EPA Proposed Cleanup Plan

Pacific Coast Pipeline Superfund Site

Fillmore, Ventura County, California

June 2011

Public Comments

Public Comment Period

June 1st – July 15th 2011

To make Official Comments:

1. Tonight: Verbal comments will be recorded

   You can also make your comments privately to the court reporter

   Written - comment cards in back

2. Until Deadline – Calling EPA, postal & email comments

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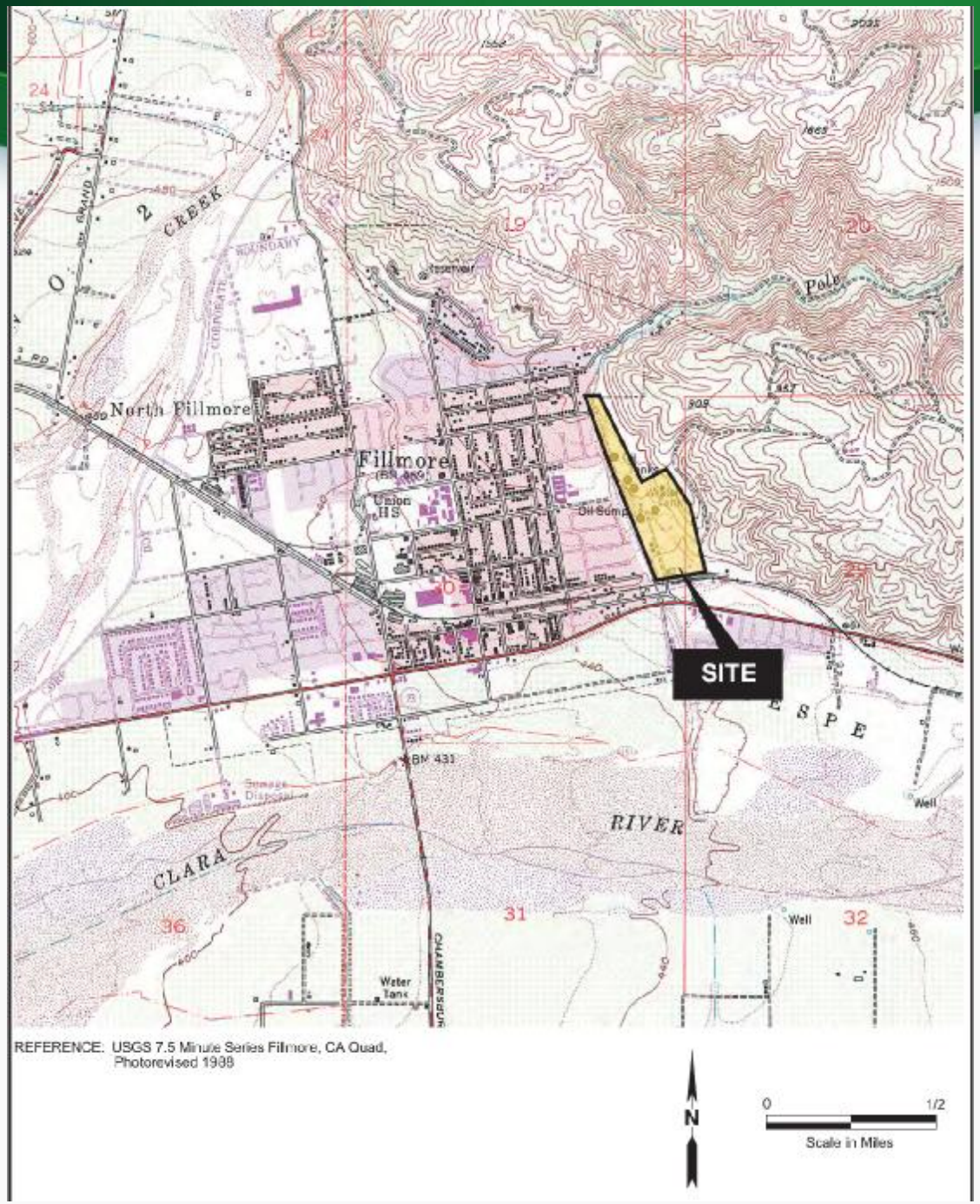


