

[ SEQ CHAPTER \h \r 1] **SITE MANAGEMENT PLAN**  
Deliberative Document  
Enforcement Confidential

**Triple Site**  
**Advanced Micro Devices, Inc. 901/902 Superfund Site (NPL)**  
**TRW Microwave Superfund Site (NPL)**  
**Offsite Operable Unit (NPL)**  
**Signetics Site (non-NPL)**

**Sunnyvale, California, FY21**

**1. EPA Site Team Members:**

RPM: Michael Schulman  
ORC: Rebekah Reynolds  
CIC: Angie Fuoco  
Civil Investigator:  
Cost Recovery: GwenL Brown  
Tech Support: Matt Plate, VI Technical Expert, Dan Stralka, Toxicologist, Herb Levine, Hydrologist

**2. Background:**

Origin of Contamination: Semiconductor manufacturing

Main compounds of concerns (COC) by media:  
Trichloroethene (TCE) in groundwater and TCE for vapor intrusion (VI).  
Existing Exposure Risk: Yes

Four operable units (OUs) covered by the 1991 ROD are:

- (1) AMD 901/902 Thompson Place (NPL Site);
- (2) TRW Microwave Site (NPL Site);
- (3) Signetics Philips Site (not an NPL site); and
- (4) The Offsite Operable Unit (OOU), a commingled plume of contaminants which were believed to have originated from the other three operable units.

**The AMD Site, TRW Site** (now owned by Northrop Grumman), and **Offsite OU (OOU)** are clustered together in Sunnyvale, California. Together with an adjacent site – the Signetics Site (now owned by Philips Semiconductors [Philips]) – these Sites/OUs are collectively known as the “Triple Site.” The Signetics Site is located at 811 East Arques Ave, 440 North Wolfe Rd, and facilities along Stewart Dr. and the TRW Site is located at 825 Stewart Dr.

The **Signetics Site** was not listed on the National Priorities List (NPL). The Signetics Site was proposed for listing on the NPL but was ultimately not listed because it was being regulated under the state-authorized Resource Conservation and Recovery Act program.

Target Completion Dates		
TRW	AOC	FY92 ✓
AMD 901/902	AOC	FY19 ✓
Signetics	AOC	FY19 ✓
Offsite OU	AOC	FY19 ✓
Sitewide	PRP RI/FS	FY24/Q2
	Prop Plan	FY24/Q4
	RODA	FY25/Q3
	AOC	FY26/Q3
	RD	FY27/Q4
	RA	FY30/Q4
	5YR	2024/Q3
<b>NPL Environmental Indicator Status</b>		
<b>AMD &amp; TRW Microwave (only)</b>		
Human Exposures Under Control: <b>No</b>		
<i>Est. HEUC Date 12/30/2021</i>		
Groundwater Migration Under Control <b>Y</b>		

The Triple Site has been in Remedial Action (RA) stage – groundwater extraction and treatment - following the finalization of the Record of Decision (ROD) in 1991.

In 1998 and 1999, Philips Semiconductor entered into contractual agreements with Northrop Grumman (then TRW, Inc.) and Advanced Micro Devices (AMD), respectively, regarding, among other matters, the investigation and remediation of the OOU. In the two agreements, it was agreed that Philips would conduct investigation and remediation activities in the OOU.

Since 1985 and up until the Site was transferred to EPA on August 7, 2014, the Regional Water Board had been the lead agency for overseeing cleanup activities at the Potentially Responsible Party (PRP)-Lead Triple Site associated with the final remedy of groundwater extraction and treatment under the 1991 ROD.

### 3. Site Status:

The OUs and SSIDs currently set up for the Triple Site are as follows:

Triple Offsite OU - A974 / CAN000900265

- OU-00 - Sitewide. OU 00 is a placeholder OU for future Sitewide work (e.g., negotiations for a Consent Decree, ROD Amendment, etc.) in the Offsite OU.
- OU-01 - VI evaluation in Offsite OU. For the Offsite OU, EPA staff should be charging to A974 OU-01. As Triple Site was transferred to EPA from the State in 2014, all of EPA's work has been associated with exploring and addressing the VI issues in the OU.
- OU-02 - GW activities in Offsite OU. OU 02 is a placeholder OU for future groundwater work in the Offsite OU.

