



Former
Fort Ord,
Monterey
County,
California

Groundwater Cleanup Update

Community Involvement Mobile Workshop, February 3, 2018

Technical Review Committee Meeting, February 6, 2018

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Fort Ord Groundwater: Definitions

ACL – Aquifer Cleanup Level, the cleanup goal for a COC in groundwater.

Aquifer – a body of rock or soil that is sufficiently permeable for groundwater to flow and serve as a water source.

Aquitard – a body of less permeable rock or soil between aquifers that retards the flow of water between the aquifers.

COC – chemical of concern.

CT – carbon tetrachloride, primary COC at OUCTP.

Groundwater – all water under the ground, not water on the surface (rivers, lakes, etc.)

OU – Operable Unit, discrete portion of remedial response that manages migration, or eliminates or mitigates a pathway of exposure.

PCE – tetrachloroethene, primary COC at Sites 2/12.

Plume – area of aquifer or unsaturated zone in which COCs are present at concentrations greater than cleanup levels.

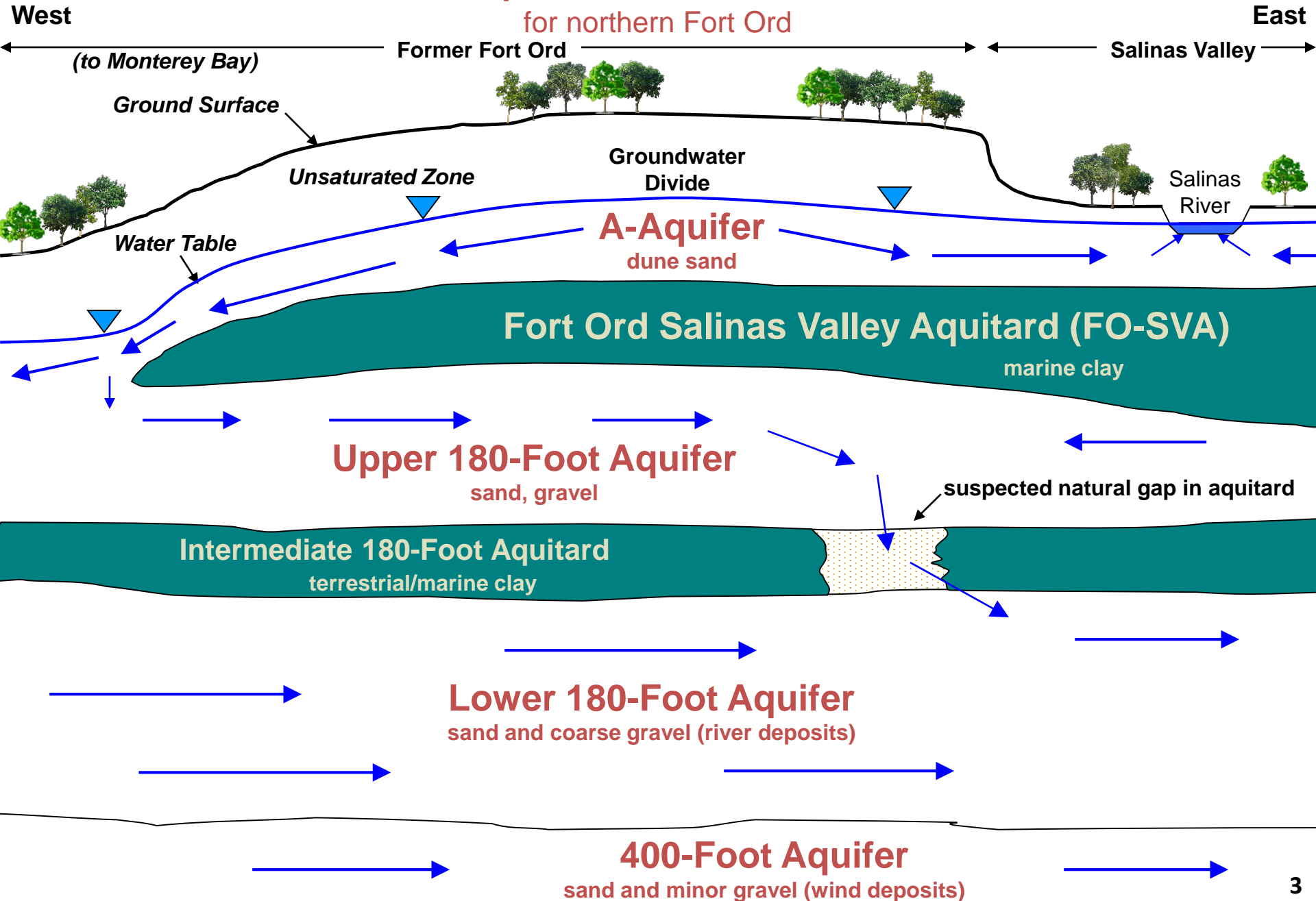
SGCL – Soil Gas Cleanup Level, the cleanup goal for a COC in soil gas.

TCE – trichloroethene, primary COC at OU1 and OU2.

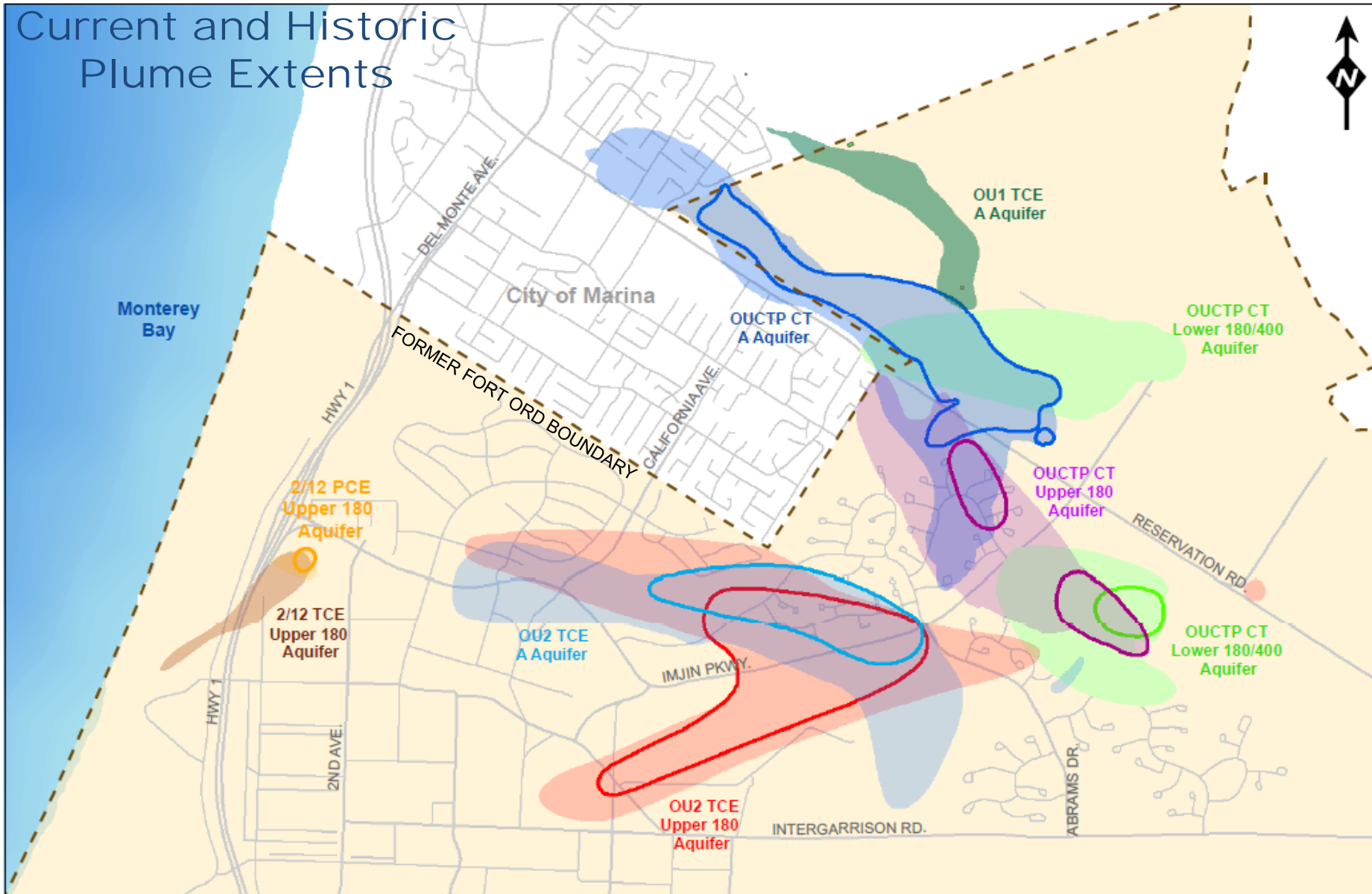
Unsaturated Zone – the portion of the subsurface above the water table.

