



RDMS DocID

109911

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action  
Environmental Indicator (EI) RCRIS code (CA725)

## Current Human Exposures Under Control

Facility Name: National Semiconductor and Fairchild Semiconductor \_\_\_\_\_  
Facility Address: 5 Foden Rd. and 333 Western Ave., South Portland, ME \_\_\_\_\_  
Facility EPA ID #: MED001098458 and MED5000001313 \_\_\_\_\_

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

if data are not available skip to #6 and enter "IN" (more information needed) status code.

**BACKGROUND****Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information):

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2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be “contaminated”<sup>1</sup> above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<u>X</u>	___	___	VOC-contaminated aquifer
Air (indoors) <sup>2</sup>	<u>X</u>	___	___	VOCs in Fairchild Building
Surface Soil (e.g., <2 ft)	___	___	<u>X</u>	More sampling in near future as part of RFI
Surface Water	___	<u>X</u>	___	Long Creek was evaluated
Sediment	___	___	<u>X</u>	Possible VOCs in detention pond sediment, sampling to occur in near future
Subsurf. Soil (e.g., >2 ft)	<u>X</u>	___	___	VOCs
Air (outdoors)	___	<u>X</u>	___	Not over DEP Air Bureau thresholds

\_\_\_ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

X If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

\_\_\_ If unknown (for any media) - skip to #6 and enter “IN” status code.

**Rationale and Reference(s):**

National Semiconductor has the environmental responsibilities for the National Semiconductor property and the environmental responsibilities for historical spills at the Fairchild property. Refer to the attached Figure 1 for a map of the two abutting sites (National and Fairchild) with groundwater monitoring well locations. See also attached Tables 1, 2 and 3 that list VOC groundwater contaminants from the most recent rounds of sampling (from Sevee & Maher Engineers, Inc. (SME) June 2011 report titled, “2010 Annual Water Quality Report, National Semiconductor and Fairchild Semiconductor, South Portland, Maine”). The tables indicate some results with concentrations above EPA’s Maximum Contaminant Levels (MCLs) or Maine’s Maximum Exposure Guidelines (MEGs) for drinking water.

Figure 2 shows mapped indoor air sampling locations in the Fairchild building, and the associated Table 4 lists indoor air VOC concentrations before the installation of a sub-slab depressurization system (SSDS) (from Sevee & Maher Engineers July 9, 2010 letter to DEP). The table indicates some results above the indoor air targets established in

MEDEP's Vapor Intrusion Evaluation Guidance, Table B6, Chronic Commercial Scenario for Multi-Contaminant Site that was dated January 13, 2010.

A February 9, 2009 letter report from Sevee & Maher Engineers to Richard Banks of National Semiconductor summarizes soil contamination as does the 2010 RCRA Facility Assessment (RFA) Report prepared by Mabbett & Associates for EPA. A soil pile referred to as Soil Pile No. 4 consisted of soil excavated from a groundwater collection trench (approximately 1,150 cubic yards) and soil from other contaminated areas on the site. The 13,000 cubic yard pile was sampled and appropriately disposed of with DEP approval. At the bottom of the pile laboratory analysis indicated the presence of a number of VOCs, but because none of those concentrations exceeded the MEDEP Remedial Action Guidelines for the Outdoor Commercial Worker Scenario the area was backfilled with clean fill with DEP approval. There are other areas on site where contaminated soils exist or may exist and they are being dealt with in the RCRA Facility Investigation by the facility. In particular, there are likely contaminated soils near and under the Fairchild building related to an 8,000 gallon solvent spill in 1974 that are being further evaluated in upcoming months. Refer to the table below for a summary of historical spills as summarized on page 66 in Mabbett's 2010 RFA:

Date	Reported Spill	Location	Reported Remedial History
1974	8,000 gallons of TCE and other solvents	Leaking transfer line into east/southeast corner of Building 2	Solvent tank emptied and buried in place.
1979	100 gallons of solvents (non-specified)	South/southeast corner of Building 5	No remedial actions noted in file material.
One event occurring between 1974 and 1979.	Single spill of unknown quantity of mixed solvents (non-specified)	North side of Building 1	No remedial actions noted in file material.
1975	Unknown quantity of No. 6 fuel oil.	West side of Building 2	No remedial actions noted in file material.
1967	Unknown quantity of solvents from neutralization tank	South/southwest corner of Building 5	No remedial actions noted in file material.