Site charging for AMD, TRW and Signetics is straightforward, as there is only one OU (OU 00).

- AMD 901/902 Thompson Place – 0982 / CAD048634059
- TRW - 09K4 / CAD009159088
- Philips (formerly Signetics) – 0994 / CAD070466479

The Triple Site is in the RA stage. It is a PRP-Lead site with a final remedy and a work settlement.

#### Sitewide Groundwater

Philips Semiconductors continues to operate the groundwater extraction and treatment system for the Triple Site to provide hydraulic control over the TCE plume and remove contaminants from groundwater. The 1991 Regional Water Board's Orders are still in effect to implement the 1991 ROD.

#### Advanced Micro Devices, Inc. 901/902 Thompson Place Site

A pilot treatability study for groundwater, exploring the potential for in-situ bioremediation to accelerate the cleanup of the source area, was initiated by AMD at the AMD Site from 2002 to 2004. The expansion of the pilot study to a full-scale in-situ bioremediation program was subsequently approved by the Regional Water Board and continues to the present. AMD has submitted a Focused Feasibility Study (FFS) report to EPA in 2013, which is currently under review.

➔ Enforcement: Docket # 2018-16, effective 10/18/18, in place for recovery of past costs.

#### TRW Microwave Site

A treatability study for groundwater, with a similar approach to that taken at the AMD Site, was initiated by Northrup Grumman at the TRW Site in 2000. Optimization of treatability study efforts and related FFS-activities are ongoing.

➔ Enforcement: 1991 Administrative Order on Consent (AOC) in place for recovery of past costs.

#### Signetics Site

Philips initiated a groundwater treatability study at the Signetics Site in 2017. The focus of this effort is to reduce the elevated concentrations of TCE in the former source area which persist at levels of up to 20,000 micrograms per liter ( $\mu\text{g/L}$ ), despite decades of groundwater extraction and treatment, and which are driving the vapor intrusion (VI) risk to the nearby community. A Phase 2 treatability study was approved in 2020 and is scheduled to be implemented in 3Q/4Q2020. EPA entered into an Administrative Settlement Agreement and Order on Consent (ASAOC) with Philips, effective March 15, 2019, for a groundwater FFS to assess options for accelerating the long-term groundwater cleanup and commercial VI Removal Site Evaluation/Removal Action at the four commercial-type buildings on the site.

➔ EPA entered into an ASAOC with Philips, effective March 15, 2019, which includes the provision for the recovery of past costs.

#### Offsite OU

A VI Removal Action for the OOU was initiated in 2015 by Philips and is ongoing. More than 250 residential, school, and commercial buildings have been sampled to date. Mitigation systems have been installed to address findings of unacceptable VI, which is being found at buildings overlying groundwater TCE levels of roughly 50-100  $\mu\text{g/L}$  and above. The previous AOC for the OOU VI removal action expired on June 30, 2016, however, VI assessment and mitigation work in the OOU continued through May 2018 when the expiration provision was raised to EPA by Philips. A new ASAOC was executed in September 2019, and per the ASAOC, Philips submitted a VI Work Plan in 4Q19 to address buildings already investigated and to implement preemptive for residents and schools underlying the 100  $\mu\text{g/L}$  TCE groundwater plume.

➔ Enforcement: EPA entered into an ASAOC with Philips what was signed September 19, and with an effective date of November 13, 2019 (based on the end of the public comment period), which includes the provision for the recovery of past costs.

#### **4. Potential Issues and Strategy:**

EPA is prioritizing and scheduling site work based on human health risk due to vapor intrusion into buildings within the Signetics Site and the OOU risk to human health and the environment. This work entails (a) OM&M of existing VI mitigation systems and any required post-mitigation sampling, (b) implementing preemptive VI mitigation within the OOU, and (c) treating the groundwater TCE source area at the Signetics Site with a treatability study that will be used to prepare a FFS. As a second priority, a Record of Decision Amendment (RODA) will be initiated based on FFSs completed for the AMD, TRW, and Signetics Site and OOU.