The Site

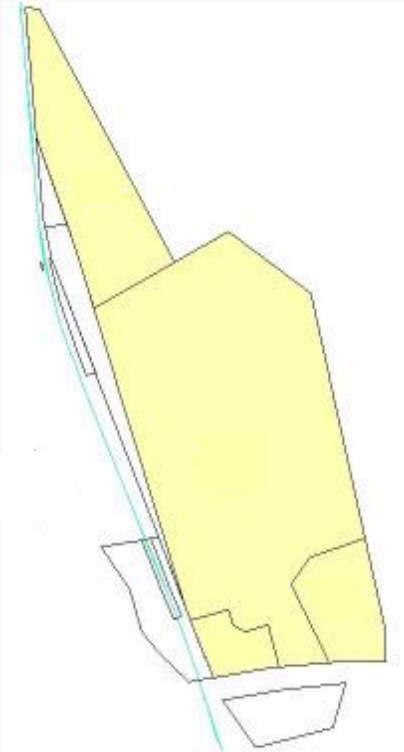
- Also known locally as the "*Texaco Site*"
- Eastern edge of Fillmore, between the city & the hills
- Unincorporated Ventura County

THE TEXAS COMPANY
TEXACO
TEXACO
TEXACO
SPENCE
THE TEXAS COMPANY
FILLMORE WORKS
CAL. 565 OCT. 4 1941

Site Maps

About 60 acres

- Ventura County parcels
- City of Fillmore parcels



The Site

from the north, facing south

Site Tour (2007)

Site History

Operational History

1900 — 1928 — 1951 — 1952 — 2000 — 2002

Texaco Refinery

Crude Oil Pumping Station

Remediation History

1985 — 2010

1986
Waste Pit Cleaned Up
under Regional Water Quality Control Board (RWQCB)

1989
Site Placed on NPL
EPA takes cleanup lead under federal Superfund Program

1992
Record of Decision Signed
Only the groundwater cleanup remedy selected

PCPL ROD

1993 — 2002
Operation of Pump & Treat & Soil Vapor Extraction System

2003-2004
Oxygen Release Compound Study
Magnesium Peroxide injected into groundwater to break down benzene, performed below expectations

2006-2009
Remedial Investigation
Vapor intrusion study; soil investigation

What EPA Studied

Results of the Remedial Investigation

1. **Soil Investigation**

2. **Vapor Intrusion Study**

3. **Groundwater**

   Continued Monitored Natural Attenuation (MNA)

Remaining Site Contaminants

Results of the Remedial Investigation

Pockets of Lead & PAHs throughout the site

Shallow Soil

(up to 10 feet)

82
Pb
207.2

Lead

A common fuel additive until the 1970s, may cause damage to nervous system, kidneys & immune system

PAHs

Group of over 100 chemicals found in crude oil; also formed during combustion. These chemicals may cause cancer.

Soil Gas

(up to 10 feet)

Soil Vapor Intrusion in Residences is not a problem

Benzene, Ethylbenzene & Napthalene

Volatile Organic Compounds (VOCs) that are naturally occurring chemicals in crude oil, known to cause cancer

