



Carousel Tract Former Kast Property Tank Farm Investigation and Remediation



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RWQCB

Los Angeles Region

- State Agency under California Environmental Protection Agency
 - Water Boards
 - Air Board
 - Toxics
 - Environmental Health Hazard Assessment
 - Pesticide Regulation
 - CalRecycle
- State Board + Nine Regional Boards
- LA Region – Los Angeles and Ventura Counties

Regional Board Structure

- Seven Board Members
- Appointed by Governor
- Confirmed by Senate
- Serve Voluntarily
- Meet 10 times per year

Regional Board Functions

- Implement Regulations
 - Clean Water Act
 - Porter-Cologne Water Quality Control Act
 - California Health and Safety Code
- Issue Permits to Discharge Wastes
- Issue Orders to Cleanup and Abate Wastes
- Rule making for Water Quality Standards and Impaired Waterbodies

Complex Sites

- Scientific
 - Work with other Public Agencies
 - Peer Review – Expert Panel
- Public Outreach
- Legal
- Political

Site History



- 1920 – 1965
Shell Oil Tank Farm
- Crude Oil Storage
 - 44 Acres
 - 3.5 Million Barrels of Crude Oil

Site History (cont'd)



1965 – 1968

Property Sold and Redeveloped

- Most Residual Oil and Water Drained or Removed
- Reservoirs Demolished
- Surface Regraded