Water Table – depth below ground surface at which groundwater is found (at the top of the saturated zone). ▼

Conceptual Site Model



Current and Historic Plume Extents



Trichloroethene (TCE) = $5\mu\text{g/L}$ (micrograms per liter)

Carbon Tetrachloride (CT) = $0.5\mu\text{g/L}$

Tetrachloroethene (PCE) - $5\mu\text{g/L}$

At OU1 there were no detections of TCE above its ACL since September 2014

0 1 Miles



September 2017
Plume Extent
"Current"



Maximum Historical
Plume Extent
"Before"



Former Fort Ord

Fort Ord Wells January 2018



Monterey Bay

1

Imjin Road

Site 12 Wells

Site 2 Wells

2nd Ave.

Lightfighter Road

Marina

OU1 Wells

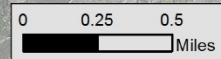
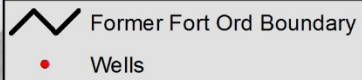
Marina Municipal Airport

OUCTP Wells

Reservation Road

OU2 Wells

Inter-Garrison Road



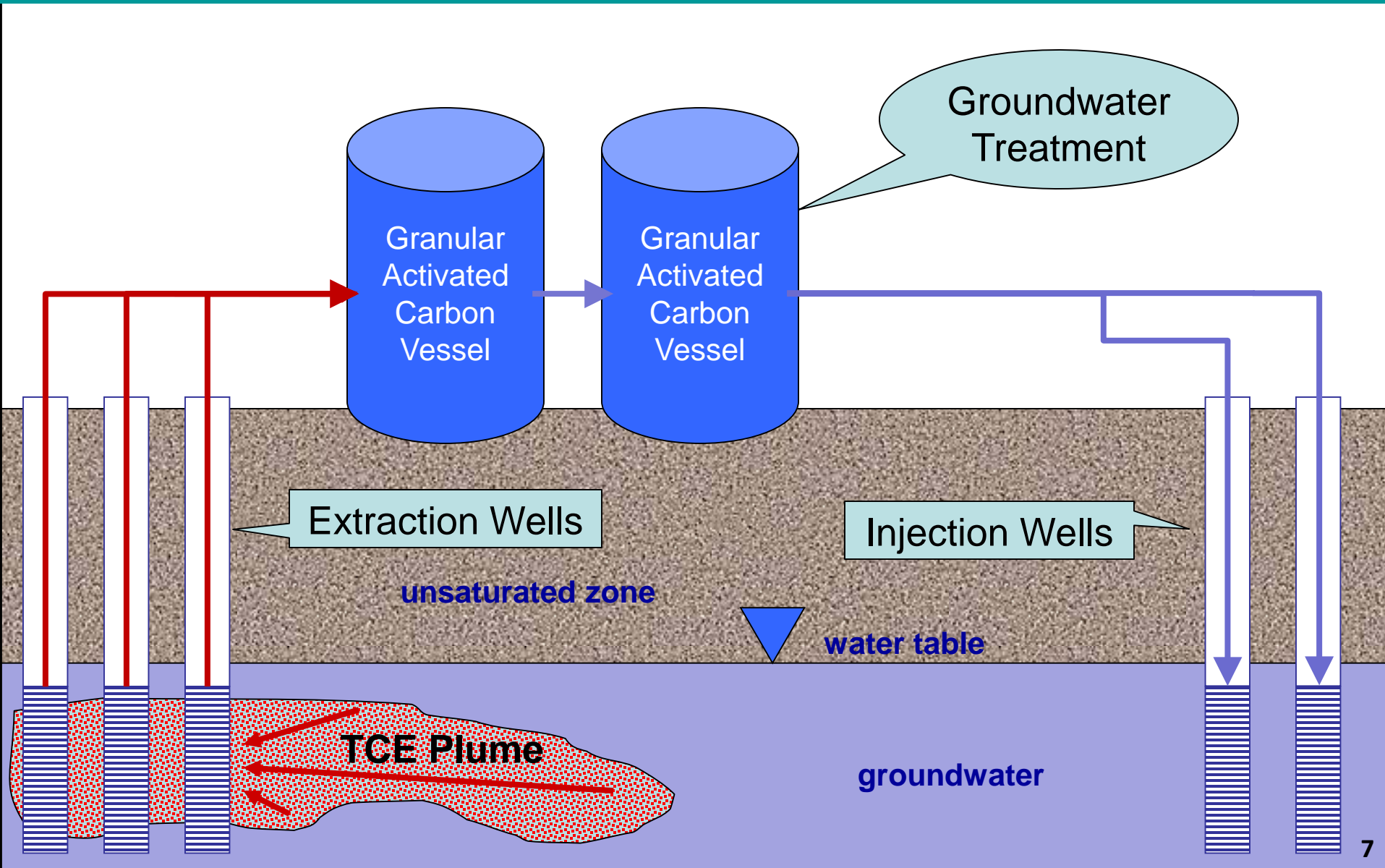
Groundwater Extraction and Treatment System Status

