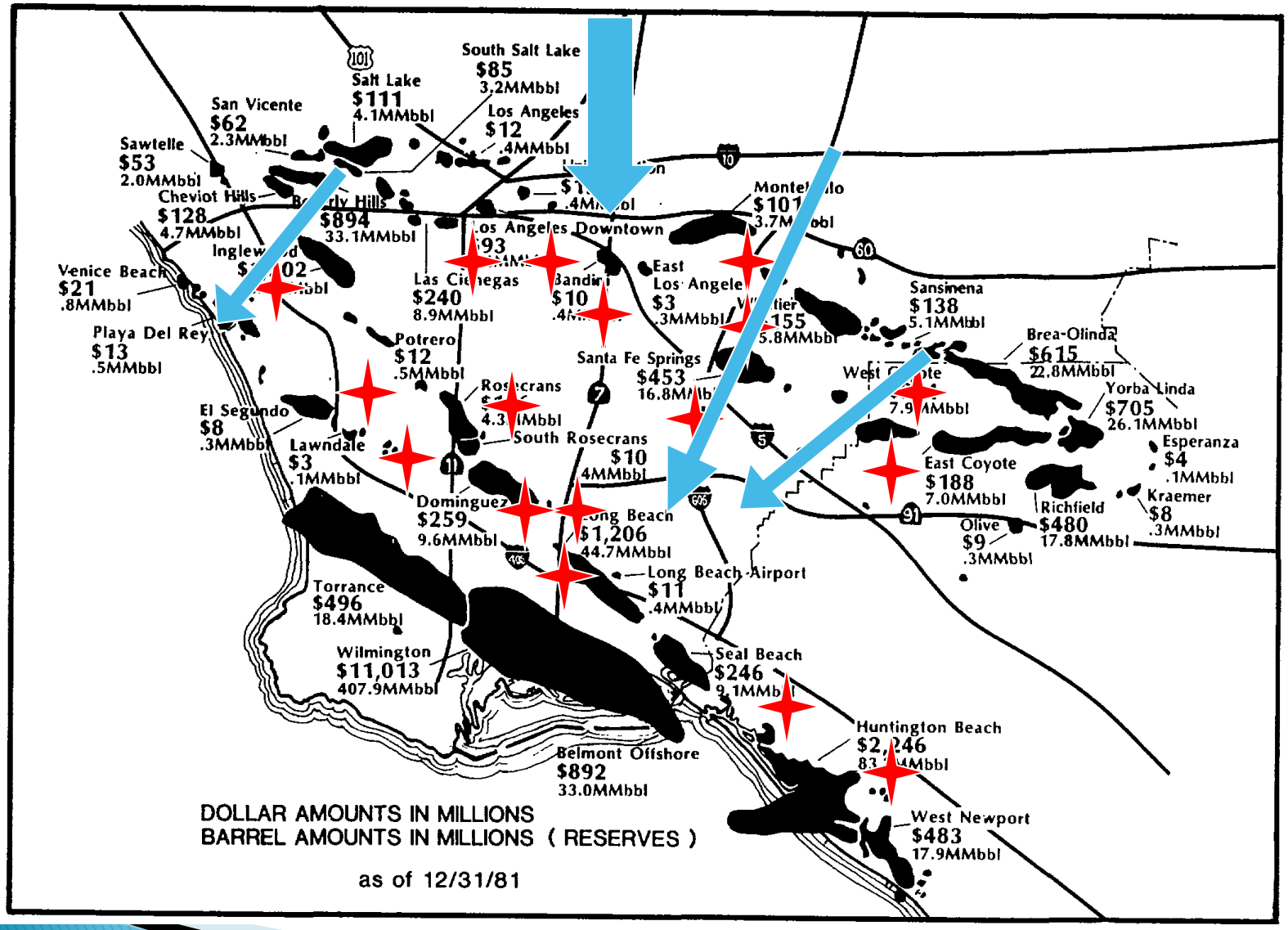
Summary of Fields – Indicator/Tracer Chemicals
Monitoring Sensor Array > Action-Trigger >Sampling
e.g., Boron/Barium/Bromine, TPH, Cr, Ni, Va

Monitor = 3-Tier/Dp-Md-Sh Sensors > Sample/Test
NOW >> 700d Baseline >> Upgrade

Basin-Source/Recharge >Path/Storage >Discharge
>100 wells Township (6x6mi)

