

**Appendix C**  
**ARARs Review Memorandum**

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This technical memorandum presents an evaluation of the Applicable or Relevant and Appropriate Requirements (ARARs) for the Applied Materials, Building 1 Superfund Site (AM site) located in Santa Clara, California. The U.S. Environmental Protection Agency (EPA) identification number for the site is CAD042728840.

### **Purpose of the ARARs Review**

The purpose of an ARARs review is to determine whether laws, regulations, or guidance promulgated since the approval of site decision documents alter the remedy's protectiveness of human health and the environment.

ARARs are established in the site decision documents, primarily in Record of Decision (ROD) documents. Changes to ARARs, where necessary, can be memorialized in ROD Amendment documents, Explanation of Significant Differences (ESD) documents, and 5-Year Review documents.

The preamble to the National Contingency Plan (NCP) states that remedy selection decisions are not to be reopened unless new or modified requirements call into question the protectiveness of the selected remedy (55 CFR 8757, March 8, 1990). This is interpreted to mean generally that ARARs are frozen at the time of remedy approval, unless updated by additional decision documents.

### **ARARs Background**

Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that remedial actions implemented at CERCLA sites are carried out in compliance with any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be ARARs.

CERCLA response actions are exempted by law from the requirement to obtain federal, state, or local permits related to any activities conducted completely on site. However, this does not remove the requirement to meet the substantive provisions of permitting regulations that are ARARs. The specific ARAR terms are defined below.

**Applicable.** Applicable requirements are cleanup standards, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. A requirement is applicable if the jurisdictional prerequisites of the environmental standard show a direct correspondence when objectively compared with the conditions at the site.

**Relevant and Appropriate.** If a requirement is not legally applicable, the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations sufficiently similar to the circumstances of the proposed response action and are well suited to the conditions of the site. The criteria for determining relevance and appropriateness are listed in 40 CFR 300.400(g) (2).

**To Be Considered (TBC).** TBC criteria are requirements that may not meet the definition of an ARAR, but still may be useful in determining whether to take action at a site or to what degree action is necessary. TBC criteria, as defined in 40 CFR 300.400(g) (3), are non-promulgated advisories or guidance issued by federal or state government that are not legally binding but may provide useful information or recommended procedures for remedial action. Although TBC criteria do not have the status of ARARs, they are considered together with ARARs to establish the required level of cleanup for protection of human health and the environment.

Pursuant to EPA guidance, ARARs generally are classified into three categories: action-specific, chemical-specific, and location-specific requirements. These categories of ARARs are identified below:

- **Action-specific ARARs** are requirements that apply to specific actions that may be associated with site remediation. Action-specific ARARs often define acceptable handling, treatment, and disposal procedures for hazardous substances. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. Examples of action-specific ARARs include requirements applicable to landfill closure, wastewater discharge, hazardous waste disposal, and emissions of air pollutants.
- **Chemical-specific ARARs** include those laws and regulations that regulate the release to the environment of materials possessing certain chemical or physical characteristics or containing specified chemical compounds. These requirements generally set health- or risk-based concentration limits or discharge limits for specific hazardous substances.
- **Location-specific ARARs** are those requirements that relate to the geographical or physical location of the site, rather than the nature of the contaminants or the proposed site remedial actions. These requirements may limit the placement of remedial action and may impose additional constraints on the cleanup action. For example, location-specific ARARs may refer to activities in the vicinity of wetlands, floodplains, endangered species habitat, and areas of historical or cultural significance.

## **ARARs Analysis**

### *Remediation Standards*

The 1990 ROD established the soil and groundwater cleanup criteria for the Applied Materials site. The groundwater remediation goals are to restore contaminated groundwater, using pump and treat, to the following standards:

- Cleanup standards as documented in the 1989 ROD, amendments, and 5-year reviews
- Federal or state Maximum Contaminant Levels (MCLs)

The groundwater cleanup criteria established for the site in the 1990 ROD, as well as the current state and federal standards, are presented in Table C-1.