Groundwater

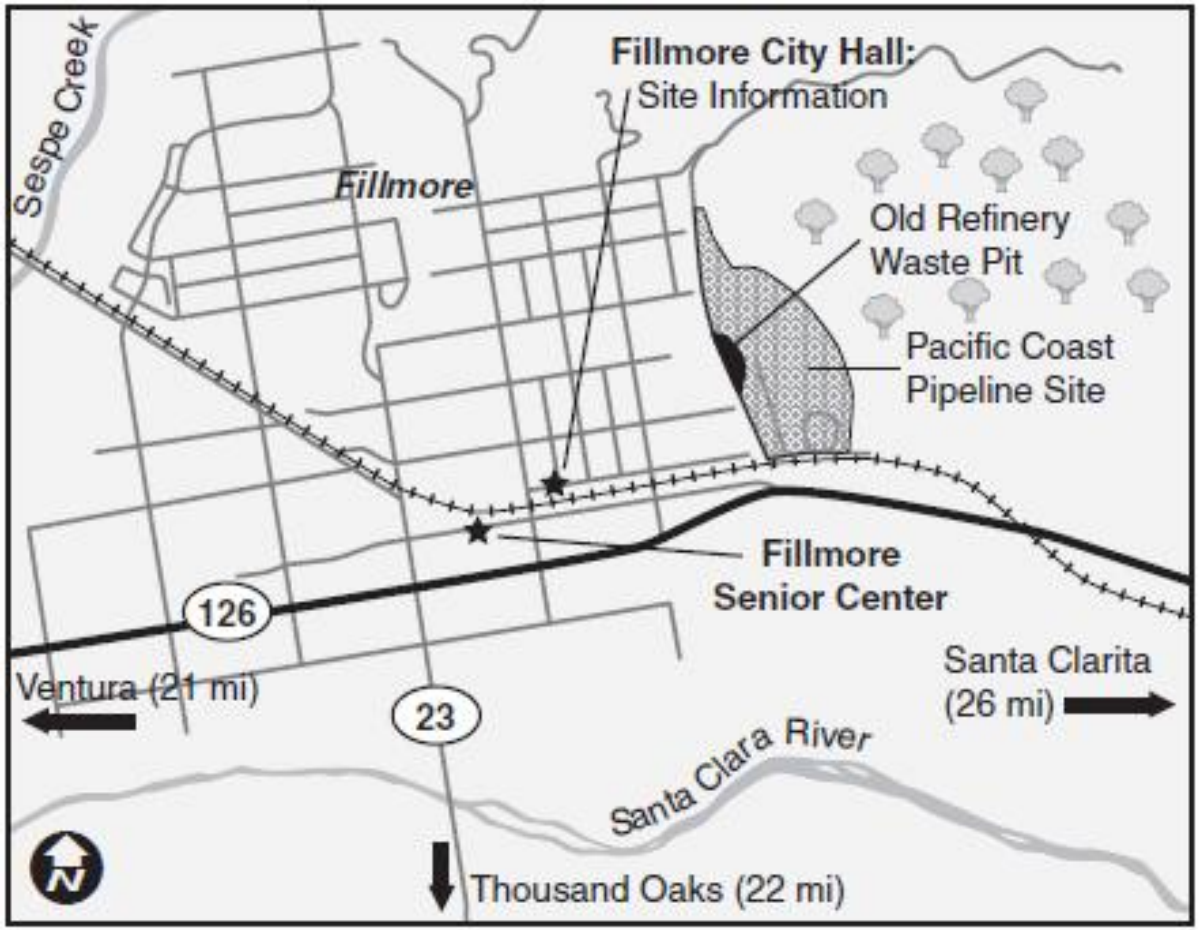
(starting at 60-80 feet)

Benzene & Toluene

Volatile Organic Compounds (VOCs) that are naturally occurring chemicals in crude oil, known to cause cancer

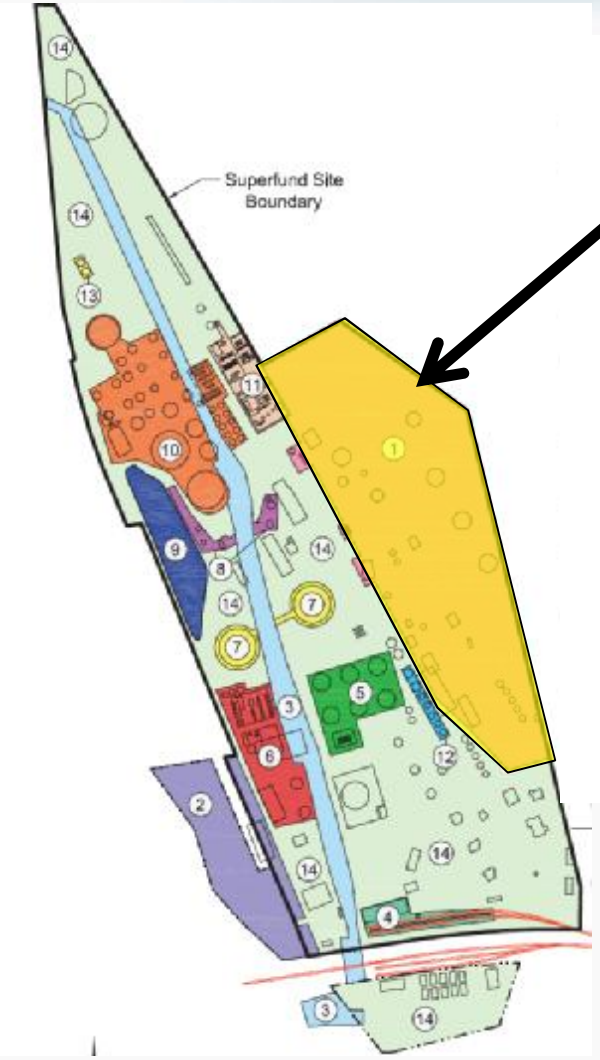
Where Fillmore's Drinking Water Comes From