- Water Companies, Departments, and MWD
- WRDistrict

LA –OR O&G/GW FIELDS



OIL & GAS IMPACTS

Secrecy vs Neighbors' Policies – API July Guide

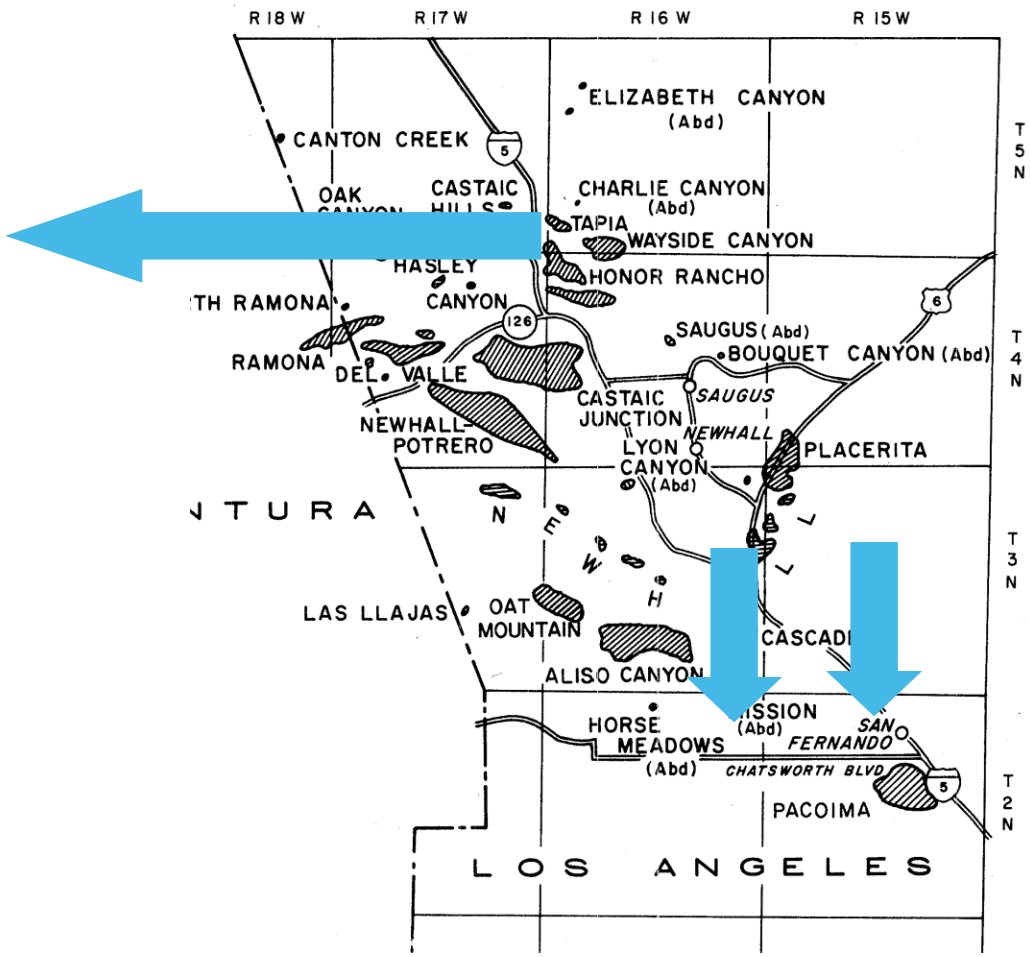
O&G Zones > Stimulation/Fracking

- Surface Sources 0–10ft
- Above BoFW Sources 10–1000ft
- Intermediate Levels – 1000–4000ft
- Production Levels – >2000ft

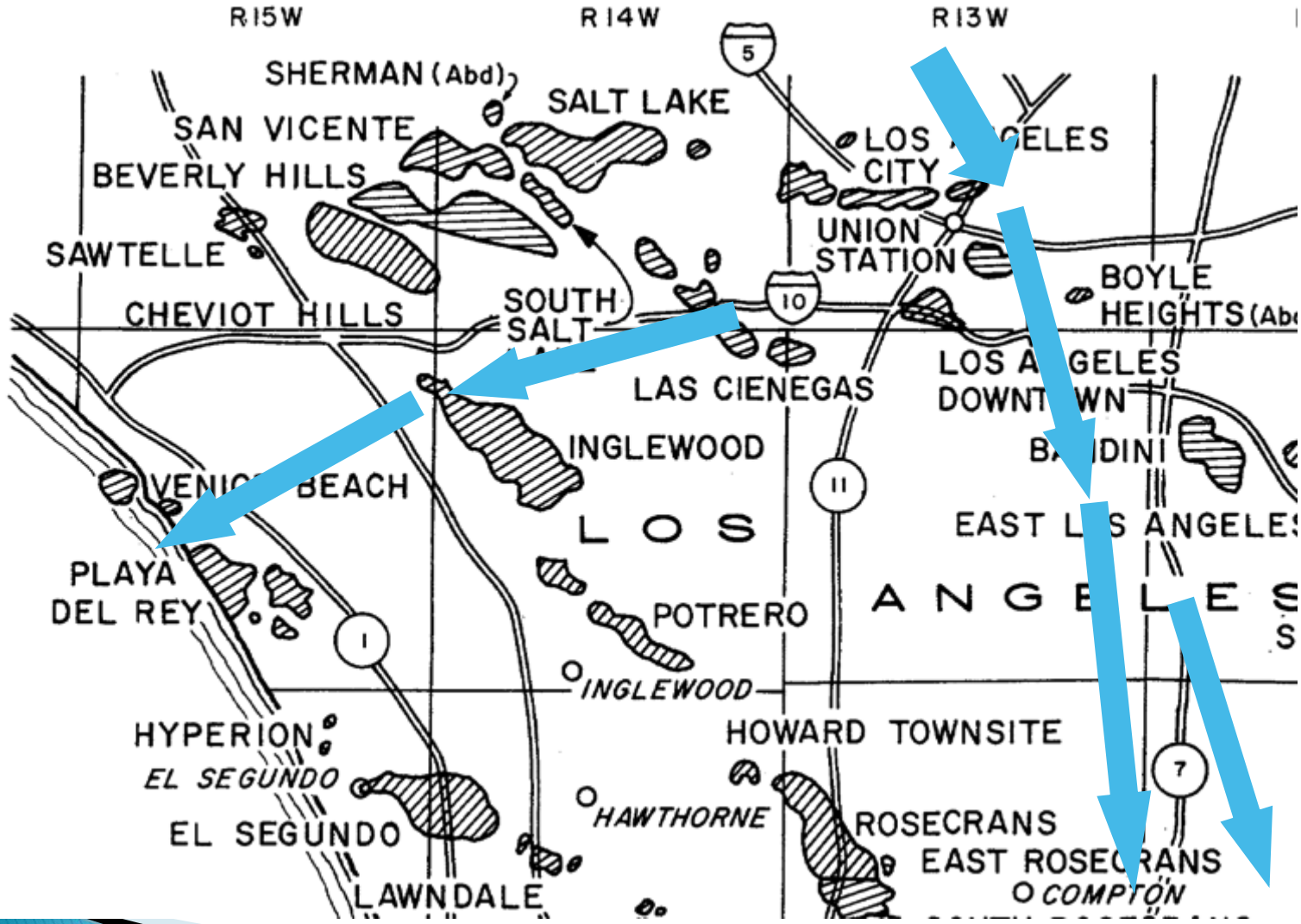
Risks/Pathways

- Ponds/Pits/Sumps/Pipes/Tanks
- Faults – Fractures/Stresses
- Orphan/Abandoned/Idled Wells
- Bad Well Integrity