as of December 31, 2017

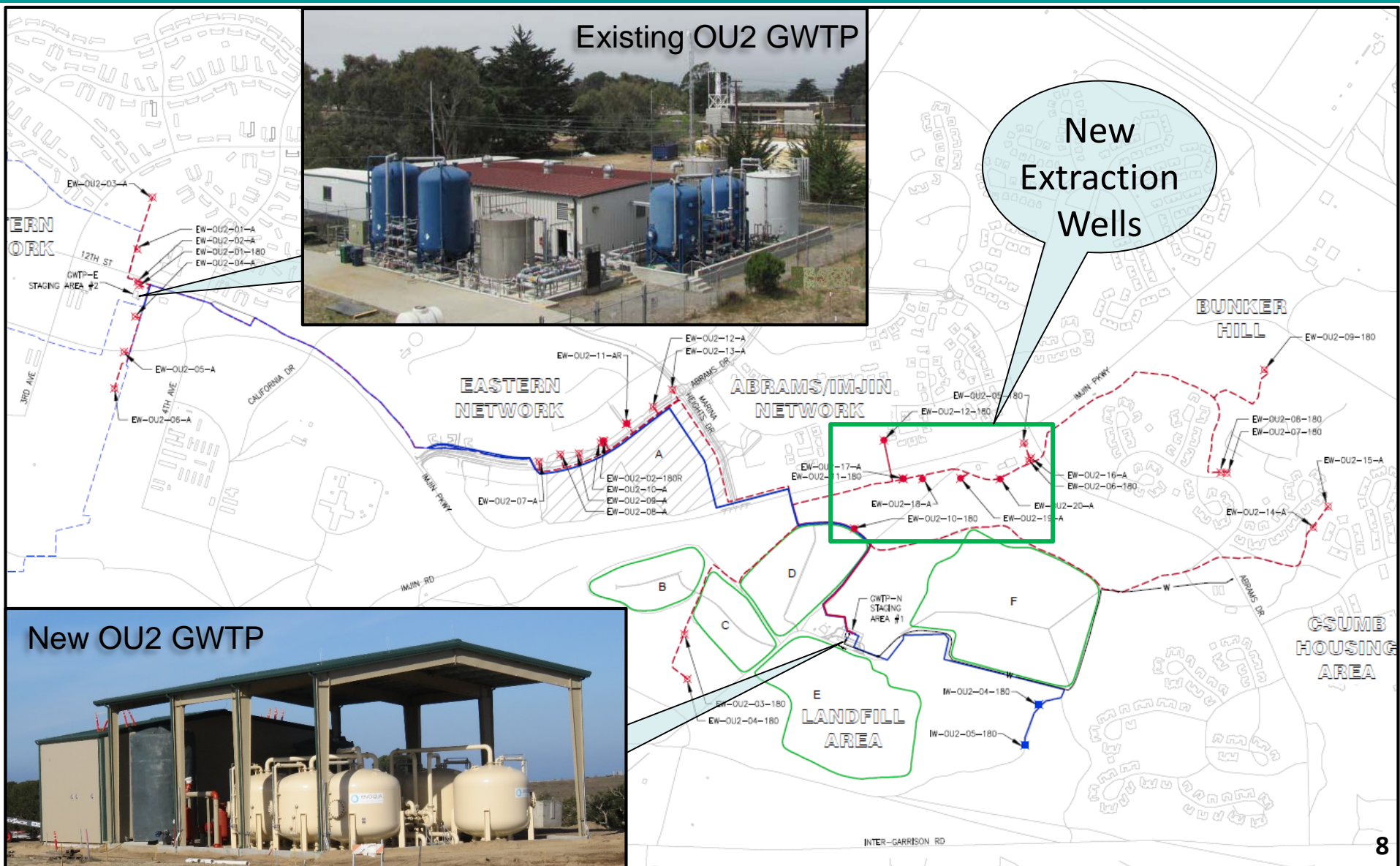
| | OU1* | OU2/OUCTP | Sites 2/12 |
|---------------------------------|---------------|-----------------------------------|------------------------|
| Treatment started | July 1988 | October 1995 | April 1999 |
| Gallons treated | 319.3 million | 7.233 billion | 2.001 billion |
| Pounds of contaminants removed | 31 | 828 | 482 |
| Gallons of contaminants removed | 3 | 67 | 37 |
| Aquifers treated | A-Aquifer | A-Aquifer, Upper 180-Foot Aquifer | Upper 180-Foot Aquifer |

*Site is closed and GWETS was decommissioned.

Groundwater Extraction and Treatment Systems Schematic



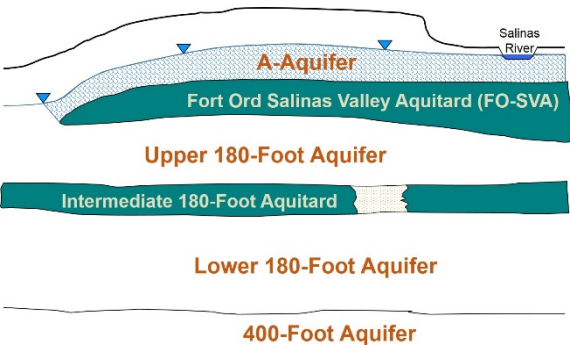
OU2 Groundwater Treatment Plant Relocation and System Expansion



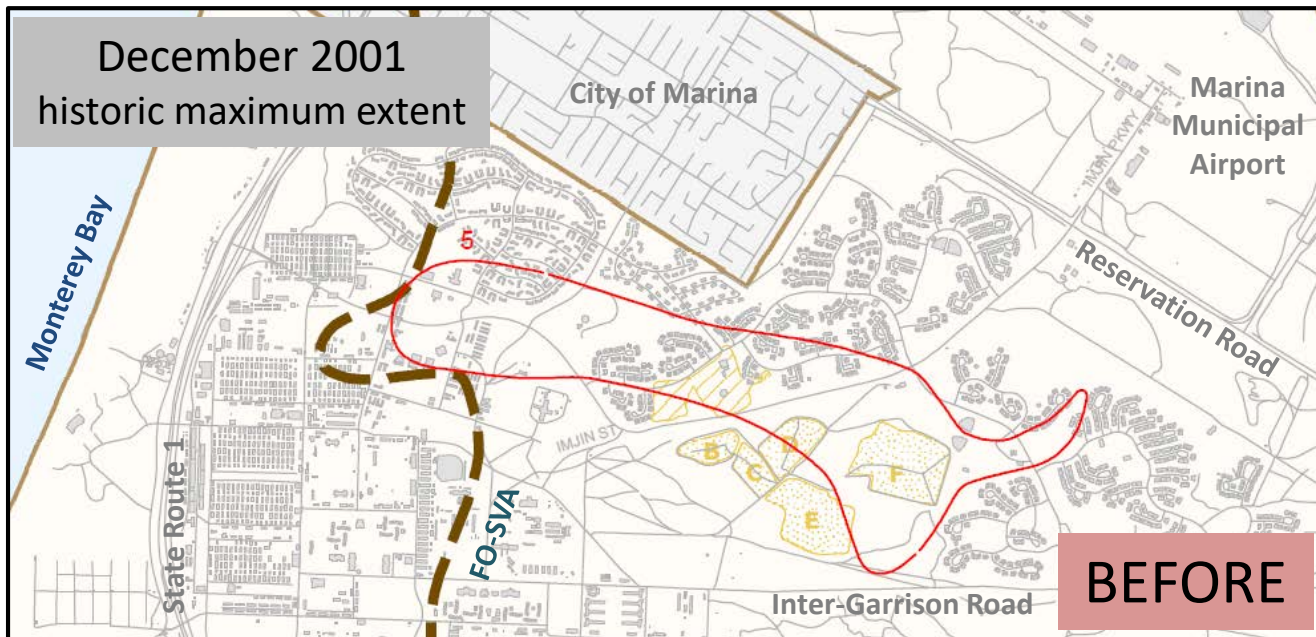
TCE at or above ACL
(5 µg/L)
Operable Unit 2 (OU2)
A-Aquifer