*Site ARARs Review*

Tables C-2 through C-4 list the ARARs established in the 1990 ROD, summarize the requirement for each ARAR, cite the regulatory basis for each ARAR, state the evaluated status of each ARAR, and provide comments where applicable. Table C-2 contains action-specific ARARs, Table C-3 contains chemical-specific ARARs, and Table C-4 contains location-specific ARARs. Current versions of the California Code of Regulations (CCR) and the Code of Federal Regulations (CFR) were consulted (via the internet or in hard copy) to review pertinent updates of laws, regulations, or guidance.

*Site ARARs Summary*

**Action-specific ARARs.** While no action specific ARARs were defined in the 1990 ROD, Table C-2 lists ARARs associated with cleanup activities at the Applied Materials site. There were no substantive changes from 1990 to present.

**Chemical-specific ARARs.** The action level for chloroform has changed from 6 ug/L for only chloroform to 80 ug/L as measured by total trihalomethanes (Table C-1). There are no other changes to existing chemical-specific ARAR stated in the ROD.

**Location-specific ARARs.** The ARARs review showed that a new regulation for property that contains hazardous waste (Title 22, CCR, Chapter 39, Section 67391.1, effective April 1 2003) requires all land use covenants to be signed by the DTSC and the deed restriction recorded in the county where the land is located. The signature requirement is considered applicable to the entire site where land use will be restricted to industrial uses, and groundwater wells will be used for monitoring or injection purposes only.

Table C-1: Groundwater Remediation Standards, Applied Materials Superfund Site, Santa Clara, California

Chemical	Standard or Cleanup Level (ug/L)	Reference	Current (June 2010) Drinking Water Standard (State/Federal MCL) (ug/L)
1,1-Dichloroethane	5	State MCL	5 <sup>1</sup>
1,2- Dichloroethane	0.5	State MCL	0.5/5
1,1-Dichloroethylene	6	State MCL	6 <sup>1</sup> /7
1,2-Dichloroethylene (cis)	6	State MCL	6 <sup>1</sup> /7
1,2-Dichloroethylene (trans)	10	State MCL	10 <sup>1</sup> /100
Tetrachloroethylene	5	State and Federal MCL	5
1,1,1-Trichlorethane	200	State and Federal MCL	200
1,1,2-Trichlorethane	5	State and Federal MCL	5
Trichloroethylene	5	State and Federal MCL	5
Freon 113	1200	State MCL	1200/NA
Freon 11	150	California DHS Action Level	150/NA
Chloroform	6	California DHS Action Level	80 <sup>2</sup> /NA
Vinyl chloride	0.5	California DHS Action Level	2

Notes:

<sup>1</sup> California DHS Action Level

<sup>2</sup> As total trihalomethanes (TTHM)

DHS = Department of Health Services

MCL = Current maximum contaminant levels as of June, 2010

<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH-11-28-2008.pdf>

NA = Not available

ug/L = micrograms per liter

Table C-2: Action-Specific ARARs, Applied Materials Superfund Site, Santa Clara, California

Action	Media	Citation	Requirement	Origin	ARARs Determination	Comments
Cleanup Actions	Ground water	Porter-Cologne Water Quality Control Act (CCR Sections 13140-13147, 13172, 13260, 13262, 12267, and 13304)	Title 27 CCR, Section 20410, and Title 23 CCR, Section 2550.6	1990 ROD	Relevant and Appropriate	There have been no substantive changes to this regulation since the 1990 ROD.
Cleanup Actions	Ground water	Porter-Cologne Water Quality Control Act (CCR Sections 13000, 13140, 13240, 13260, 13263, 13267, 13300, 13307, and 13394)	State Water Resources Control Board Resolution 92-49 (as amended April 21, 1994) (Subparagraph III G)	1990 ROD	Relevant and Appropriate	There have been no changes to Subpart III G.
Air Stripping	Air	Title 22 CCR 66265.1030-66265.1035	Applies to treatment, storage, and disposal facilities with process vents associated with solvent extraction or air or steam stripping operations managing RCRA hazardous wastes with organic concentrations of at least 10 ppm. These operations must reduce total organic emissions below specified device to reduce the total organic emissions by 95percent by weight.	1990 ROD	Relevant and Appropriate	There have been no substantive changes to this regulation since the 1990 ROD.
Air Stripping	Air	Bay Area Air Quality Management District (BAAQMD), Regulation 8 – Rule 47	Requirement regarding nuisance conditions, emissions, and fugitive dust.	1990 ROD	Applicable	There have been no changes to this regulation.