As EPA issued a stop-work notice to Philips on April 26, 2018 for treatability study-related activities pending the finalization of the Signetics Site and OOU ASAOCs, the schedule for the FFS and RODA has been delayed. The ASAOCs for both Sites were finalized in March and September of 2019, after about 1.5 years of negotiations. This has resulted in an FFS/RODA schedule delay of about 1.5-2.0 years.

**a) Municipal/Community/State Issues** (e.g., legal, policy, jurisdictional, position);

Residences are being sold in the OOU and building permits for construction are being issued by the City without notification of site conditions and transmittal of mitigation system O&M plans and EPA requirements to existing owners, prospective purchasers, and new buyers. An Institutional Controls (ICs) plan needs to be prepared to address this gap, the development of which will be coordinated with the City of Sunnyvale to integrate into their existing permitting process and municipal record-keeping system.

**b) Groundwater Issues / Change Site Conditions**

Vapor intrusion in the OOU was not addressed in the ROD. The ROD Remedial Investigation (RI) for groundwater is outdated and the surficial aquifer exposure pathway for VI is poorly delineated in the Offsite OOU. To address this a FFS and likely RODA is needed.

**5. Green Remediation Opportunities:**

Treatability study efforts at the three source sites (AMD, TRW, Signetics) incorporate green remediation approaches in seeking to bypass the existing remediation technology which extracts millions of gallons of groundwater from the aquifers each year. The treatability study technologies are in-situ approaches, looking to remediate contamination in-place without removing the potential drinking water resource.

**6. Target Dates:**

See Table above.

**7. Upcoming Consultations:**

None anticipate at this time.

**8. Outreach:**

Prepare and distribute updated community fact sheet and letter to property owners and occupants of buildings that qualify for preemptive mitigation in highest VI-risk area of community, which are defined in the ASAOC. This work will be conducted in coordination with EPA management, Community Involvement Coordinator (CIC), City of Sunnyvale and school administrations. Ongoing attempts to communicate with non-responsive property owners of buildings that may qualify for mitigation or preemptive mitigation. Additionally, prepare updated sets of school-specific letters once complete evaluation of supplemental school sampling results. Prepare an update letter for the City of Sunnyvale in lieu of in person meetings.

Development of ICs Implementation Plan to address VI with coordination with management, CIC, Office of Regional Counsel (ORC), California Regional Board, and City of Sunnyvale.

Distribute updated community fact sheet on ROD Amendment & ICs plan.

**9. Budget Needs:**

Contractor support under RAC is provided by APTIM under Task Order #25. Through the June 2020 invoice period there is \$2,505,883 authorize (obligated) budget remaining in APTIM's TO #25 contract, with a period of performance (PoP) through November 2021, after which contracting is expected to transition to RAF. Funding for TO #25 is via Special Accounts, which is replenished via cost recovery

activities.

The APTIM TO #25 contract SOW and Work Plan were initially funded based on assumptions that EPA would be conducting the work with an uncooperative RP; however, since the Signetics and Triple Site OOU ASAOCs were signed in 2019, the RP has worked collaboratively under EPAs’ oversight and the level of EPA effort is declining as the RP conducts the work. It is expected that APTIM’s contract funding will be sufficient through the PoP and to complete the TO #25 SOW. Special Account Planned Obligations for Response Actions in SEMS show the “Pipeline Operations” obligation below:

- Triple Site (A974): \$3,200,000
- Philips Site (0994): \$65,000
- TRW Microwave Site (09K4): \$120,000
- AMD 901/902 (0982): \$50,000

**10. Other Resources Needs:**

	<b>Assistance Needed? [Y/N]</b>	<b>Activity and Anticipated Level of Effort</b>
ATSDR	N	
Case Development		
Community Involvement	Y	<i>Minor to moderate LOE. Liaison between RPMs and community is infrequent and as necessary. Prepare fact sheets, update CIP, assist with messaging strategies.</i>
Congressional Liaison	N	
Cost Recovery	Y	<i>Ongoing billing for multiple OUs.</i>
Emergency Response	N	
HQ	N	
ORC	Y	<i>Minor Level of Effort: Cost recovery, and general support on ASAOC items.</i>
ORD	N	
OPA	N	
Quality Assurance		
Tech. Support	Y	<i>Provide technical comments on the three PRPs’ mitigation and remedy approaches.</i>
[Other]		