Water comes from northwest of the Site, near Sespe Creek, it does not come from the Site.



What is the current risk to the plants & animals?

Results of the Ecological Risk Assessment



Area of Concern 1, is the area studied

- 19 sample locations **have lead above** ecological screening levels *(screening levels for surface soil are 26 mg/kg & subsurface 56mg/kg)*

- In order to protect plant community, soil invertebrates, birds, mammals, these areas will need to be cleaned up

How EPA makes its Decision

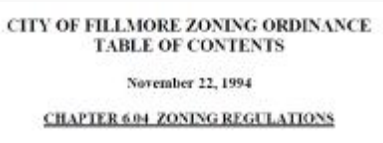
The 9 criteria analysis

Cleanup Goals

1. Restore groundwater to drinking water standards – 1 part per billion (µg/L) benzene

2. Prevent exposure (ingestion, dermal, inhalation) for on-site workers and recreational users to contaminated soil

3. Reduce exposure for plants and animals


CITY OF FILLMORE ZONING ORDINANCE
TABLE OF CONTENTS

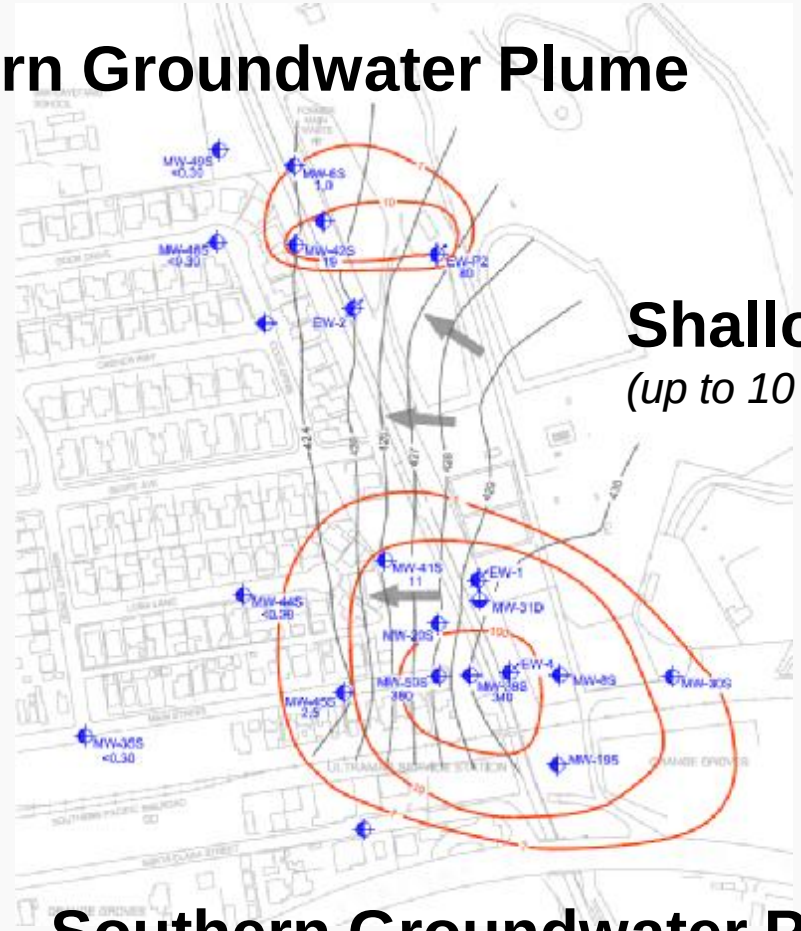
November 22, 1994

CHAPTER 6.04 ZONING REGULATIONS

4. Restrict future use of the site

Site Divided into Three Cleanup Areas

Northern Groundwater Plume



Shallow Soil
(up to 10 feet)