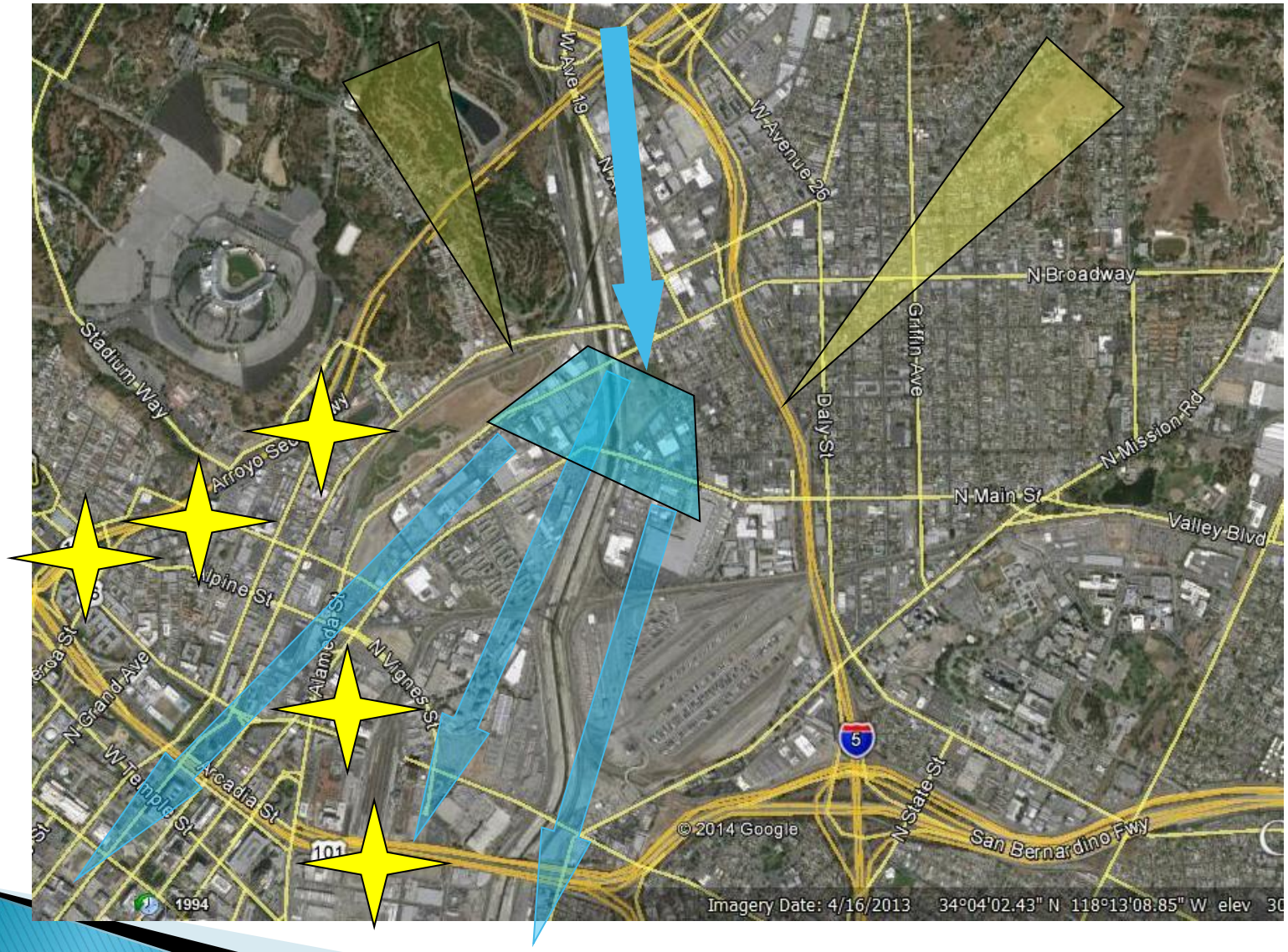
THE OTHER LA COUNTY



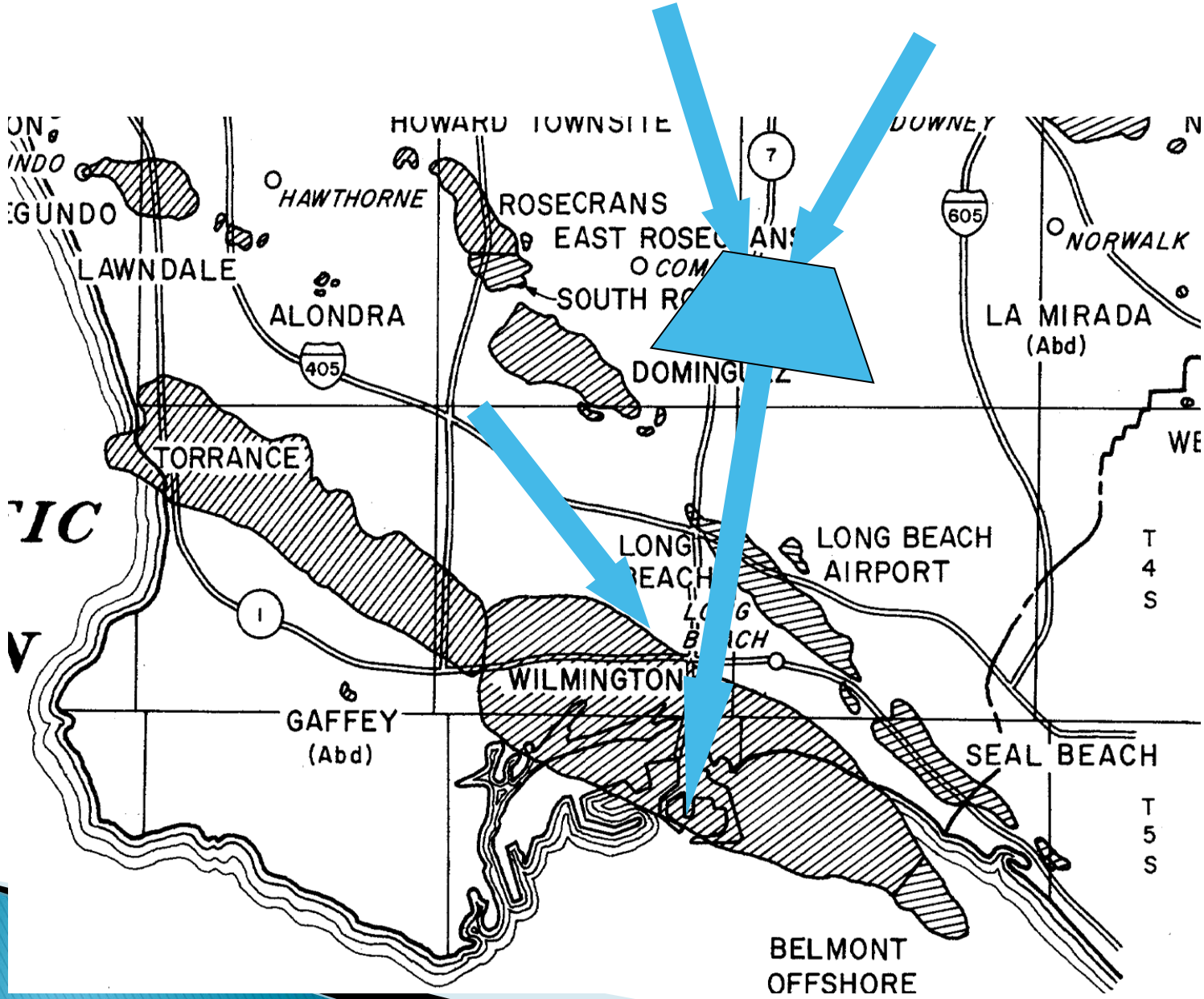
FURTHER SOUTH LA Co.