Notes:

CCR = California Code of Regulations

ROD = Record of Decision

Table C-3: Chemical-Specific ARARs, Applied Materials Superfund Site, Santa Clara, California

Contaminant	Media	Citation	Requirement	Origin	ARARs Determination	Comments
All COCs	Groundwater	Safe Drinking Water Act (40 U.S.C. 300 et seq.) National Primary Drinking Water Standards (40 CFR Part 141)	Chemical-specific drinking water standard MCLs have been promulgated under the Safe Drinking Water Act (SDWA). Drinking-water MCLs have also been promulgated under SDWA. MCL goals (MCLGs) above zero are considered chemical-specific ARARs under the NCP (40 CFR 300.430(e)(2)(1)(B)). When the MCLGs are equal to zero (which is generally the case for a chemical considered a carcinogen), the MCL is considered to be a chemical-specific ARAR, instead of the MCLG (40 CFR 300.430(e)(2)(I)(C)).	1990 ROD	Relevant and Appropriate	MCLs are ARARs for any water that is considered to be a source or potential source of drinking water. MCLs are applicable at the tap when the water is directly provided to 25 or more people or 15 or more service connections. Otherwise, MCLs are relevant and appropriate. The COCs remain unchanged since the 1990 ROD.
All COCs	Groundwater	California Safe Drinking Water Act CCR Title 22, Division 4, Chapter 15, Articles 4, 5.5, and 16	California primary drinking water standards establish enforcement limits for chemicals that may affect public health or the aesthetic qualities of drinking water. However, only those requirements that are more stringent than federal standards are ARARs. Also establishes monitoring requirements to ensure treated effluent is meeting cleanup standards.	1990 ROD	Relevant and Appropriate	The COCs and state MCLs for the site remain unchanged since the 1990 ROD.
All COCs	Groundwater	California State Water Resources Control	On October 28, 1968, the State Water Resources Control Board adopted		Applicable	The original discharge of contamination to groundwater at the site

		Board Resolution 68-16	Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California". This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses.			was in violation of this resolution. Groundwater quality associated with the site needs to be restored to its original quality as determined by the cleanup standards.
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Notes:

CCR = California Code of Regulations

CFR = Code of Federal Regulations

EPA = U. S. Environmental Protection Agency

ROD = Record of Decision

Table C-4: Location-Specific ARARs, Applied Materials Superfund Site, Santa Clara, California

Location	Citation	Requirement	Origin	ARARs Determination	Comments
Property Within a Fault Zone	40 CFR Section 264.18(A)	Requires that property containing hazardous waste within 61 meters (200 feet) of a known fault be designed, constructed, operated, and maintained to prevent release of hazardous waste due to seismic activity.	1990 ROD	Relevant and Appropriate	Not applicable, Applied Materials is not within 200 feet of a known fault
Property Within a Floodplain	CCR Title 22	Requires that a hazardous waste treatment facility located within a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood..	1990 ROD	Relevant and Appropriate	Applied Materials is located within the 100-year floodplain of the San Tomas Aquino Creek drainage system.
Property Containing Hazardous Waste	Title 22, CCR, Chapter 39, Section 67391.1	For properties that contain hazardous waste, citation requires all land use covenants to be signed by the DTSC and the landowner and be recorded in the county where the land is located.	New regulation	TBC	New regulation, effective April 19, 2003, for properties that contain hazardous waste should be considered. If the site contains hazardous waste, then a land use covenant would be applicable.

Notes:

CCR = California Code of Regulations

CFR = Code of Federal Regulations

DTSC = Department of Toxic Substances Control

EPA = U. S. Environmental Protection Agency

ROD = Record of Decision

TBC = To be considered