Southern Groundwater Plume

Soil Alternatives

5 alternatives considered

Common Elements of all Alternatives

1. Removal of 20,000 cubic yards
   *about the volume to fill just over 6 Olympic size swimming pools

2. Institutional controls, i.e., restrictive covenant and vapor barriers below buildings

Alternatives 3, 4 and 5

include on-site disposal in former waste pit

The Soil Alternatives

Alternative **1**	No Action
Alternative **2**	Excavation, Off-Site Disposal
EPAs Preferred Alternative Alternative **3**	Excavation, On-Site Disposal & Cap
Alternative **4** Screened Out	Excavation & Composting
Alternative **5a**	Excavation, Solidification with Cement
Alternative **5b** Screened Out	Excavation, Solidification with Phosphate

The Soil Alternatives

Alternative 1 — No Action

EPA is required to consider the no action alternative. Under this alternative no soil would be cleaned up.

Alternative 2 — Excavation, Off-Site Disposal

Removing 20,000 cubic yards of contaminated soil & trucking it to an off-site licensed facility. Institutional controls will include zoning restrictions and a restrictive covenant.

estimated time-frame
10 weeks

present value cost
3.37 million

The Soil Alternatives

EPAs Preferred Alternative

Alternative 3 Excavation, On-Site Disposal & Cap

Removing 20,000 cubic yards of contaminated soil and disposing of it in the on-site pit that used to contain refinery wastes. To protect groundwater, the pit would be capped with a synthetic material in order to prevent rainwater from percolating down & leaching contaminants.

estimated time-frame
13 weeks

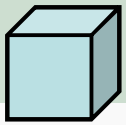
present value cost
1.59 million

The Soil Alternatives

Alternative **4** Excavation & Composting

Screened Out

5a Excavation, Solidification with Cement



Removing 20,000 cubic yards of contaminated soil & treating contaminated soil on-site by solidifying & stabilizing contamination with Portland Cement. The consolidated product would then be placed in the on-site pit. Cement would stabilize the lead & PAHs.

estimated time-frame
14 weeks

present value cost
1.66 million

Screened Out

5b ...with Phosphate Additive

Comparing Alternatives

The Soil Alternatives

Off-site disposal most expensive, not more protective — Alternative 2

Composting treats PAHS, not lead — Alternative 4

Solidification with cement stabilizes both lead and PAHs — Alternative 5a

Solidification with phosphate stabilizes lead, not PAHs — Alternative 5b

Cement has high carbon footprint — Alternative 5a

On-site disposal & capping requires least handling of contaminated soil
Cap will prevent leaching of lead and PAHs (they already have very low mobility) — Alternative 3

Treatment alternatives (4, 5a, & 5b) do not reduce risk more than non-treatment alternatives (2 &3)

Why the Preferred Alternative?

The Soil Alternatives

EPAs Preferred Alternative

Alternative 3 Excavation, On-Site Disposal & Cap

1. Less handling of contaminated soil
2. Lead and PAHs relatively immobile
3. Additional treatments minimally reduce risk
4. Waste consolidation best for future site development

The Groundwater Alternatives

Alternative **1** No Action

EPAs Preferred Alternative for Northern Plume

Alternative **2** Monitored Natural Attenuation (MNA)

Alternative **3** Air Sparging + MNA

Alternative **4** Groundwater Recirculation (bioremediation) + MNA

EPAs Preferred Alternative for Southern Plume

Alternative **5** Multiple technologies (Alternatives 2, 3 and 4)

The Groundwater Alternatives

Alternative 1 — No Action

EPA is required to consider the no action alternative.
Under this alternative, **the 1992 cleanup decision would remain in place**, no additional cleanup actions would be carried out, & current monitoring would continue.