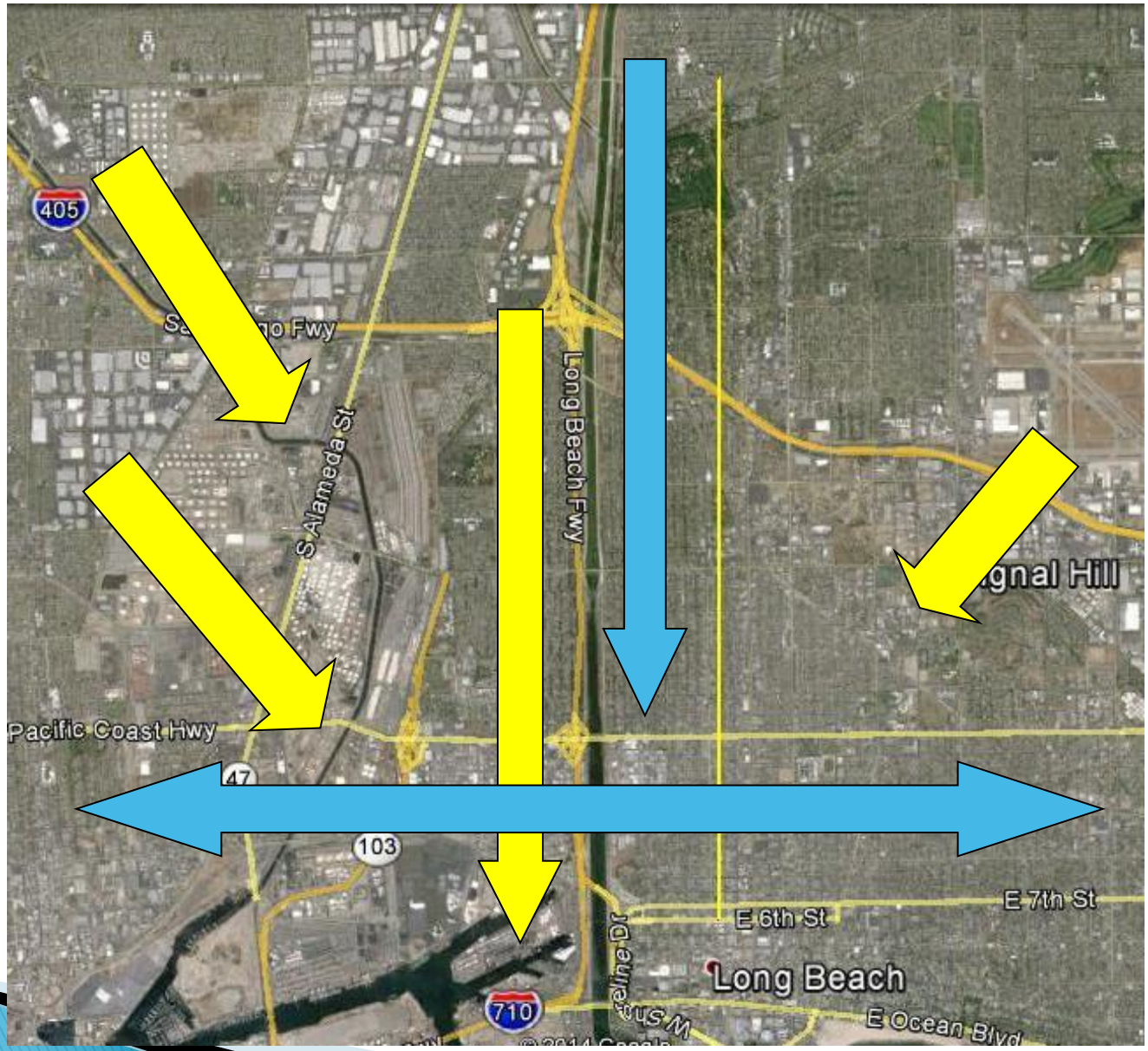
NO. CENTRAL FLOWS



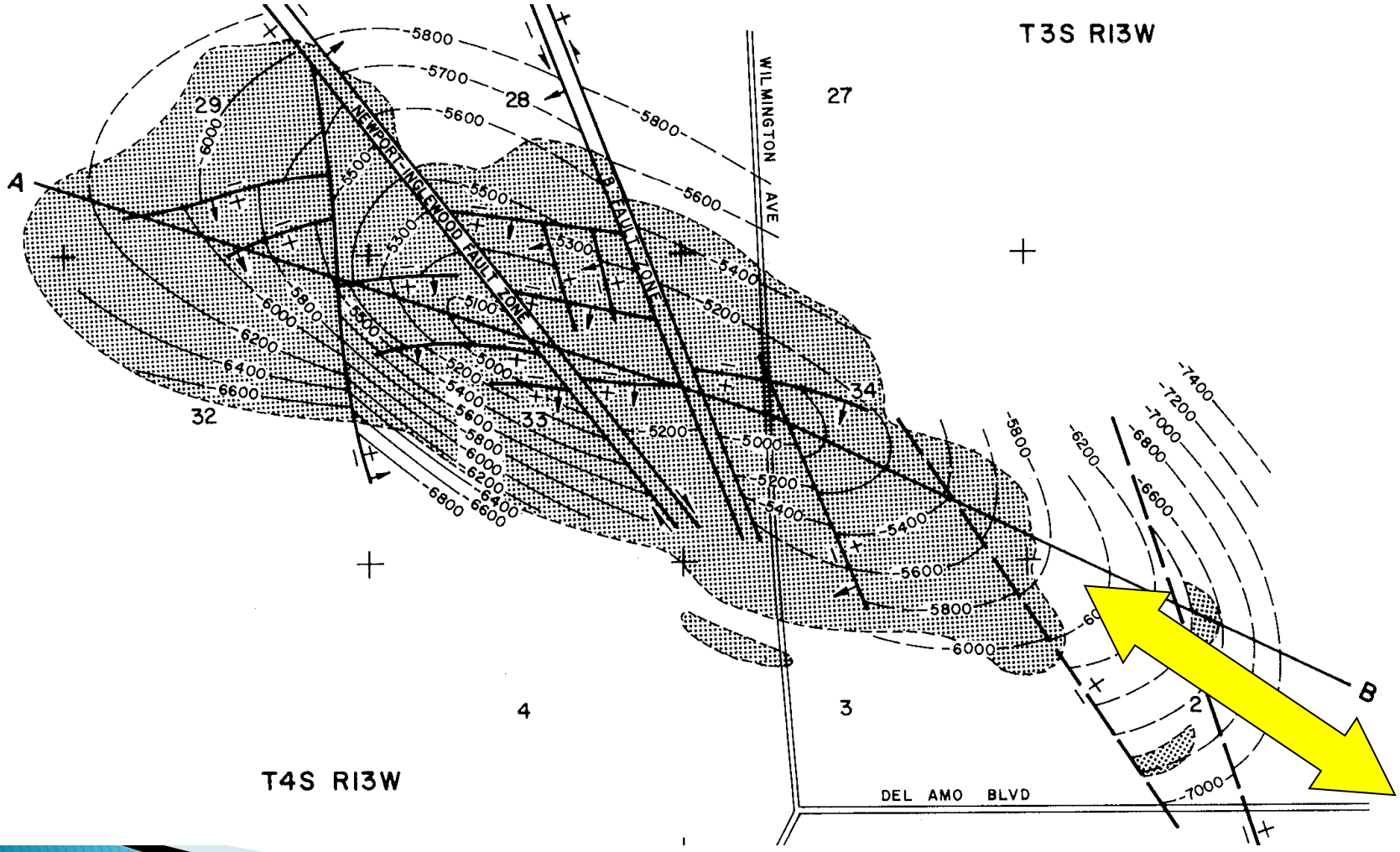
SO. CENTRAL FLOWS



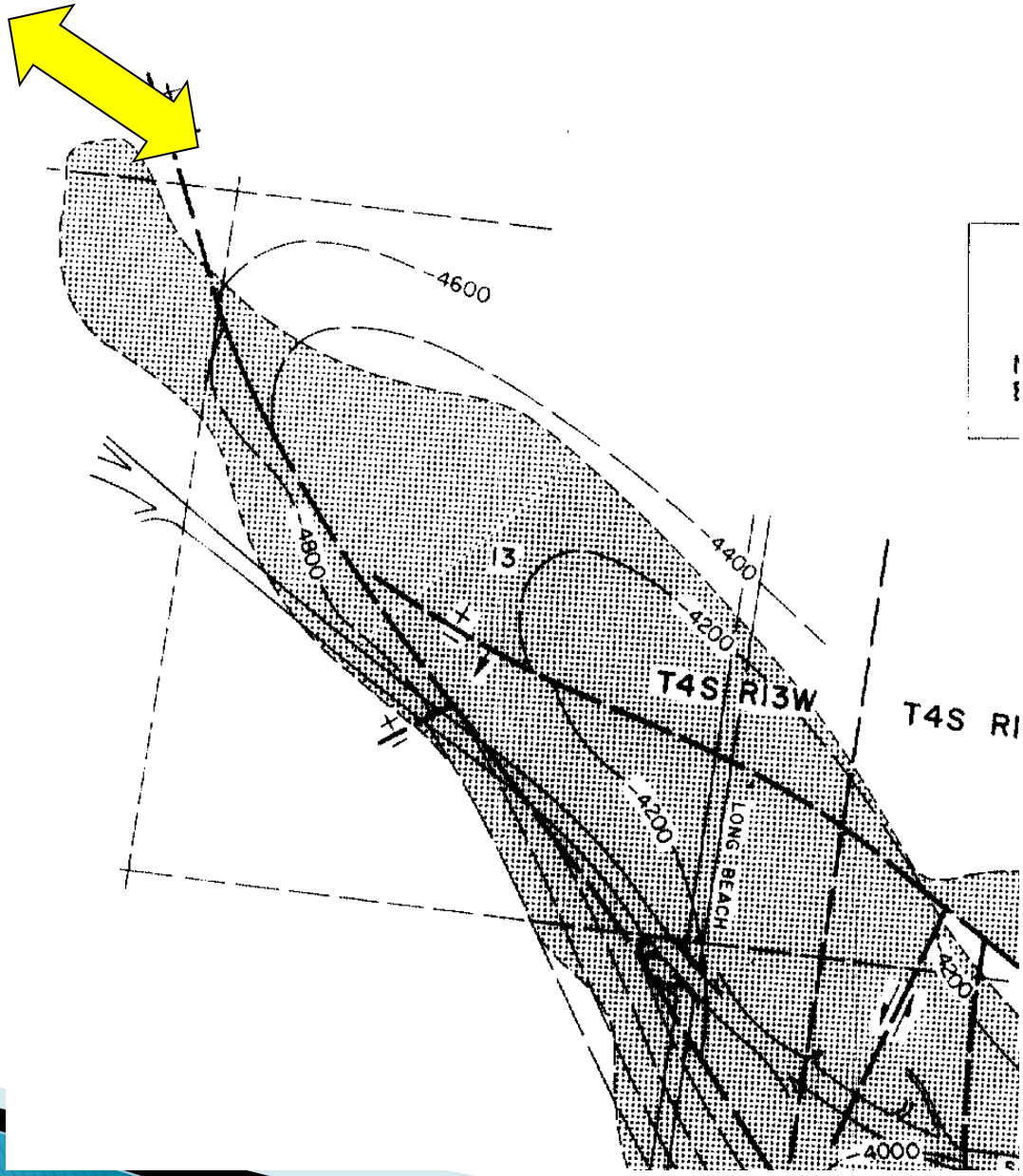
SO.LA RIVER – GW/O&G



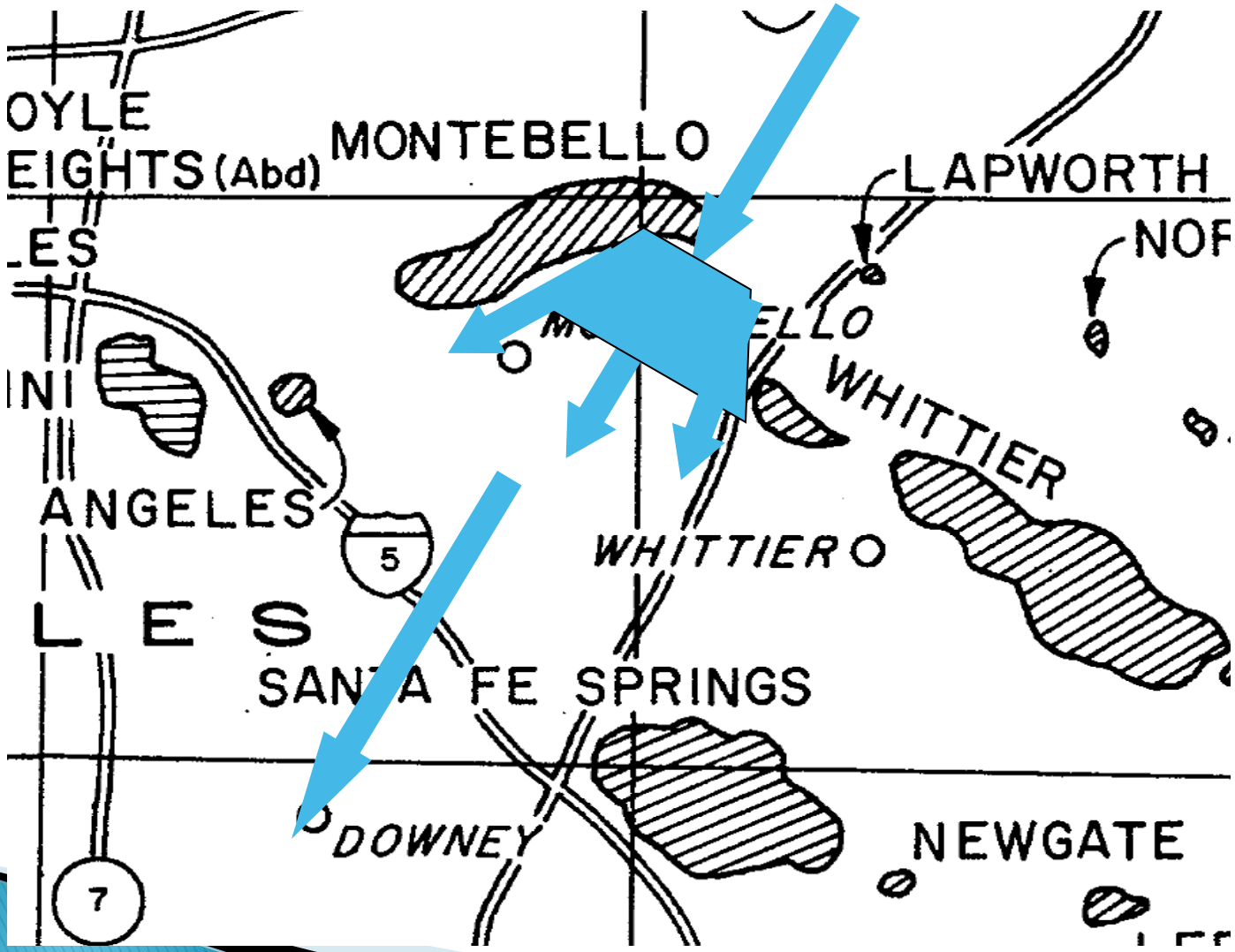
DOMINGUEZ FIELD



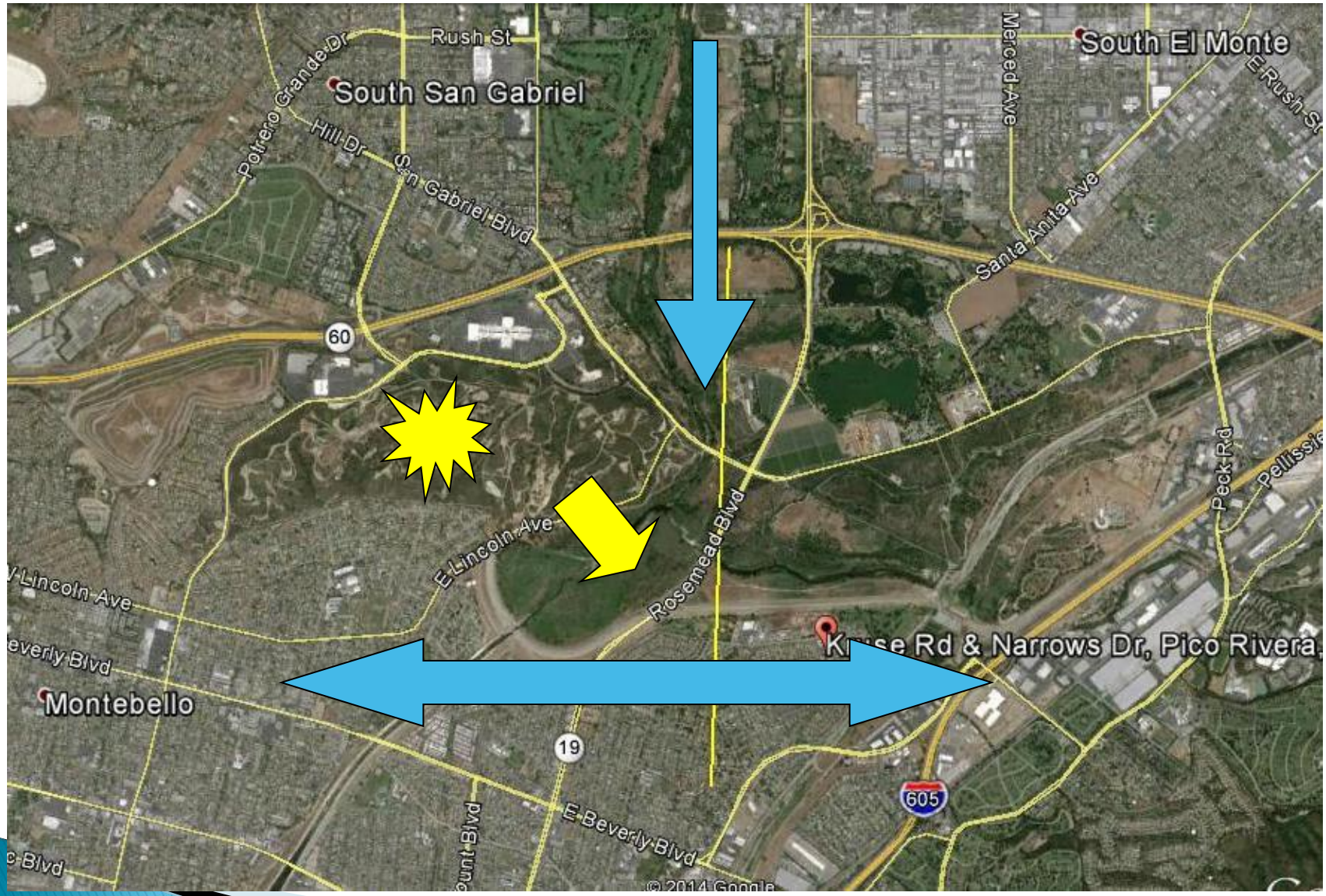