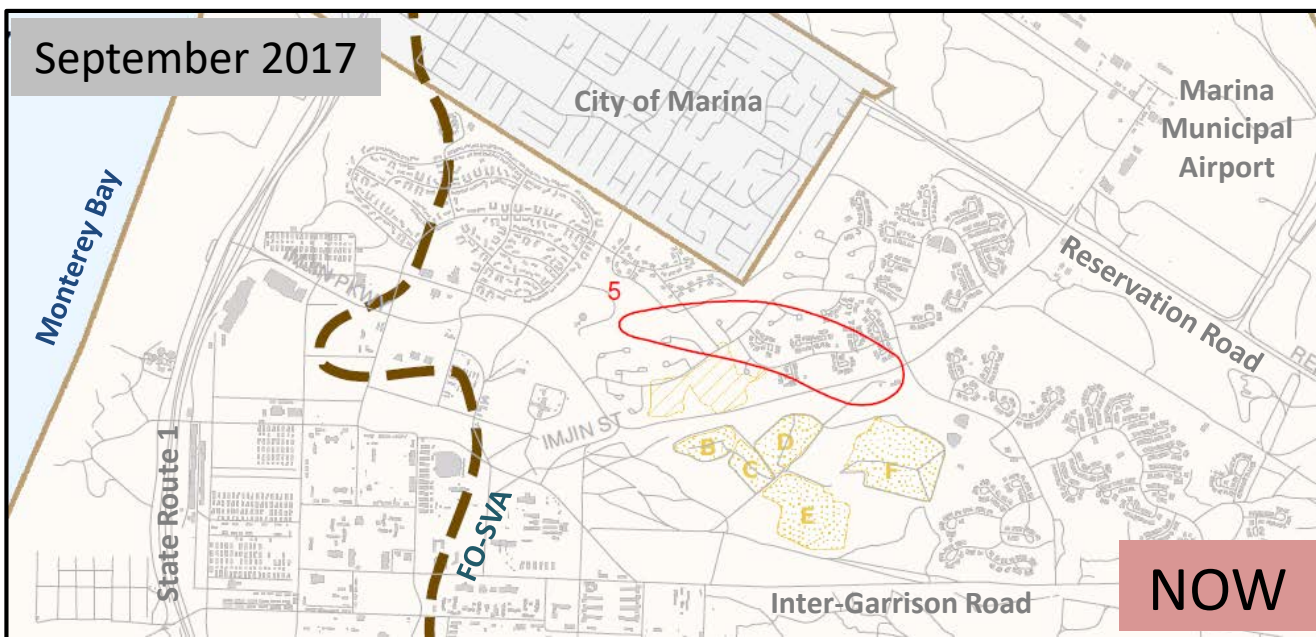
Remedy: Groundwater
Extraction and
Treatment



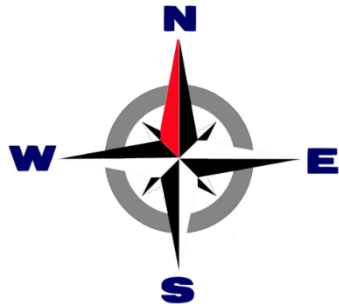
December 2001
historic maximum extent



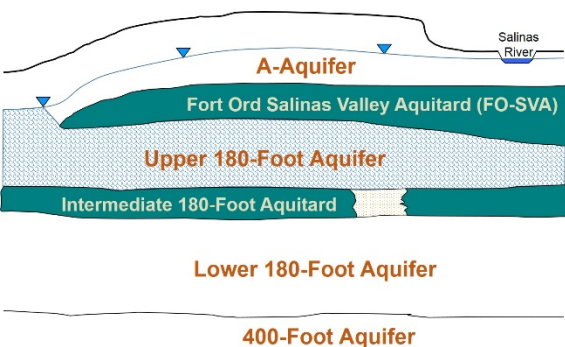
September 2017



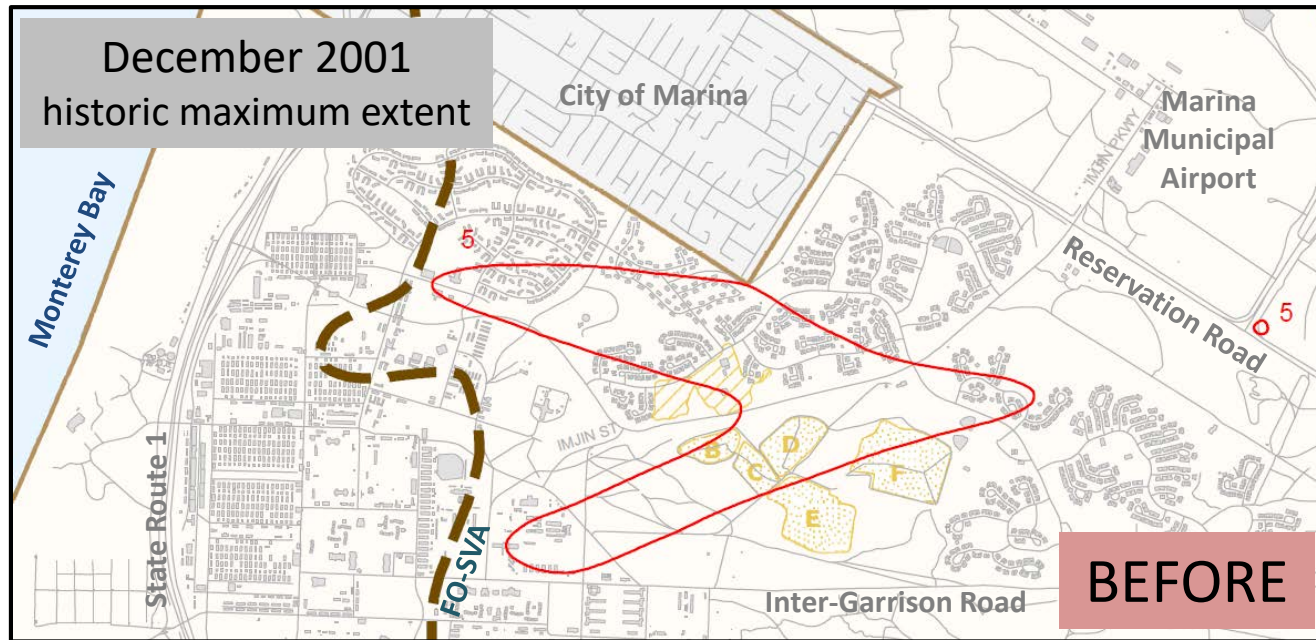
TCE at or above ACL
(5 µg/L)
OU2 Upper 180-Foot
Aquifer



