



Welcome



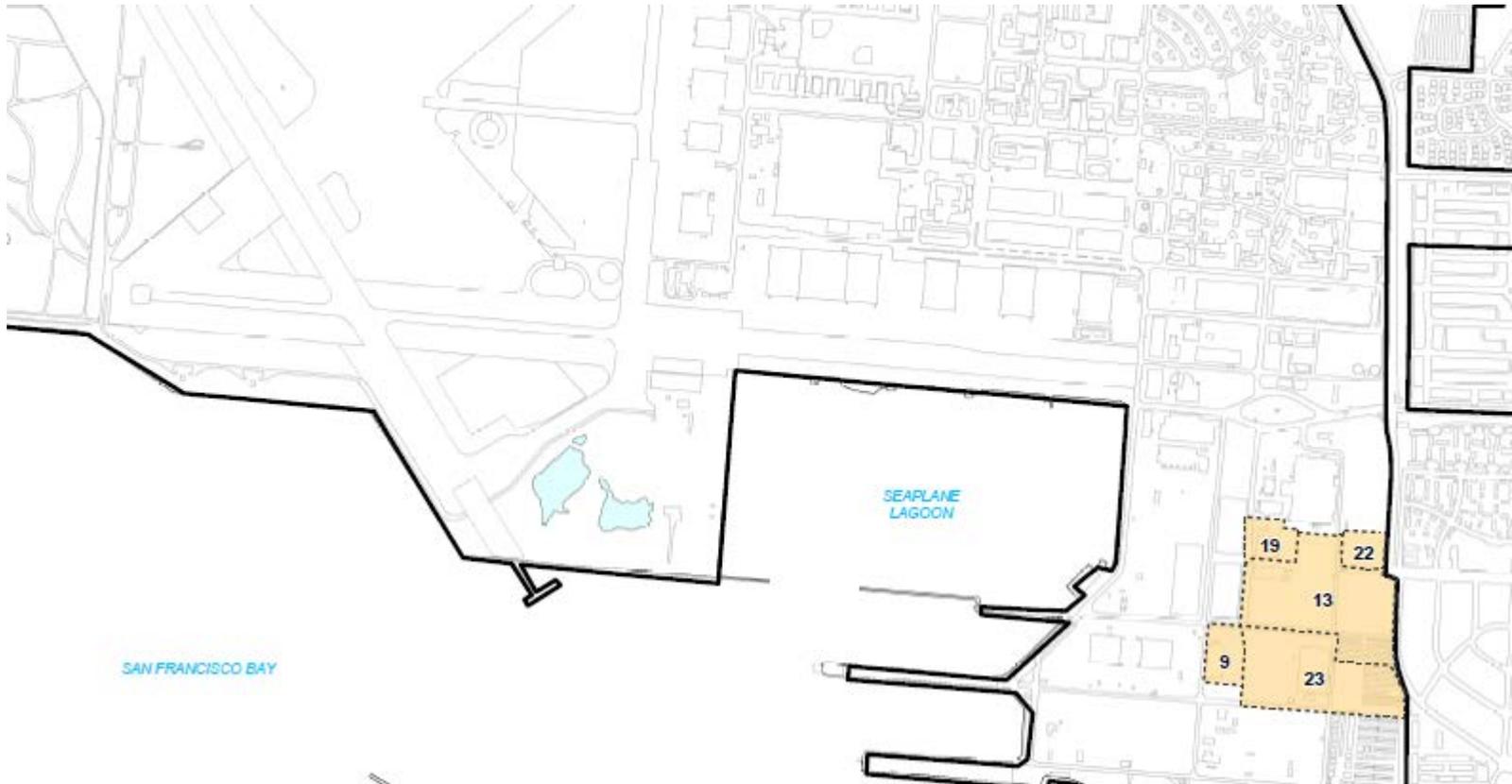
Alameda RAB Meeting

Operable Unit-2A Remedial Design and Remedial Action Work Plan Alameda Point

Navy BRAC PMO West
August 2, 2013



Operable Unit 2A Sites 9, 13, 19, 22, 23





Operable Unit 2A ROD Selected Remedies



IR Site 22 & 23

No action

IR Sites 9 & 19

Institutional controls (ICs) restricting use of groundwater

IR Site 13

In-Situ Bioremediation (ISB), monitored natural attenuation (MNA), and ICs for vapor control and restricting use of groundwater