DOMINGUEZ / LONG BEACH



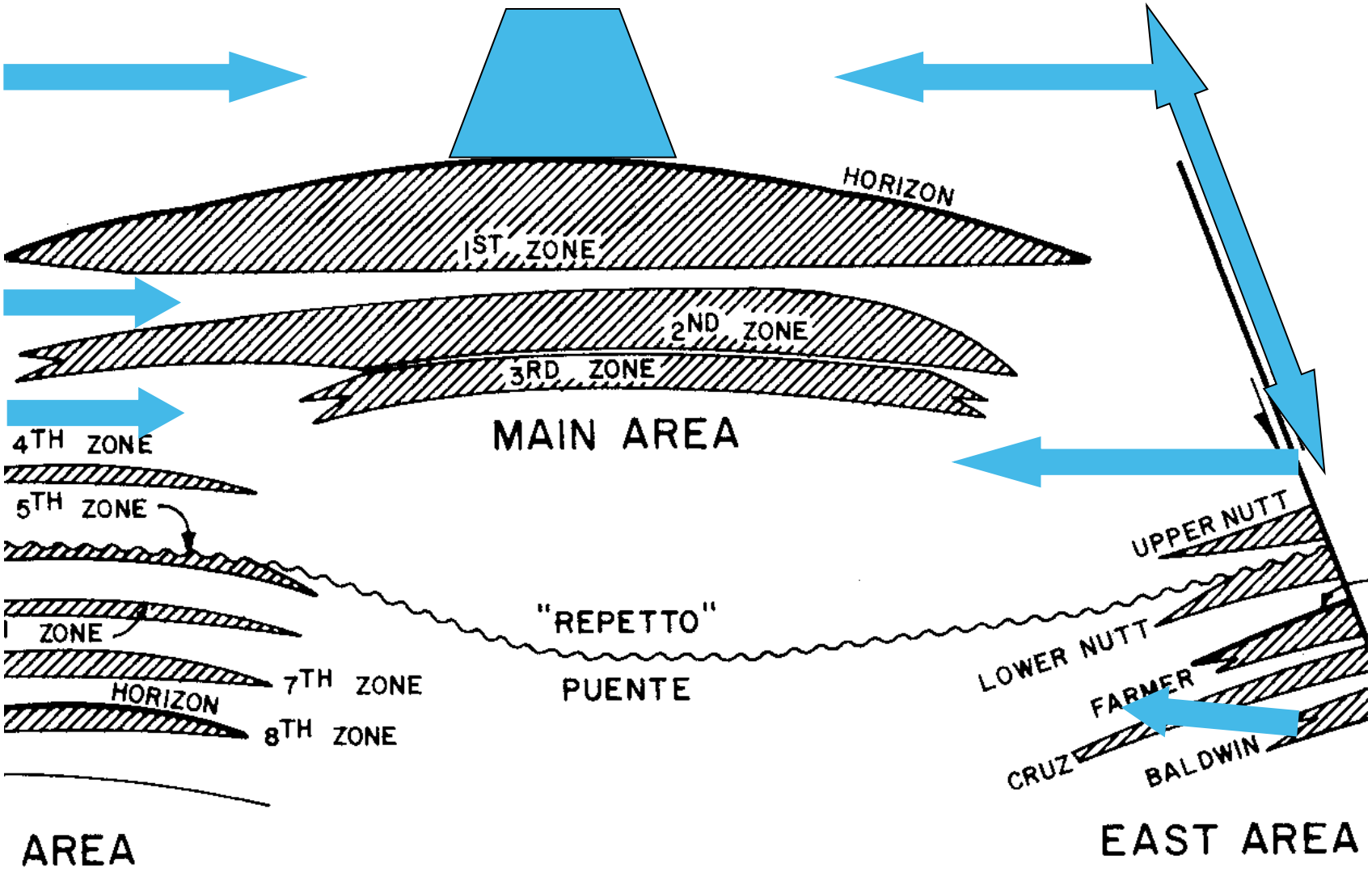
SAN GABRIEL/FOREBAY



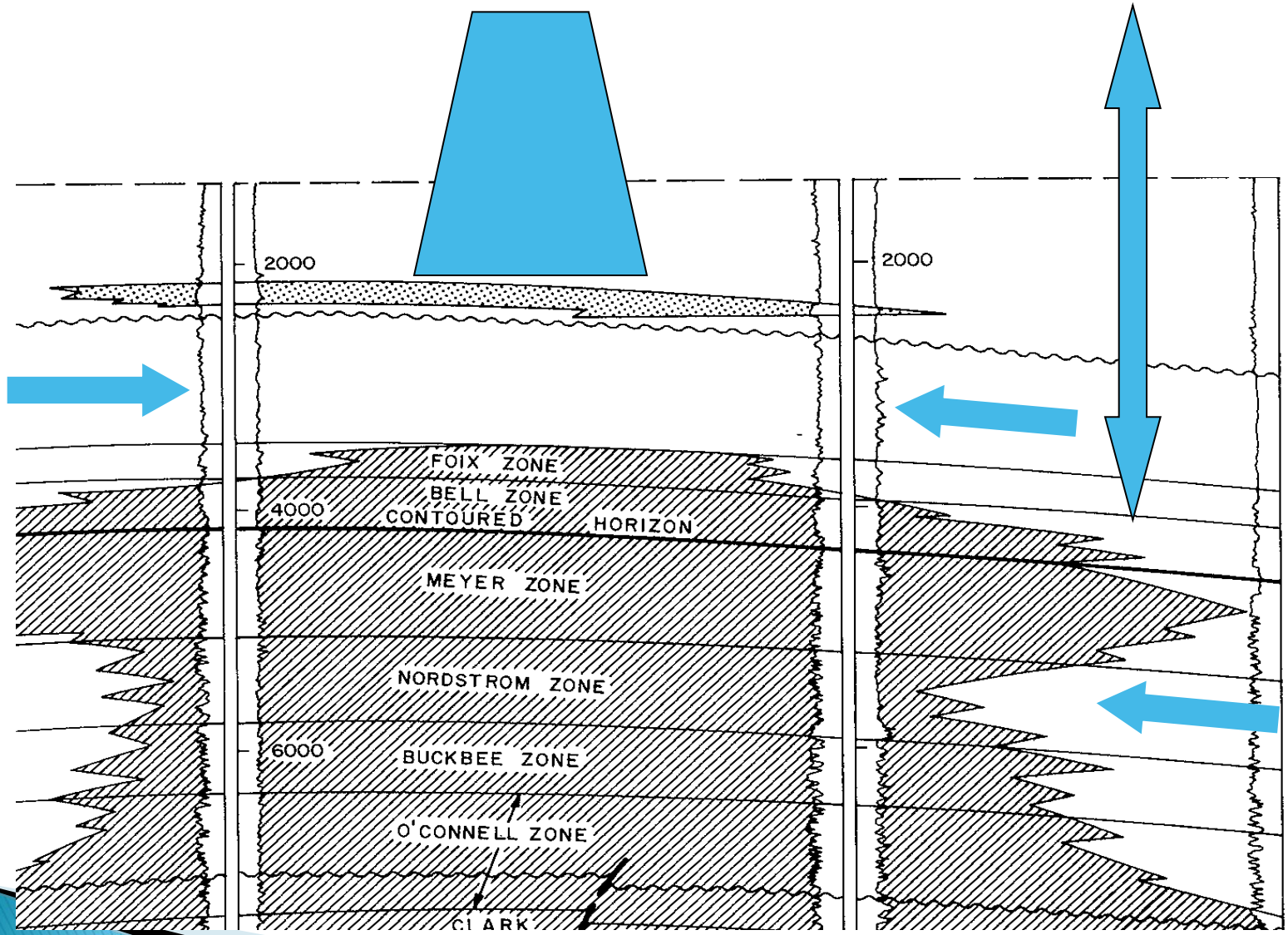
MONTEBELLO FIELD/FOREBAY



MONTEBELLO FIELD



SANTA FE SPRINGS FIELD



ONE WATER / ONE BASIN

ALL WATER IS GOOD WATER – RECYCLING/REUSE