Continued on next page

1962-1966	Unknown quantity of solvents (non-specified)	West side of Building 1	No remedial actions noted in file material.
1960's-1973	Unknown quantity of plating sludges	Adjacent to north side of intersection of Western Avenue and Foden Road; related to Klik Industries, former owners of Building 7	No remedial actions noted in file material.
1978	600 gallons of No. 2 fuel oil	North/northwest corner of Building 1	Reportedly removed. No further remedial actions noted in file material.
1979	1,000 gallons of TCA and Acetone	East/southeast side of Building 5	Partially removed. No further remedial actions noted in file material.
1982	40 gallons of PCE	East/southeast side of Building 5	Reportedly removed. No further remedial actions noted in file material.
1982	150 gallons of TCA and Acetone	North/northwest corner of Building 1	Reportedly removed. No further remedial actions noted in file material.

Footnotes:

<sup>1</sup> "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

<u>"Contaminated" Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	<u>N</u>	<u>N</u>	<u>N</u>	<u>Y</u>			<u>N</u>
Air (indoors)	<u>N</u>	<u>Y</u>	<u>N</u>				
Soil (surface, e.g., <2 ft)	<u>N</u>	<u>?</u>	<u>N</u>	<u>?</u>	<u>N</u>	<u>N</u>	<u>N</u>
<del>Surface Water</del>							
Sediment	<u>N</u>	<u>N</u>			<u>N</u>	<u>N</u>	<u>N</u>
Soil (subsurface e.g., >2 ft)				<u>Y</u>			<u>N</u>
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.
2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("\_\_\_"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- \_\_\_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- X If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.
- \_\_\_ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

A sub-slab depressurization system (SSDS) has been installed on the Fairchild Semiconductor site to decrease indoor air VOCs to below indoor air targets. Recent sampling to test the effectiveness of the SSDS shows significant improvement but there are still a couple of exceedances of target levels (MEDEP's 2010 Vapor Intrusion Guidance, Table B6). Refer to the table below that was submitted to DEP in email from Sevee & Maher Engineers, Inc. on September 22, 2011:

Location	Compound	OSHA PEL (ug/m <sup>3</sup> )	Indoor Air Target (ug/m <sup>3</sup> )	August 2011 Concentration (ug/m <sup>3</sup> )	Historical Range of Concentrations (ug/m <sup>3</sup> )
A-1 (T Square Sump)	TCE	5.4 x 10 <sup>5</sup>	6.1	ND	ND – 24.6
	Vinyl Chloride	2.6 x 10 <sup>3</sup>	2.8	ND	ND – 3.18
	cDCE	7.9 x 10 <sup>5</sup>	53	ND	ND – 48.1
A-2 (T-Square B5L1 Pumps)	TCE	5.4 x 10 <sup>5</sup>	6.1	ND	3.33 – 34.5
	Vinyl Chloride	2.6 x 10 <sup>3</sup>	2.8	ND	ND – 4.51
	cDCE	7.9 x 10 <sup>5</sup>	53	0.928	5.15 – 65.4
A-3 (Back Ground/Outside Loading Dock)	TCE	5.4 x 10 <sup>5</sup>	6.1	ND	ND – ND
	Vinyl Chloride	2.6 x 10 <sup>3</sup>	2.8	ND	ND – ND
	cDCE	7.9 x 10 <sup>5</sup>	53	ND	ND – ND
A-4 (Machine Shop)	TCE	5.4 x 10 <sup>5</sup>	6.1	<b>8.44</b>	19.2 – 48.5
	Vinyl Chloride	2.6 x 10 <sup>3</sup>	2.8	0.532	ND – ND
	cDCE	7.9 x 10 <sup>5</sup>	53	5.47	9.6 – 16.9
A-5 (Shipping and Receiving)	TCE	5.4 x 10 <sup>5</sup>	6.1	<b>11.0</b>	18.4 – 27.8
	Vinyl Chloride	2.6 x 10 <sup>3</sup>	2.8	0.933	ND – ND
	cDCE	7.9 x 10 <sup>5</sup>	53	8.88	6.23 – 11.7

**Underlined** indicates levels above IAT

Besides the complete pathway between facility workers and contaminated indoor air, a construction project could expose construction workers to contaminated soils and groundwater due to the historic spills listed in section 2 of this form.