1968 – present

- 285 Single Family Homes

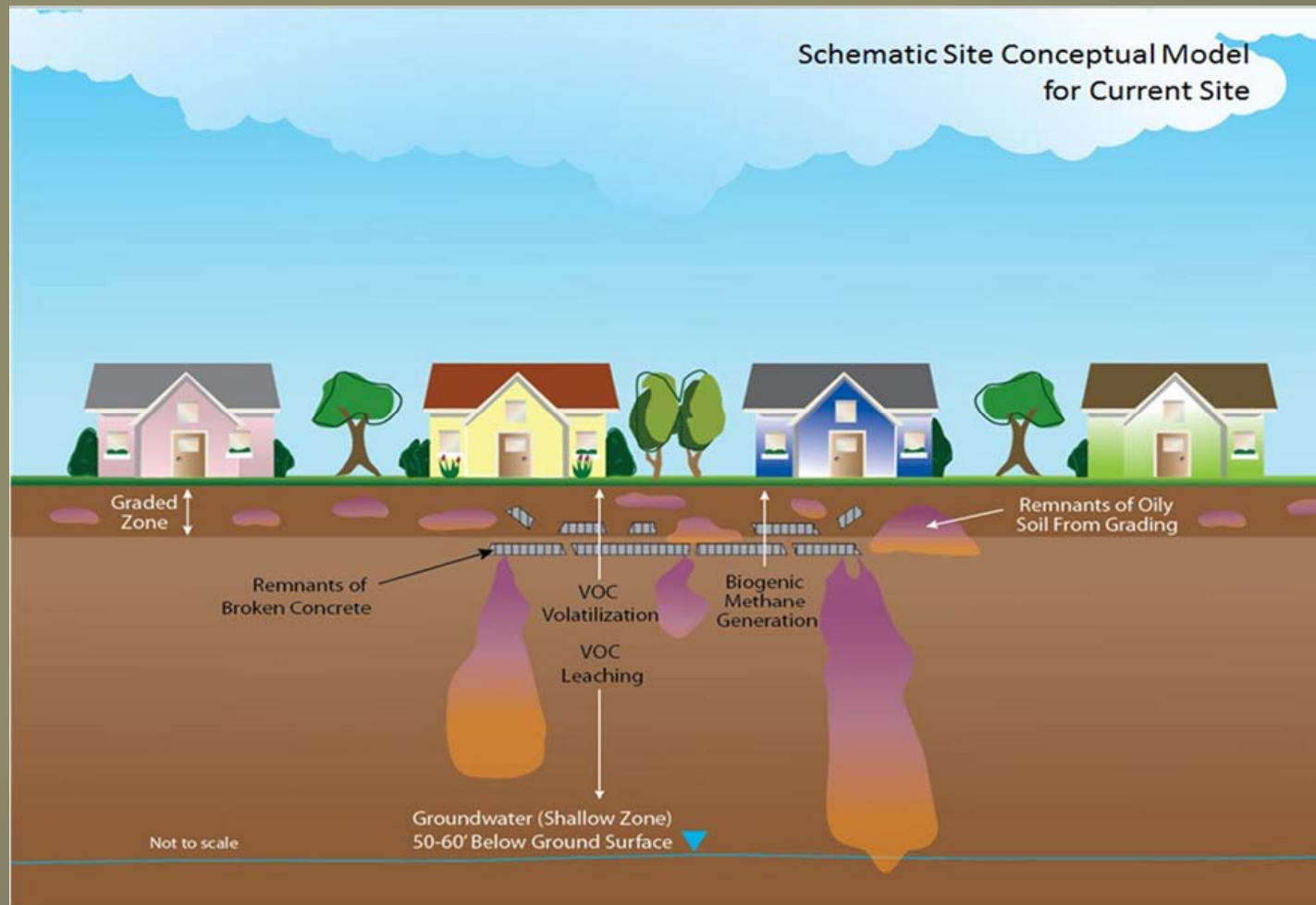
Investigation Priorities

- Health Risks and Groundwater
- Extent of Contamination
- Remediation Methods

Health Risk Assessment

- Are residents breathing vapors from contaminated soil and groundwater?
- Site safety: methane monitoring and mitigation
- Are residents' drinking water contaminated at the site?