- What Water? Surface/Recharging/Ground Waters ?
- Quality – 2000/10,000/20,000 mg/L TDS
- Can't Desal Oil or Produced Water is too $$$$$

WATER SYSTEMS APPROACH

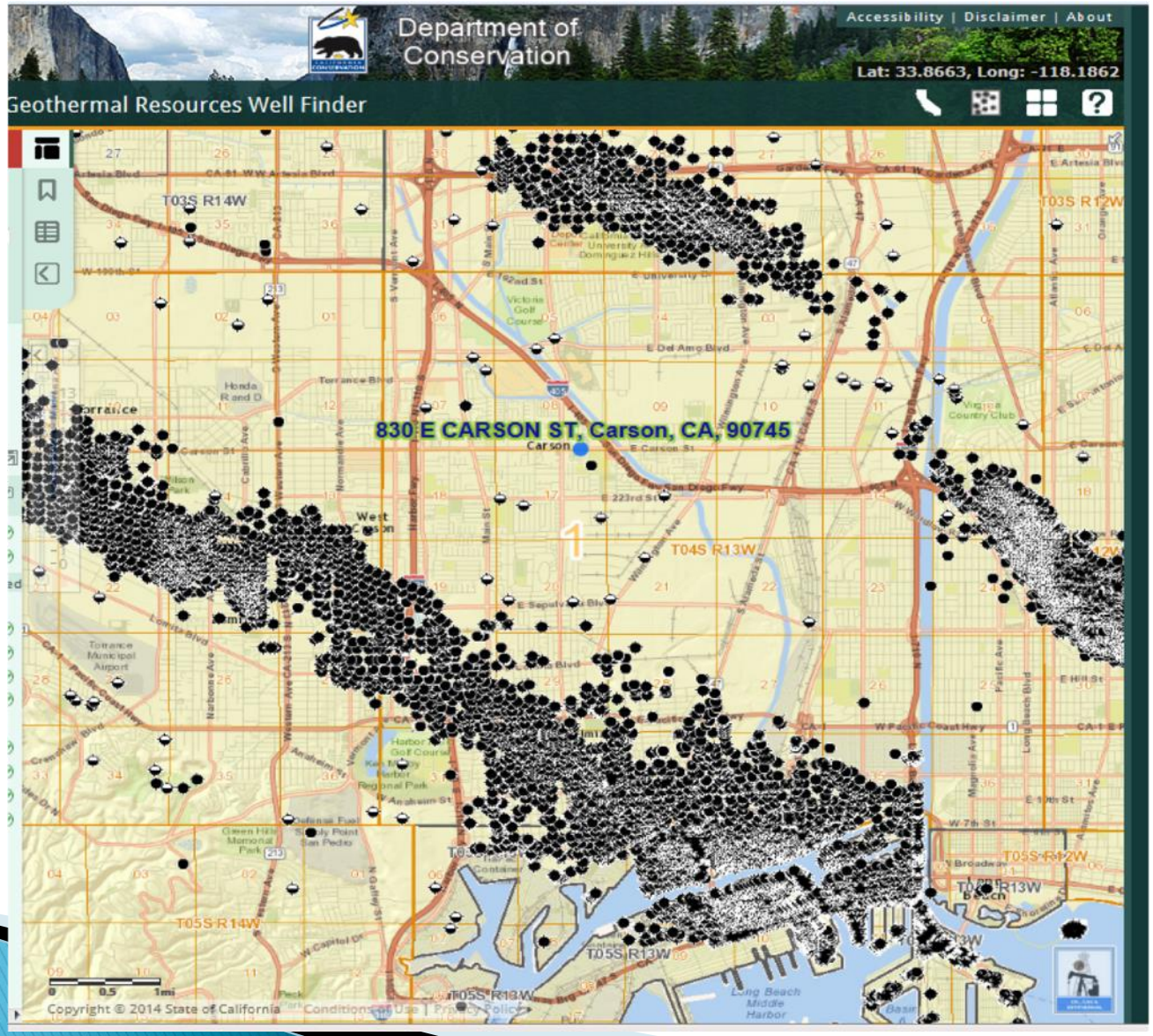
- River Flow, Channel, Floodplain, or Watershed
- GW – Recharge > Flow / Storage > Discharge
- Pathways – Faults, Abandoned Wells, Bad Wells
- Follow Pressures and Incorporate UIC Projects

Environmental Justice

"The environmental justice movement addresses the reality that low-income communities and communities of color bear a disproportionate burden of environmental pollution and as a result, residents struggle with negative health and quality of life impacts."

– California Environmental Justice Alliance

City of Carson



Thank You

www.earthworksaction.org www.ccfasc.org www.lawaterkeeper.org