VOC contaminated groundwater is collected in a trench and pumped to a new "VOC eater" system that breaks down the VOCs before the water is then discharged to the sewer. More investigation is planned this fall for the most contaminated area of groundwater up-gradient of the trench near and under the Fairchild building. It is expected that an in situ treatment will be conducted in this location. Although a plume of VOC contamination exists down-gradient of the trench, public water serves the area. To make sure no private wells were being used in the area, a drinking water well search was conducted by National Semiconductor's consultant SME in 2011. No drinking water wells were found as described by SME in a letter to Mr. Chris Lee of National Semiconductor dated September 20, 2011.

A human health risk assessment was completed by Amec in March of 2009 for the shallow VOC source area near the Fairchild building, concluding that potential exposure pathways from groundwater and soils impacted by VOCs from the shallow source area are incomplete for facility workers (not including vapor intrusion as discussed above).

Footnotes:

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4 Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant"<sup>4</sup> (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

\_\_\_\_\_ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

X  If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

\_\_\_\_\_ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

A July 20, 2010 letter from SME to Chris Lee summarizes Fairchild Semiconductor employee personal exposure monitoring data (see the attached Table 5). For all ten employees included in the monitoring program, trichloroethylene (TCE), 1,2-dichloroethylene (DCE), and vinyl chloride (VC) results were below the laboratory reporting limits and were below applicable Occupational Exposure Limits (OELs) including: OSHA Permissible Exposure Limits (PELs), NIOSH Recommended Exposure Limits (RELs), and ACGIH Threshold Limit Values (TLVs). The monitoring was performed by GEI of Falmouth, Maine with data review by a certified industrial hygienist from Zurich Services Corp. of Kennebunk, Maine. During the personal exposure monitoring SME collected a 24-hour indoor air sample to confirm that TCE, DCE, and VC concentrations were consistent with prior indoor air testing. The results of this SUMMA canister sampling by SME (at location Air-4 or A-4 machine shop) confirmed that the concentrations were similar to previous indoor air sampling events and therefore showed that the personal exposure monitoring was performed in typical working conditions.

Even though the results from the personal exposure monitoring program were encouraging, the laboratory reporting limits for the personal exposure monitoring data were higher than Maine DEP Vapor Intrusion Guidance indoor air targets. Exposures at the facility to workers from VOCs in indoor air have been greatly reduced since the personal monitoring data was collected due to installation of the SSDS as evidenced by the table in section 3 of this form, but there are still a couple of exceedances of Maine's indoor air targets. Exposures are anticipated to be nearly eliminated though in the near future with additional engineering controls/improvements to the SSDS. Basement sumps with airtight covers will be installed in the near future. After this is completed, a re-test of indoor air will occur to compare to DEP's indoor air targets. Pending the testing results, follow up will be made with additional vapor extraction points if necessary. (Sevee & Maher Engineers, Inc. September 22, 2011. Email correspondence with subject "Fairchild Indoor Air Testing.")

Certain construction activities with soil disturbance on site require approval from Maine Department of Environmental Protection so that DEP can help ensure the proper disposal of contaminated soils and help

with consideration of potential exposures to human health. A January 9, 1985 DEP Amendment to the 1983 Administrative Agreement requires the facility to obtain approval from the DEP Commissioner for movement, placement, or disposal of soils with the exception of soils with concentrations of 10 mg/kg or less of combined trichloroethylene and xylene provided that such soils are not disposed of off site. The facility voluntarily contacts DEP with all plans for any soil disturbance. In addition, the facility has an established Health and Safety Plan for the site (refer to Appendix D of the August 2011 RCRA Facility Investigation Project Management Plan, prepared for National Semiconductor by SME). Finally, DEP plans to update the older Administrative Agreement as the site moves further through the Corrective Action program and there will very likely be an environmental covenant established for the property.