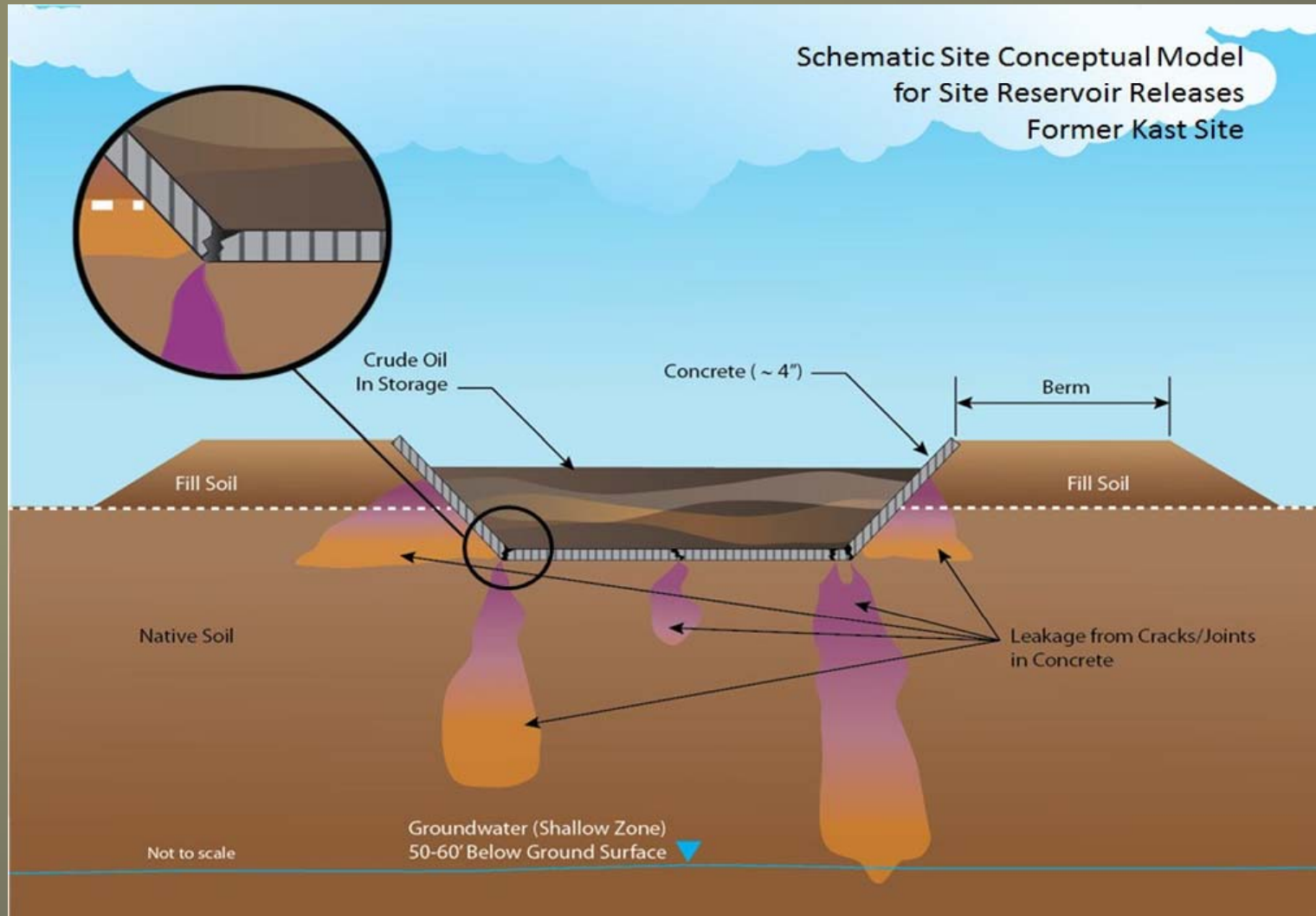
Nature and Extent of Contamination



- What is the lateral and vertical extent of contaminants?
- What are the contaminants?
- Which technologies are most effective for remediation?

Schematic of Leaking Reservoir

How Contamination Occurred
Between 1920 and 1965



Chemicals of Concern

- Methane
 - Flammable
- Benzene
 - Carcinogen
- Petroleum Hydrocarbons
 - (polycyclic aromatic hydrocarbons, naphthalene)

Investigation Results



- No indication of vapor intrusion to date.
- No accumulation of methane in utility vaults to date.
- Total petroleum hydrocarbons found below the ground surface.
- Crude oil found in one well.
- Groundwater pollution.

Cleanup Technologies Tested



- Soil Vapor Extraction
- Excavation
- Bioventing
- In-situ Chemical Oxidation (ISCO)
- Free Product Recovery

Site Chronology

2008	2009	2010	2011	2012
Site Referral	Monthly Methane Testing	Monthly Methane Testing	Monthly Methane Testing	Monthly Methane Testing
13267 Order Issued to Shell	Public Process	Public Process	Public Process	Public Process
	Parcel by Parcel Shallow Soil and Sub-Slab Vapor Sampling Initiated	Continue Parcel by Parcel Investigations	Continue Parcel by Parcel Investigations	Continue Parcel by Parcel Investigations
	Investigation on Public Streets	Delineation of Contaminants	Clean Up and Abatement Order Issued	ISCO Pilot Testing
	Groundwater Investigation Initiated	13267 Order Issued to Shell	Vapor Intrusion Studies	Biovent Pilot Testing
	Indoor Air Testing Initiated	SVE Pilot Testing	13267 Order Issued to Dole	Excavation Pilot Testing
	Notice of Violation Issued to Shell	Wilmington Middle School Investigation		
		Free Phase Recovery		

Summary of Site Activities

2008-2012

- Continuous Monthly Monitoring of 69 utility boxes for methane – less than lower explosive limit (LEL)
- Completed Residential Sampling Activity
 - 265 homes were screened for methane (93%)
 - 265 homes had soils sampled and vapor probes installed (93%)
 - 264 homes had sub-slab soil vapor probes sampled (93%); and
 - 209 homes had indoor air sampled (73%)
- September 2009 to present
 - Over 475 residential sampling reports
 - Eight final interim documents

Next Steps

- Pilot Test Program reports submitted
- Assess impacts of the slabs
- Set cleanup goals
- Develop Remedial Action Plan
- Conduct CEQA analysis
- Facilitate public involvement
 - Public meeting/workshop
 - Public comment period Expert panel review
- Expert panel review
- Approve the Remedial Action Plan and begin remediation

Public Participation

- Eleven community meetings were held between 2009 and 2012.
- New Water Board staff expert now on board
- Water Board will prepare public participation plan for remaining activities, including:
 - Public meetings/workshops
 - Opportunity to comment on cleanup proposals
- Water Board staff will work with outside experts as appropriate under law

Supporting Agencies

- Office of Environmental Health Hazard Assessment (California EPA)
- Air Quality Management District
- Los Angeles County Public Health Department
- Los Angeles County Fire Department
- Los Angeles County Department of Public Works
- Los Angeles Unified School District
- City of Carson Public Works
- Department of Toxic Substances Control

Summary

Regional Board has:

- Evaluated health risks
- Defined nature and extent of contamination
- Evaluated methane risks and mitigation in place
- Conducted public outreach
- Engaged other public agencies
- Required pilot testing of remediation
- Initiated use of an expert panel