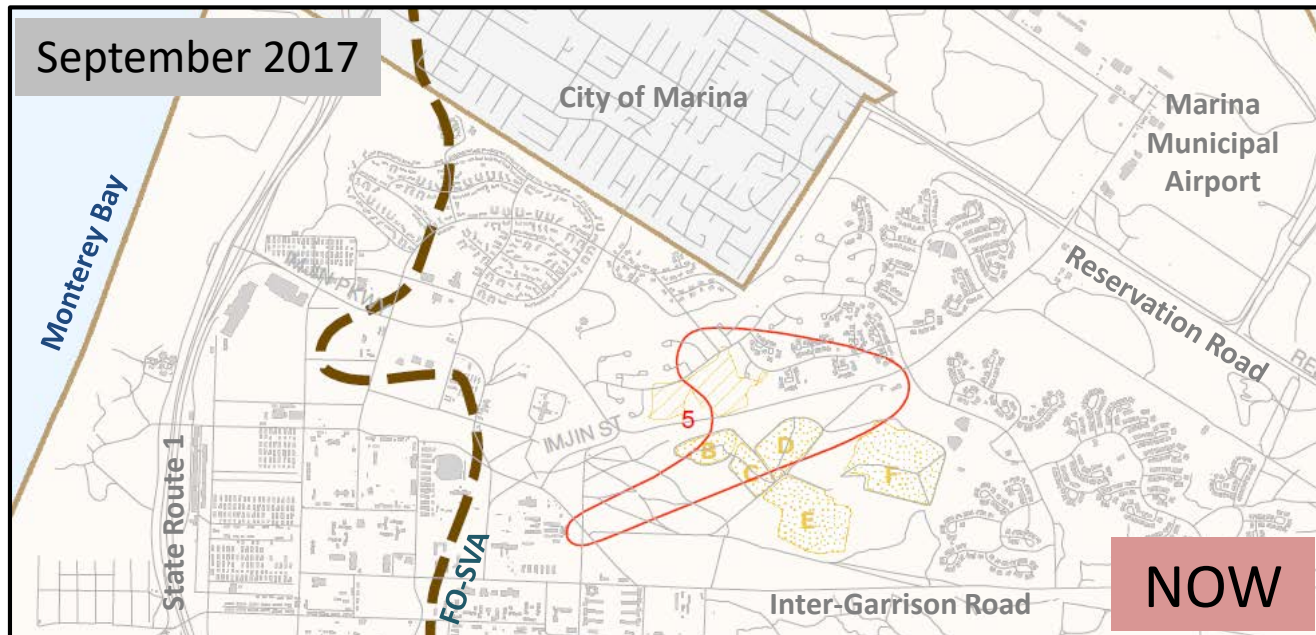
Remedy: Groundwater
Extraction and
Treatment