Footnotes:

<sup>4</sup>If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5 Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

- If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
- If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.
- If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

The potential "significant" exposures described in this form can be shown to be acceptable. A draft Maine Department of Health and Human Services toxicological calculator (draft risk calculator for Maine indoor air targets) can be used for site specific indoor air contaminants. At Fairchild Semiconductor the only identified indoor air contaminants from vapor intrusion are TCE, vinyl chloride, and cDCE. This calculator shows that for the concentrations found at this site the non cancer risk and the cancer risk are in an acceptable range.

When multiple contaminants of concern (ie contaminants stemming from the release) are present in indoor air and the concentration of one or more compounds exceeds its multiple contaminant IAT, the calculator can be used to determine whether the combined risk from the contaminants is unacceptable. The multiple contaminant IATs were developed with the assumption that non cancer risk may target a solitary organ when in fact the COCs may act on separate organs and if so, risk may be diminished below Maine's Hazard Index (HI) of 1.0. With regard to cancer risk, the multiple contaminant IATs were developed assuming that multiple compounds contribute to exceed Maine's allowable ILCR of  $1 \times 10^{-5}$  and to be protective of the total cancer risk, the multi contaminant IATs reflect an ILCR of  $1 \times 10^{-6}$ . The spreadsheet calculates each compound's ILCR and the HI for each organ and sums them to provide the actual ILCR and HI for the site's particular collection and concentration of compounds. If the totals are below Maine's HI of 1.0 and Maine's ILCR of  $1 \times 10^{-5}$ , the risk is considered acceptable. This draft risk calculator is being updated for TCE in upcoming weeks due to updates to EPA's Integrated Risk Information System (IRIS). A Maine DHHS toxicologist has said the updates for TCE will be more conservative but risk at this site is still likely to be acceptable after the change. This will need to be confirmed.

Finally, the current practice of the facility notifying DEP of any plans for soil disturbance, in addition to the site specific Health and Safety Plan for the upcoming RFI show that potential exposures are being dealt with and are acceptable for the short term until possible soil removal, in situ treatment, and/or environmental covenants are done.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at National Semiconductor and Fairchild Semiconductor in South Portland, EPA ID #s MED001098458 and MED5000001313 respectively, under current and reasonably expected conditions. This determination will be re-evaluated when the State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by (signature) H. Jackson Date 9/30/11  
(print) Heather Jackson  
(title) Environmental Specialist III

Supervisor (signature) Stacy C. Ladner Date 9/30/11  
(print) Stacy Ladner  
(title) Environmental Specialist IV  
(EPA Region or State) \_\_\_\_\_

Locations where References may be found:

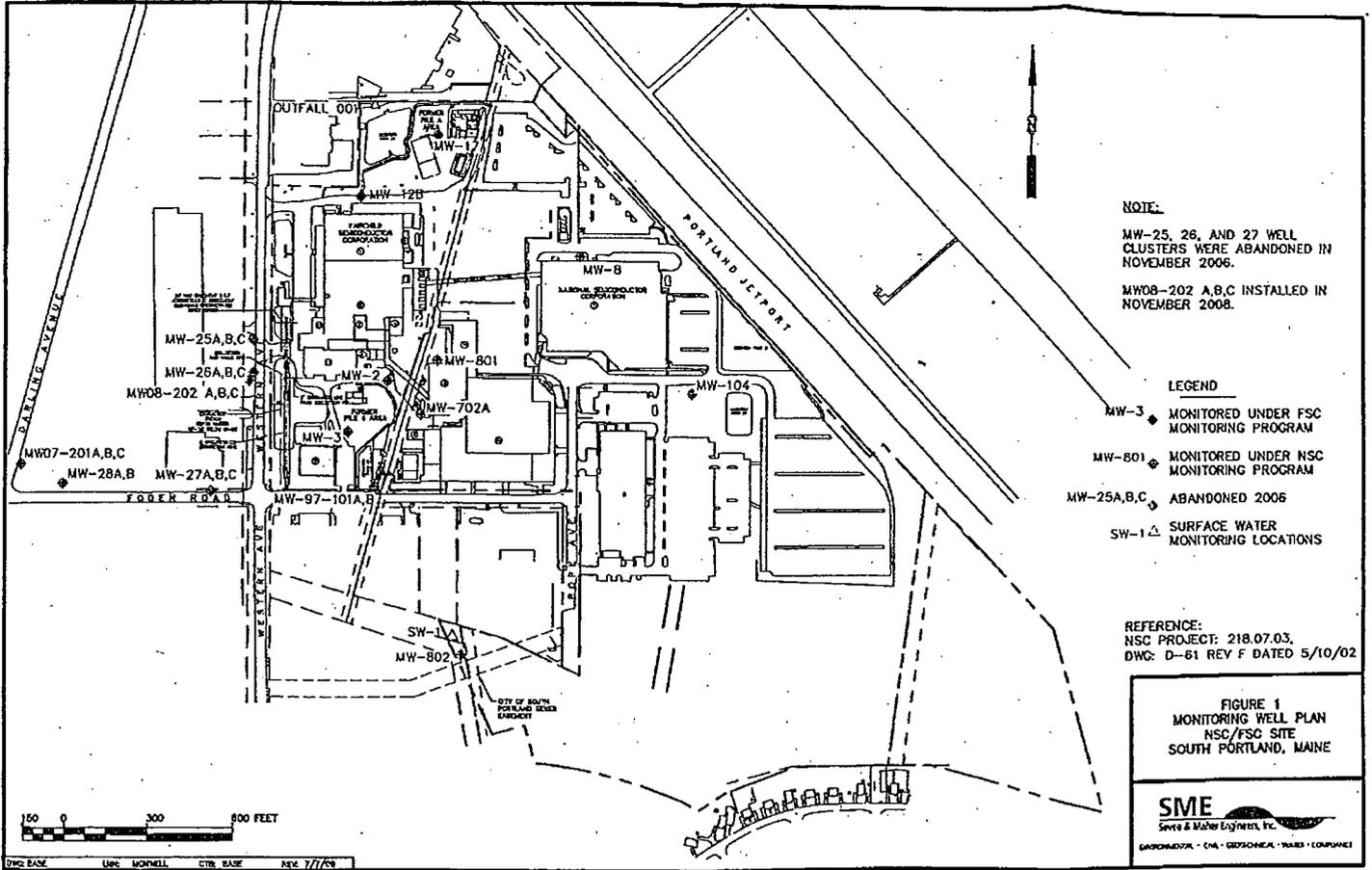
Maine Department of Environmental Protection, Augusta, file room

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact telephone and e-mail numbers

(name) Heather Jackson \_\_\_\_\_  
(phone #) (207)287-7880 \_\_\_\_\_  
(e-mail) heather.p.jackson@maine.gov \_\_\_\_\_

**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**



NOTE:  
 MW-25, 26, AND 27 WELL CLUSTERS WERE ABANDONED IN NOVEMBER 2006.  
 MW08-202 A,B,C INSTALLED IN NOVEMBER 2008.

- LEGEND
- MW-3 ◆ MONITORED UNDER FSC MONITORING PROGRAM
  - MW-801 ◆ MONITORED UNDER NSC MONITORING PROGRAM
  - MW-25A,B,C ◆ ABANDONED 2006
  - SW-1 ▲ SURFACE WATER MONITORING LOCATIONS

REFERENCE:  
 NSC PROJECT: 218.07.03.  
 DWG: D-61 REV F DATED 5/10/02

FIGURE 1  
 MONITORING WELL PLAN  
 NSC/FSC SITE  
 SOUTH PORTLAND, MAINE

**SME**  
 Sites & Water Engineers, Inc.  
 GEORGETOWN • CHA • GEORGETOWN • MAINE • COMPANY

This drawing was prepared using AutoCAD 2000. All dimensions are in feet unless otherwise noted.