EPAs Preferred Alternative for **Northern** Plume

Alternative 2 — Monitored Natural Attenuation (MNA)

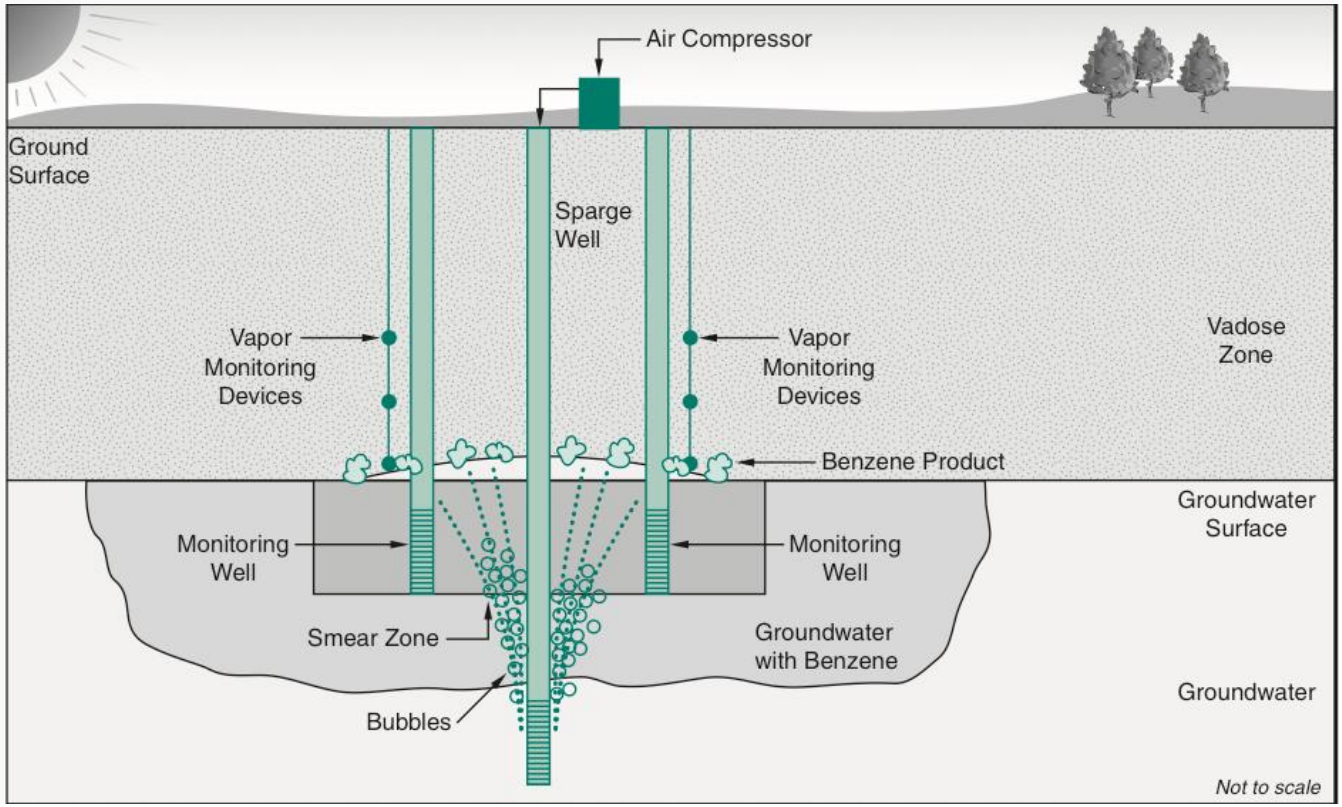
Relies on naturally occurring biological, physical, and/or chemical processes that act without human intervention to reduce the toxicity, mobility, volume and/or concentration of contaminants. Current groundwater monitoring would continue.

The Groundwater Alternatives

Alternative 3

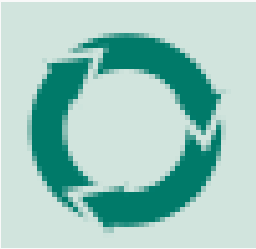
Air Sparging + MNA

Involves injecting air through wells into the contaminated groundwater. This air speeds up the breakdown of benzene. Because this treatment might volatilize benzene in the deep soil just above the groundwater, vapor monitoring wells would be installed to prevent benzene from reaching the surface.