IR Sites 9, 13, and 19 Risk Summary



- Groundwater does not meet requirements for a drinking water source
- IR Sites 9 & 19 - Risk associated with inhalation of VOCs due to vapor intrusion is within the risk management range for residential use
- IR Site 13 - Potentially unacceptable human health risk from vapor intrusion in groundwater
- Soil - no risk
- No unacceptable risk to ecological receptors



IR Sites 9, 13, and 19 Land Use Control Remedial Design



IR Sites 9, 13, and 19

Ensure municipal and domestic use of groundwater is prohibited until safe for unrestricted use

IR Site 13

Future residential building must install vapor intrusion mitigation system until vapor intrusion criteria is met

	Residential Vapor Intrusion Criteria (ug/L)	Commercial Vapor Intrusion Criteria (ug/L)
Benzene	11.26	37.84
Ethylbenzene	31.46	105.69



Institutional Controls

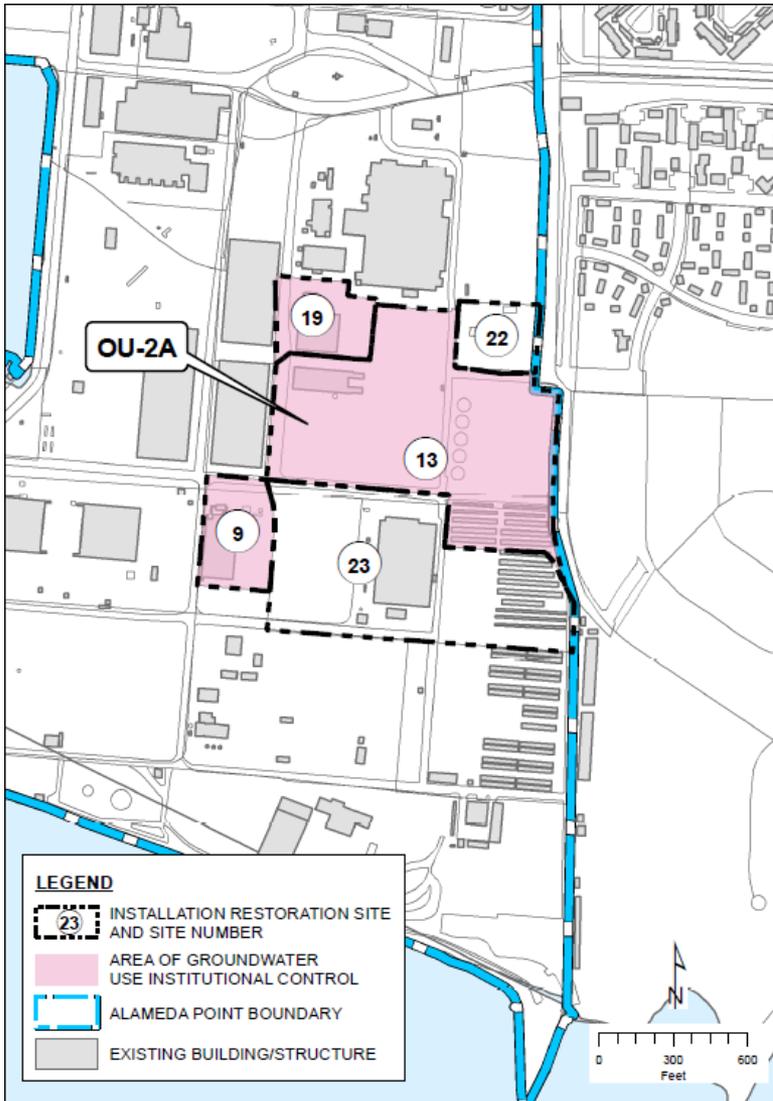


FIGURE 2-10 GROUNDWATER USE INSTITUTIONAL CONTROL

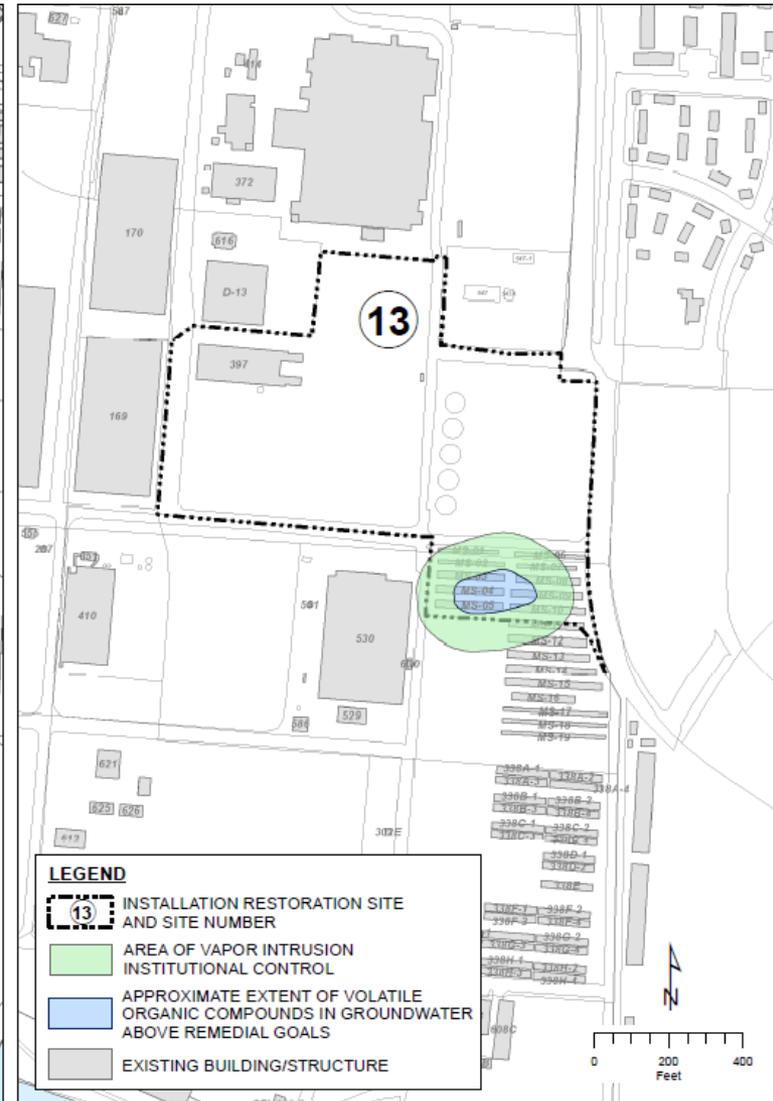


FIGURE 2-11 VAPOR INTRUSION INSTITUTIONAL CONTROL



IR Sites 9, 13, and 19 Land Use Control Enforcement



- Locks on gates or monitoring wells will restrict access to the site and/or monitoring equipment
- CERCLA 5-year remedy review
- Requirements for monitoring, inspecting, and reporting
- Notification procedures
- Navy retains ultimate responsibility for remedy integrity





Site 13 In-situ Bioremediation



- Aerobic ISB to achieve remedial goals for benzene and ethylbenzene in groundwater
- Oxygen-releasing agents injected via bioventing wells, auger borings, and direct push technology (DPT) borings
- Stimulation of biological activity degrades chemicals of concern



Site 13 In-situ Bioremediation



Oxygen-releasing amendments delivered via:

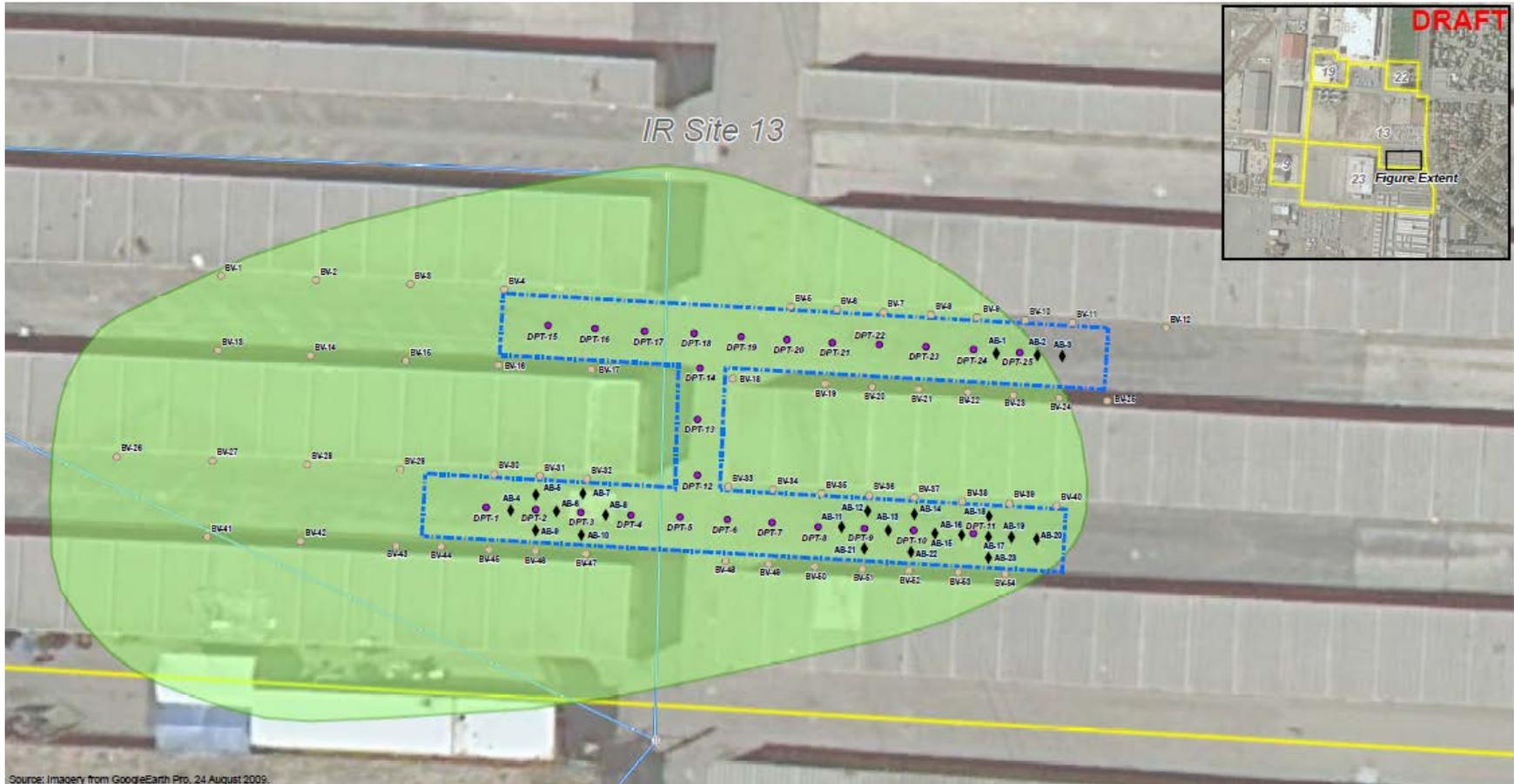
- 54 bioventing wells
- 20 auger borings
- 25 DPT injection locations

Injection events:

- Phase 1 – Klozur CR
- Phase 2 – Calcium Peroxide
- Phase 3 – Klozur CR



IR Site 13 In-Situ Bio Layout



Source: Imagery from GoogleEarth Pro, 24 August 2009.

<p>LEGEND</p> <ul style="list-style-type: none"> OU-2A / IR Site 13 Benzene and Ethylbenzene Plume Above RGs Phase DPT Injection Location ● Phase I DPT Injection Locations ● Blowent ◆ Auger Boring ⊕ Storm Drain — Storm Sewer 	<p>Notes: Phase 2 and 3 DPT injection locations will be based on monthly soil gas and oxygen readings and groundwater performance monitoring.</p> <p>Plume extents taken from Record of Decision, OU-2A, Former Naval Air Station, Alameda, California, September 2012, Trevet.</p> <p>Acronyms: AB - Auger Boring BV - Blowent DPT - Direct push technology IR - Installation restoration ISB - In Situ Bioremediation OU - Operable unit RGs - Remedial goals</p>	<p style="text-align: center;">N ↑ 0 20 40 feet</p>	<p style="text-align: center;">IR Site 13 ISB Layout Alameda Point OU-2A, Alameda, California</p> <p style="text-align: center;">Geosyntec consultants</p> <p style="text-align: right;">WR1513 April 2013</p> <p style="text-align: right;">Figure 11</p>
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Remedial Action Schedule



Final Remedial Design Remedial Action Work Plan	October 2013
Install new monitoring wells	October 2013
Phase 1 Borings	October 2013
Phase 2 Bioventing	December 2013
Phase 3 DPT injection (Calcium Peroxide)	November 2013
Phase 4 DPT injection (Klozur CR)	March 2014
Phase 5 DPT injection (Calcium Peroxide)	July 2014
Quarterly monitoring	On-going