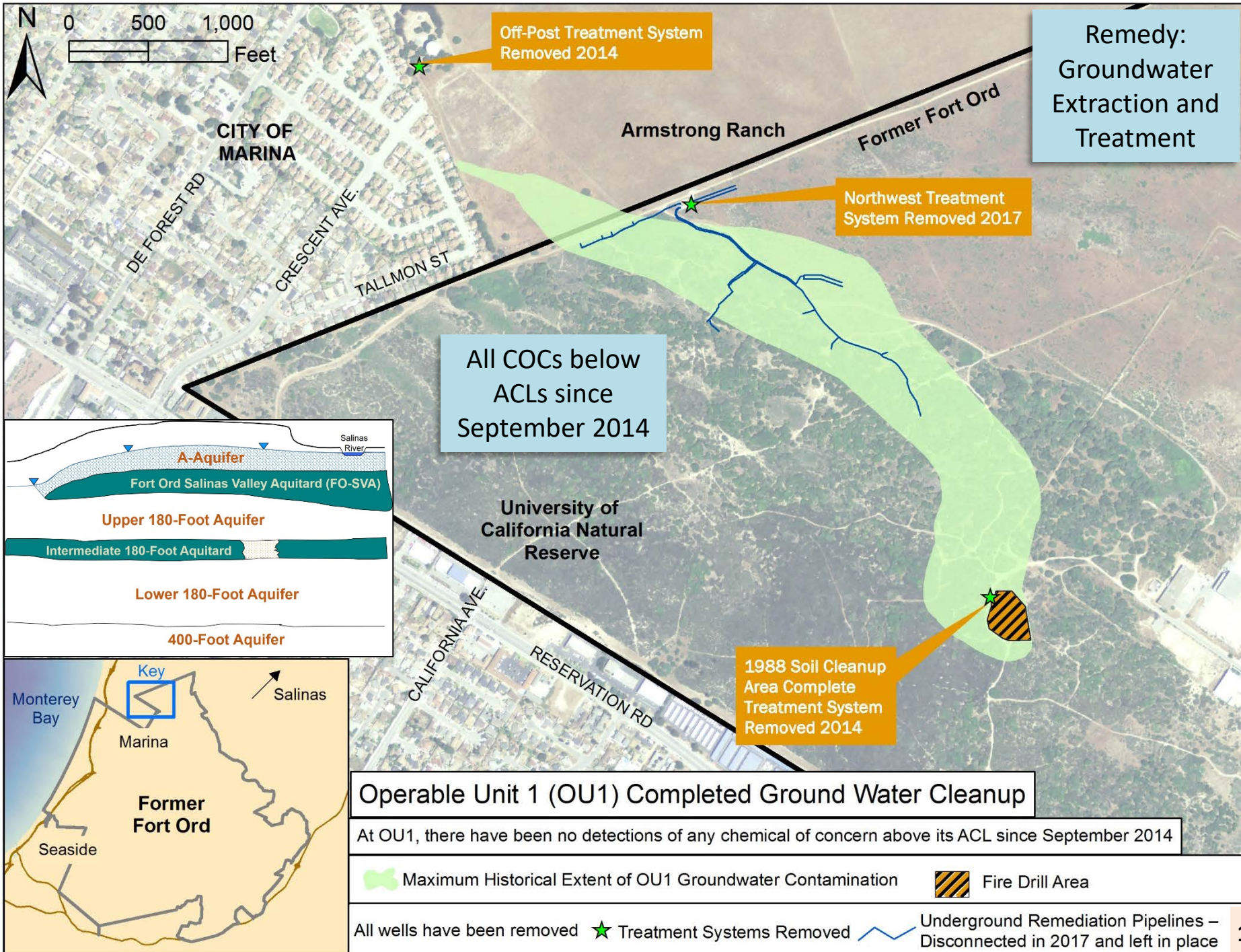


December 2001
historic maximum extent



September 2017

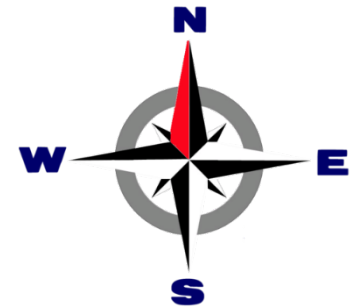




December 2009
historic maximum extent

BEFORE

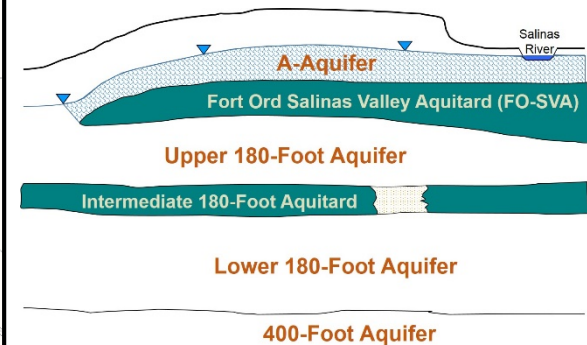
CT at or above ACL
(0.5 $\mu\text{g/L}$)
Operable Unit Carbon
Tetrachloride Plume
(OUCTP)
A-Aquifer



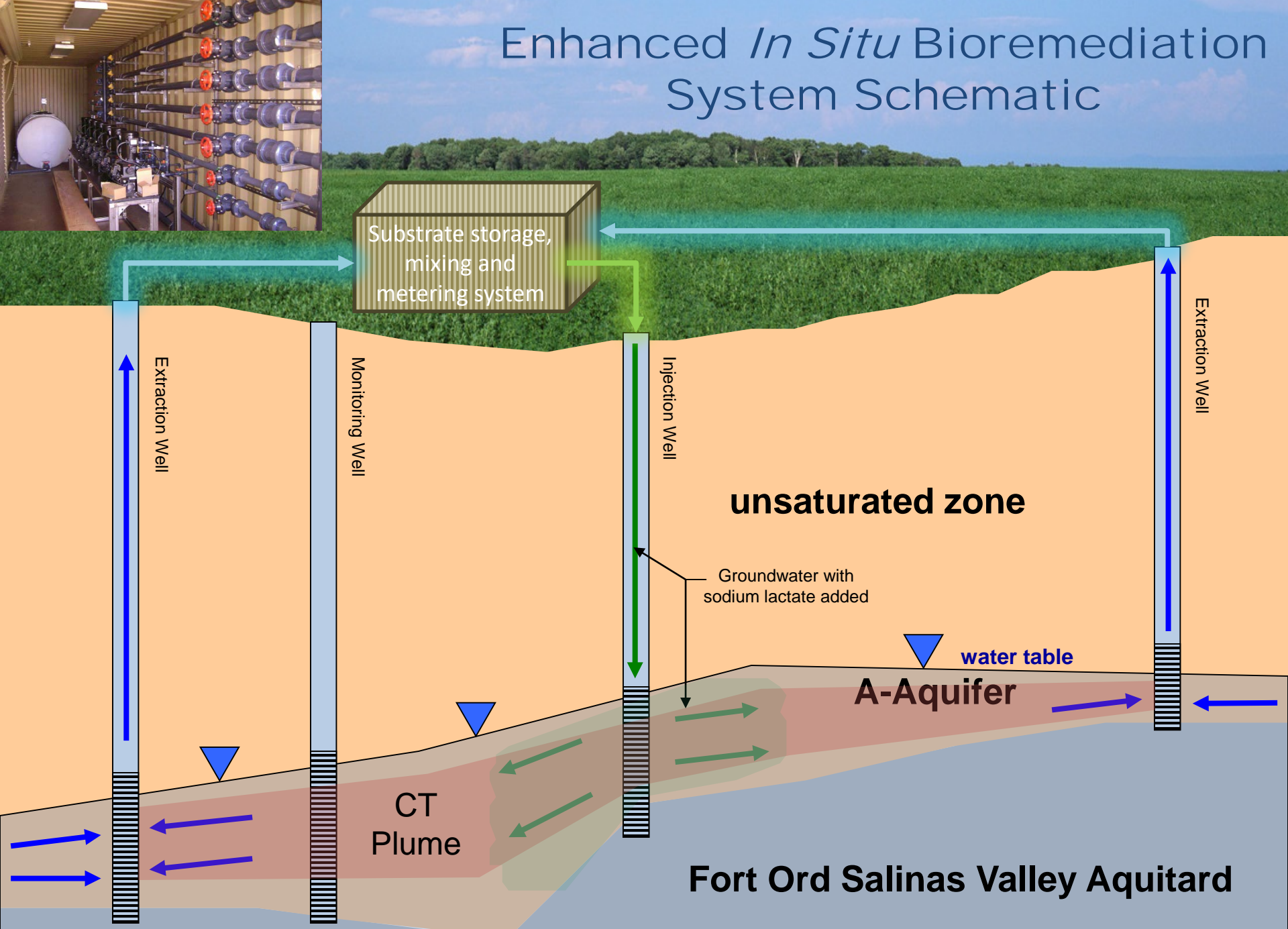
September 2017

NOW

Remedy: Enhanced *In Situ*
Bioremediation (EISB)



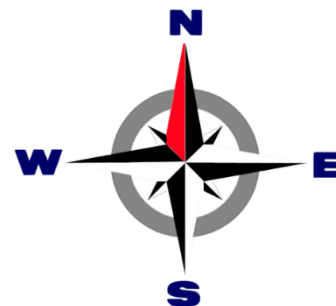
Enhanced *In Situ* Bioremediation System Schematic



June 2007
historic maximum extent

BEFORE

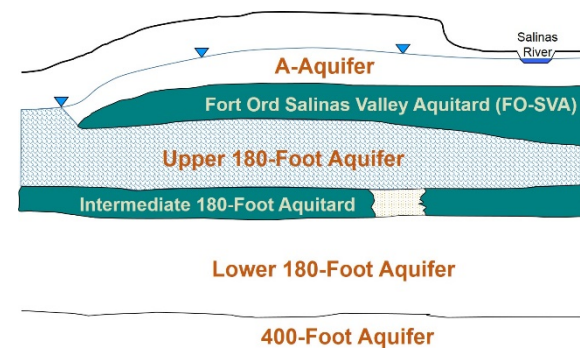
CT at or above ACL
(0.5 $\mu\text{g/L}$)
OUCTP
Upper 180-Foot
Aquifer