The Groundwater Alternatives

Alternative 4 Groundwater Recirculation (bioremediation) + MNA



- Wells pull deeper groundwater from below the benzene plume up into the benzene plume
- Deeper water has more sulfate than the water that has been exposed to benzene
- The sulfate-consuming bacteria will thrive & break down the benzene
- This water would be released into the benzene plume at a very slow rate
- Surrounding monitor wells would detect any change in the benzene plume

The Groundwater Alternatives

EPAs Preferred Alternative for Southern Plume

Alternative 5 Multiple technologies (Alternatives 2, 3 and 4)

First to be implemented would be Air Sparging to target the floating benzene, followed by Groundwater Recirculation for the dissolved benzene, & MNA to eliminate the remaining benzene in groundwater.

The Groundwater Alternatives

	Northern Plume		Southern Plume	
Alternative 2 Monitored Natural Attenuation (MNA)	50 yrs	$598,000	100 yrs	$590,000
Alternative 3 Air Sparging + MNA	25 yrs (15 AS + 10 MNA)	2.7 Million	30 yrs (20 AS + 10 MNA)	5.68 Million
Alternative 4 Groundwater Recirculation (bioremediation) + MNA	40 yrs (30 GR + 10 MNA)	2.7 Million	60 yrs (50 GR + 10 MNA)	4.67 Million
Alternative 5 Multiple Technologies (Alternatives 2, 3 and 4)	20 yrs (4 AS + 6 GR + 10 MNA)	2.94 Million	25 yrs (6 AS + 9 GR + 10 MNA)	6.44 Million

Why the Preferred Alternatives?

The Groundwater Alternatives

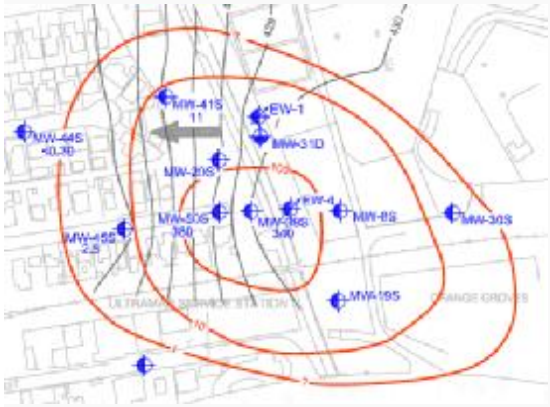
The Northern Plume

Alternative **2** Monitored Natural Attenuation (MNA)

- Benzene concentrations steadily dropping
  Evidence of Natural Attenuation Working
- No LNAPL (Light Non Aqueous Phase Liquid)
  All benzene in the is plume is dissolved in Groundwater
- Least expensive

The Southern Plume

Alternative **5** Multiple Technologies (Alternatives 2, 3 and 4)



- Fastest option for reaching MCL of 1 µg/L benzene
  (25 yrs v. 30, 60, and 100)
- Best way to capture LNAPL in vadose zone

Soil Alternatives Comparison

Table 4: Soil Alternatives Comparison

EPA's Preferred Alternative

Evaluation Criteria	Alternative S-1 No Action	Alternative S-2 Off-Site Disposal	Alternative S-3 On-Site Disposal and Cap	Alternative S-5a On-Site Solidification
Overall Protectiveness	Not protective	High	High	High
Compliance w/State & Federal requirements	Yes	Yes	Yes	Yes
Long-Term Effectiveness	NA	High	High	High
Implementability	NA	High	High	Med
Short-Term Effectiveness	NA	Low	High	Med
Reduction of Toxicity, Mobility or Volume by Treatment	NA	No	No	Yes
Estimated Total Cost (NPV*)	NA	$3.4 M	$1.6 M	$1.7 M
State Agency Acceptance	Yes			
Community Acceptance	Community acceptance of the preferred alternative will be evaluated after the public comment period.			