150 0 300 600 FEET

DWG. BASE LUC MORRILL CTR. BASE REV 7/7/09

**TABLE 1**  
**SUMMARY OF 2010 ANALYTICAL RESULTS**  
**NSC SAMPLING PROGRAM**

LOCATION	ANALYTE (µg/L)			
	TCE	cDCE	Vinyl Chloride	<sup>(1)</sup> DRO
MW-104	1 U	1 U	2 U	56
MW-8	1 U	1 U	2 U	47U
MW-702A	1	1	2 U	58
MW-801	2	1U	2 U	80
MW-802	1 U	1 U	2 U	47U
SW-1	1 U	1 U	2 U	100

**Notes:**  
(1) DRO – Diesel Range Organics  
U indicates concentration below laboratory PQL

**TABLE 2**  
**SUMMARY OF 2010 ANALYTICAL RESULTS**  
**FSC SAMPLING PROGRAM**

Locations	TCE (µg/L)		cDCE (µg/L)		Vinyl Chloride (µg/L)	
	Spring	Fall	Spring	Fall	Spring	Fall
MW-2	-	19	-	17	-	2 U
MW-3	1	1 U	1 U	2	2 U	2 U
MW-12B	-	1 U	-	2	-	2 U
MW-17	-	3	-	1	-	2 U
MW97-101A	1 U	1 U	1 U	1 U	2 U	2 U
MW97-101B	-	1 U	-	1 U	-	2 U
MW-28A	-	1 U	1 U	1 U	-	2 U
MW-28B	-	1 U	1 U	1 U	2 U	2 U
MW07-201A	4	6	6	13	2 U	2 U
MW07-201B	3	2	170	160	2 U	2 U
MW07-201C	1 U	1 U	4	3	2U	2U
MW08-202A	16	17	620	4,000	37	140
MW08-202B	8	25	13,000	13,000	1,200	2,000
MW08-202C	1 U	1 U	89	140	6	13

**Notes:**  
1. **BOLD** font indicates concentration above MCL, MEG, or site clean-up goal.  
2. U indicates concentration below the laboratory PQL.  
3. - indicates no sample collected.

**Applicable Regulatory Levels:**  
TCE: MCL=5 µg/L, MEG=30 µg/L, or site clean-up goal=75 µg/L  
cDCE: MCL and MEG=70 µg/L  
Vinyl Chloride: MCL=2 µg/L

TABLE 3

ADDITIONAL PARAMETERS DETECTED  
WESTERN AVENUE MONITORING WELLS  
FSC SAMPLING PROGRAM

Compound	CONCENTRATION (µg/L)				
	MW08-202A	MW08-202B	MW08-202C	MCL	MEG
1,1-dichloroethene	21	100	U	7	40
1,1-dichloroethane	44	760	5	NA	60
1,2-dichloroethane	U	1	U	5	4
1,1,1-trichloroethane	370	390	2	200	10,000
tetrachloroethene	1	U	U	5	0.6
toluene	1	79	2	1000	600
ethylbenzene	3	33	1	700	70
total xylenes	10	39	U	10,000	1,000
1,1,2-trichloro-1,2,2trifluoroethane	2	U	U	NA	NA
1,2-dichlorobenzene	3	18	U	600	200

Notes:  
U indicates concentration below laboratory PQL  
NA indicates no published MCL or MEG