September 2017

NOW

Remedy: Groundwater
Extraction and Treatment



December 2001
historic maximum extent



Marina
Municipal
Airport

0.5

City of Marina

RESERVATION RD

BEFORE

0.5

OLD COUNTY ROAD

0 750 1,500
Feet

September 2017

Marina
Municipal
Airport

City of Marina

MAIN PKWY

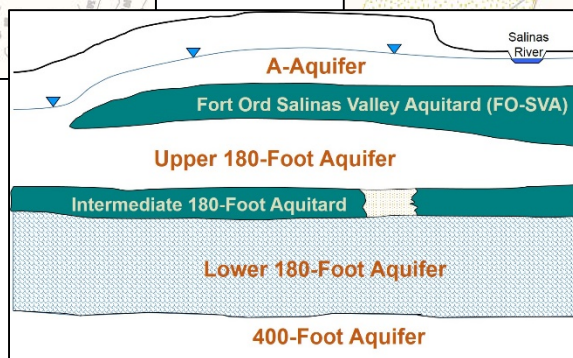
NOW

RESERVATION RD

0.5

MAIN PKWY

CT at or above ACL ($0.5 \mu\text{g/L}$)
OUCTP Lower 180-Foot Aquifer



Remedy: Monitored
Natural Attenuation

historic maximum extent
TCE: December 2000
PCE: March 2011

BEFORE

TCE at or above ACL ($5 \mu\text{g/L}$)
PCE at or above ACL ($5 \mu\text{g/L}$)
Sites 2 and 12
Upper 180-Foot Aquifer
West of the FO-SVA

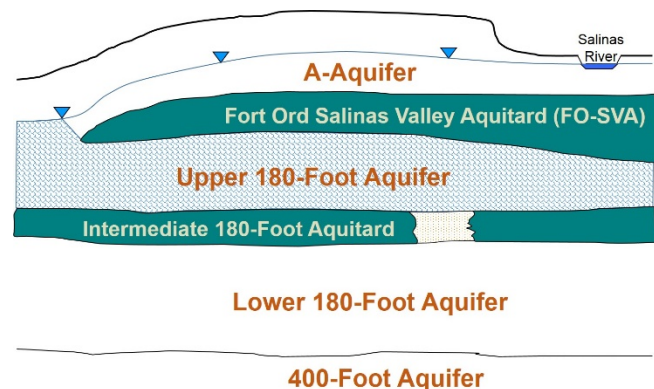


September 2017

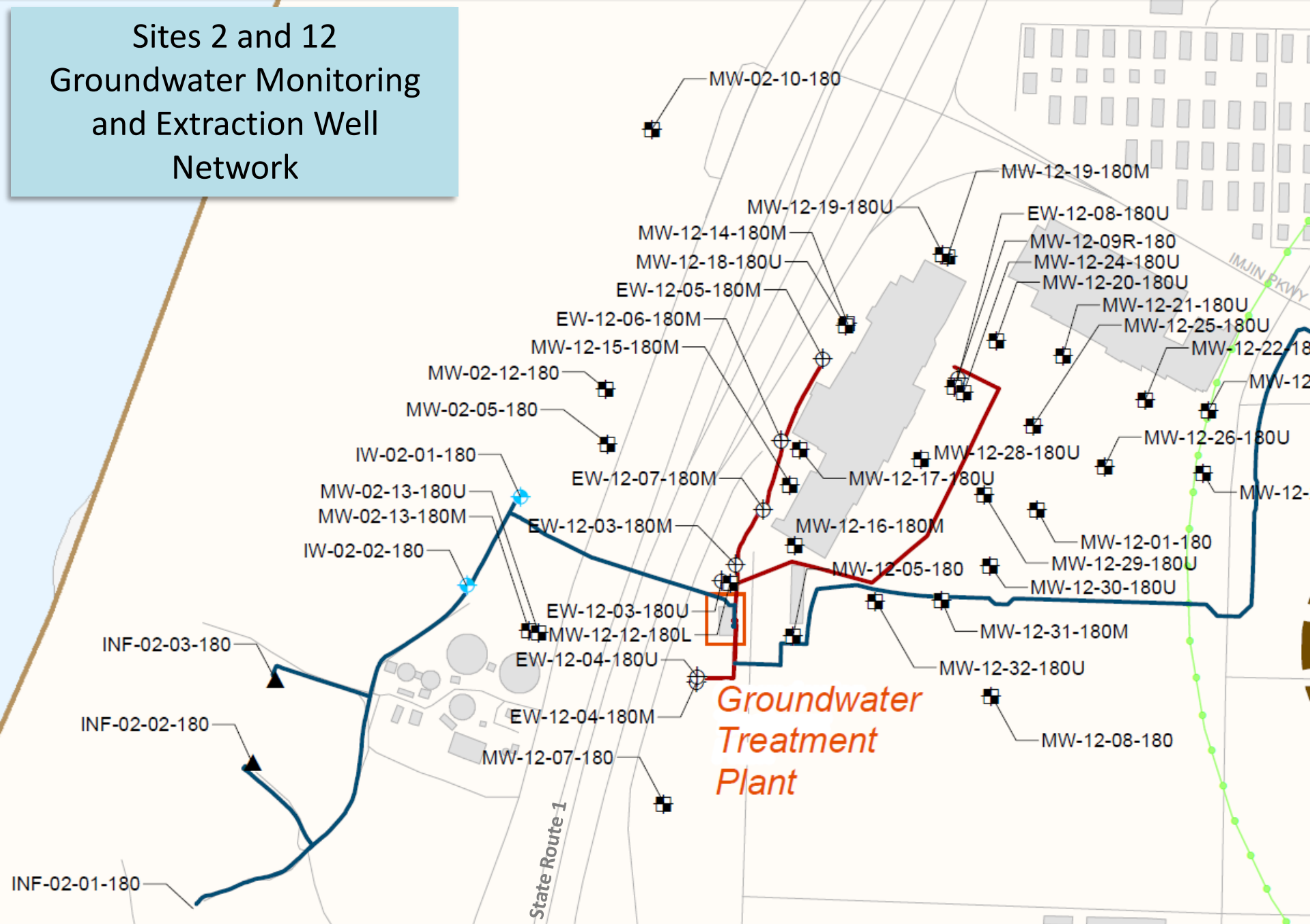
NOW

Remedy: Groundwater
Extraction and Treatment

— Trichloroethene (TCE)
— Tetrachloroethene (PCE)