*Net present value

Northern Groundwater Alternatives Comparison

Table 3: Northern Plume Groundwater Alternatives Comparison

EPA's Preferred Alternative

Evaluation Criteria	Alternative GW-1 1992 ROD	Alternative GWN-2 MNA	Alternative GWN-3 Air Sparging	Alternative GWN-4 Sulfate	Alternative GWN-5 Multiple Technologies
Overall Protectiveness	Not protective	High	High	High	High
Compliance w/ State & Federal requirements	Yes	Yes	Yes	Yes	Yes
Long-Term Effectiveness	NA	High	High	High	High
Implementability	NA	High	High	High	High
Short-Term Effectiveness	NA	High	Med	Med	Med
Reduction of Toxicity, Mobility or Volume by Treatment	NA	No	Yes	Yes	Yes
Estimated Total Cost (NPV*)	NA	$0.6 M	$2.7 M	$2.7 M	$2.9 M
State Agency Acceptance	Yes				
Community Acceptance	Community acceptance of the preferred alternative will be evaluated after the public comment period.				

Southern Groundwater Alternatives Comparison

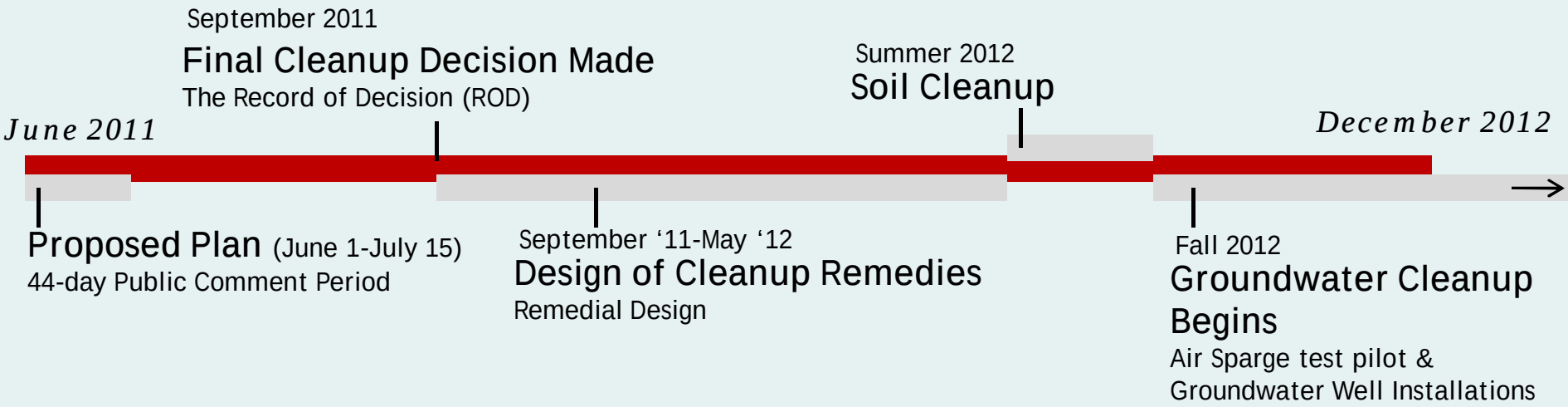
EPA's Preferred Alternative

Table 2: Southern Plume Groundwater Alternatives Comparison

Evaluation Criteria	Alternative GW-1 1992 ROD	Alternative GWS-2 MNA	Alternative GWS-3 Air Sparging	Alternative GWS-4 Sulfate	Alternative GWS-5 Multiple Technologies
Overall Protectiveness	Not protective	High	High	High	High
Compliance w/ State & Federal requirements	No	Yes	Yes	Yes	Yes
Long-Term Effectiveness	NA	High	High	High	High
Implementability	NA	High	High	High	High
Short-Term Effectiveness	NA	Med	Med	Med	High
Reduction of Toxicity, Mobility or Volume by Treatment	NA	No	Yes	Yes	Yes
Estimated Total Cost (NPV*)	NA	$0.6 M	$5.7 M	$4.7 M	$6.4 M
State Agency Acceptance	Yes				
Community Acceptance	Community acceptance of the preferred alternative will be evaluated after the public comment period.				

Cleanup Schedule

Cleanup Schedule



Repository & Contact Information

Information Repositories

The Administrative Record file, which contains documents EPA used to develop this Proposed Plan, is available at:

Fillmore City Hall, 2nd Floor
250 Central Avenue
Fillmore, CA 93015
(805) 524-3701

EPA Superfund Records Center
95 Hawthorne Street
San Francisco, CA 94105
(415) 820-4700

Documents and information are also available at EPA's website: **www.epa.gov/region09/pacificcoastpipeline**

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