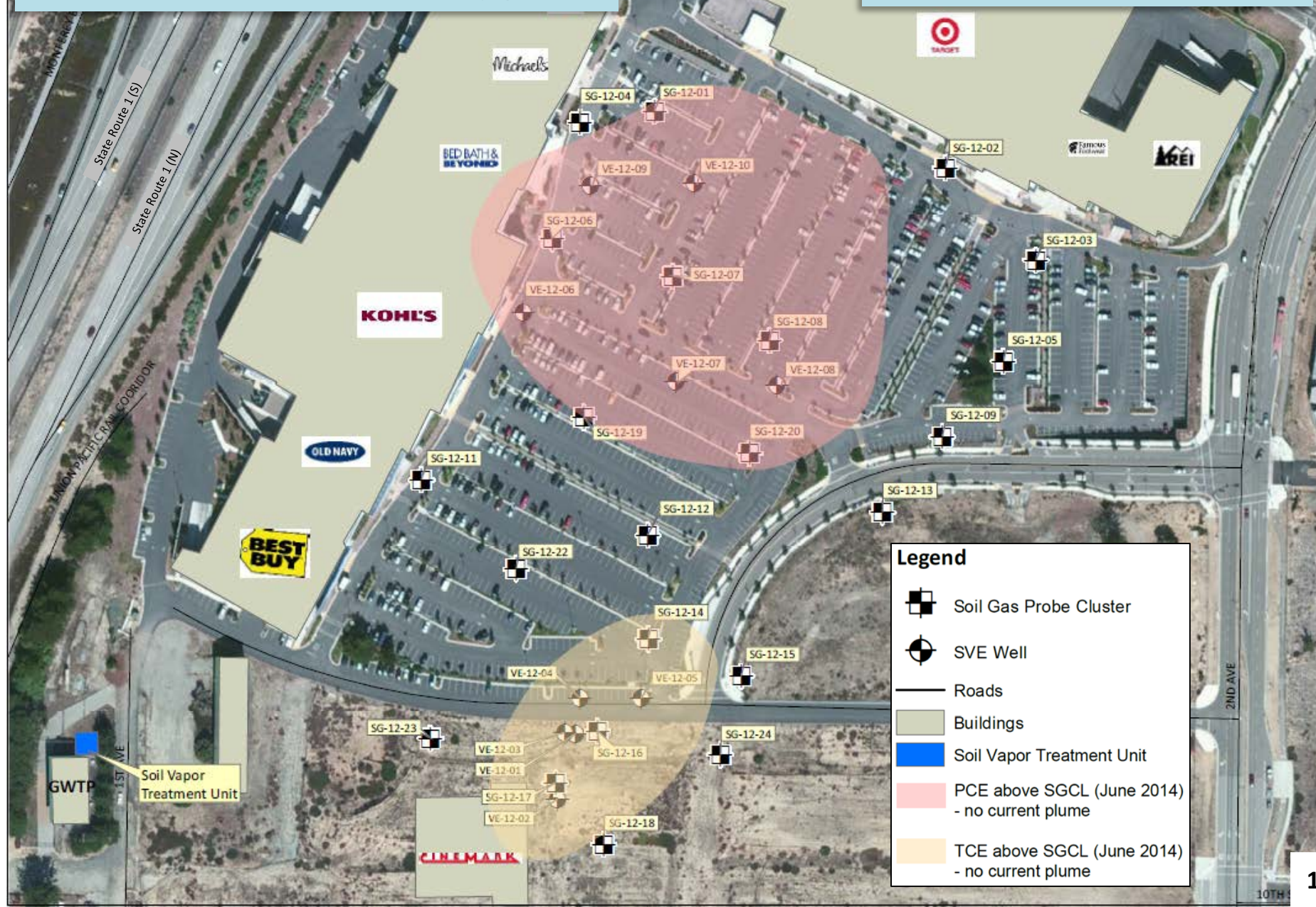


Sites 2 and 12 Groundwater Monitoring and Extraction Well Network



TCE at or above SGCL ($1000 \mu\text{g}/\text{m}^3$)
PCE at or above SGCL ($1800 \mu\text{g}/\text{m}^3$)

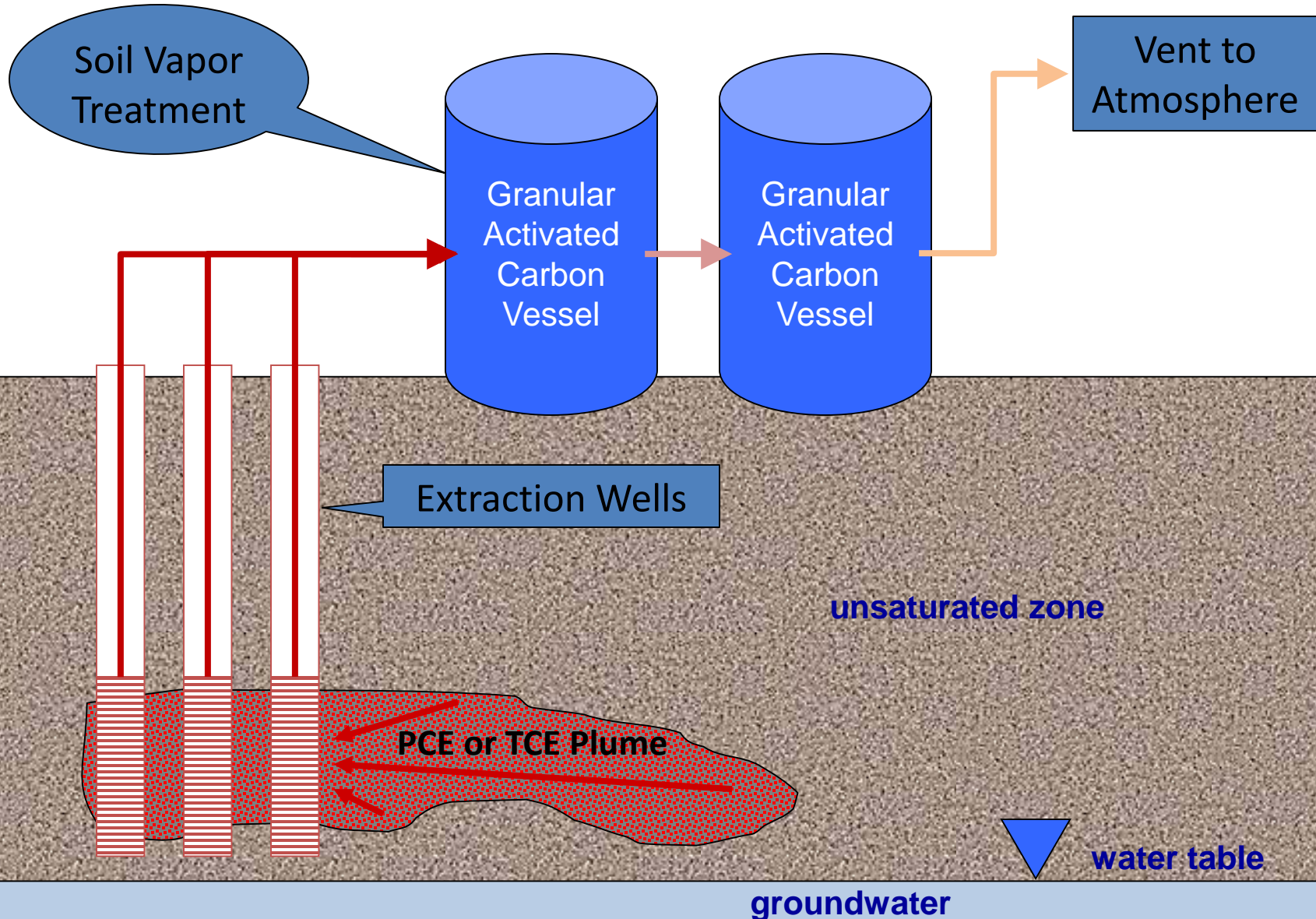
Remedy: Soil Vapor Extraction
and Treatment



Sites 2/12 Soil Gas Probe and SVE Well Network



Soil Vapor Extraction and Treatment System Schematic



For Additional Information

Visit the Army's website at:
www.fortordcleanup.com

Visit the Fort Ord Administrative Record at:
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Ord Military Community
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