TABLE 4

**INDOOR AIR SAMPLING  
SUMMARY OF ANALYTICAL RESULTS  
RECURRING SAMPLE LOCATIONS  
FAIRCHILD SEMICONDUCTOR SITE**

Location	Description	Target Compounds	<sup>(4)</sup> OSHA PEL ( $\mu\text{g}/\text{m}^3$ )	<sup>(5)</sup> Indoor Air Target Level ( $\mu\text{g}/\text{m}^3$ )	Sample Results						
					<sup>(1)</sup> February 2008 ( $\mu\text{g}/\text{m}^3$ )	<sup>(1)</sup> April 2008 ( $\mu\text{g}/\text{m}^3$ )	<sup>(1)</sup> August 2009 ( $\mu\text{g}/\text{m}^3$ )	<sup>(2)</sup> February 2010 ( $\mu\text{g}/\text{m}^3$ )	<sup>(2)</sup> April 2010 ( $\mu\text{g}/\text{m}^3$ )	<sup>(2)</sup> May 2010 ( $\mu\text{g}/\text{m}^3$ )	
<sup>(6)</sup> BACKGROUND	Dock	TCE	$5.4 \times 10^5$	6.1	<1.07	<1.07	<1.07	<1.07	NA	NA	
		Vinyl Chloride	$2.6 \times 10^3$	2.8	<0.511	<0.511	<0.511	<0.511	NA	NA	
		Cis-1,2-DCE	$7.9 \times 10^5$	53	<0.792	<0.792	<0.792	<0.792	NA	NA	
Air-1	Next to GP-15 Next to Sump	TCE	$5.4 \times 10^5$	6.1	5.42	<b>24.6</b>	1.34	8.23	2.53	NA	
		Vinyl Chloride	$2.6 \times 10^3$	2.8	1.37	<b>3.16</b>	<0.511	<0.511	<0.511	NA	
		Cis-1,2-DCE	$7.9 \times 10^5$	53	24.4	<b>48.1</b>	2.15	5.23	2.14	NA	
Air-2	Next to B5 L1 Pumps	TCE	$5.4 \times 10^5$	6.1	<sup>(3)</sup> NA	<b>34.5</b>	3.33	12.8	2.73	NA	
		Vinyl Chloride	$2.6 \times 10^3$	2.8	NA	<b>4.51</b>	<0.511	0.69	<0.511	NA	
		Cis-1,2-DCE	$7.9 \times 10^5$	53	NA	<b>65.4</b>	5.15	8.63	2.14	NA	
Air-3	Shipping/Receiving or Packaging Area	TCE	$5.4 \times 10^5$	6.1	NA	<sup>(3)</sup> NA	NA	27.8	24.5	NA	
		Vinyl Chloride	$2.6 \times 10^3$	2.8	NA	NA	NA	<0.511	<0.511	NA	
		Cis-1,2-DCE	$7.9 \times 10^5$	53	NA	NA	NA	11.2	6.23	NA	
Air-4	Machine Shop	TCE	$5.4 \times 10^5$	6.1	NA	NA	NA	43.3	48.5	NA	
		Vinyl Chloride	$2.6 \times 10^3$	2.8	NA	NA	NA	<0.511	<0.511	NA	
		Cis-1,2-DCE	$7.9 \times 10^5$	53	NA	NA	NA	11.9	13.8	NA	
Air-5	Makeup Air Inside intake duct	TCE	$5.4 \times 10^5$	6.1	NA	NA	NA	NA	13.8	2.42	
		Vinyl Chloride	$2.6 \times 10^3$	2.8	NA	NA	NA	NA	<0.511	<0.511	
		Cis-1,2-DCE	$7.9 \times 10^5$	53	NA	NA	NA	NA	2.36	1.07	
Air-6	Overhead Door Loading Area	TCE	$5.4 \times 10^5$	6.1	NA	NA	NA	NA	NA	<u>Sample</u> 9.46	<u>Duplicate</u> 5.24
		Vinyl Chloride	$2.6 \times 10^3$	2.8	NA	NA	NA	NA	NA	<0.511	<0.511
		Cis-1,2-DCE	$7.9 \times 10^5$	53	NA	NA	NA	NA	NA	1.17	1.17

**Notes:**

- (1) Samples from April 2008 and August 2009 collected by Ransom Environmental, Portland, Maine.  
(2) Samples from February and April 2010 collected by Sevee and Maher Engineers, Inc., Cumberland, Maine.  
(3) NA indicates no sample collected.  
(4) OSHA Permissible Exposure Level, 8-Hr time weighted average (29 CFR 1910).  
(5) Indoor Air Target Level, Maine Department of Environmental Protection, Bureau of Remediation, Vapor Intrusion Evaluation Guidance, January 13, 2010, Table B6, Chronic Commercial Scenario for Multi-Contaminant Site.  
(6) Background sample location was denoted Air-2 in original February 2008 sampling, but not in subsequent sampling events.

\*BOLD value exceeds the Indoor Air Target Level

**Table 5 Personal Exposure Air Monitoring, June 11, 2010**  
 Fairchild Semiconductor  
 South Portland, Maine

Analyte (ppm)	Time Monitored	TCE	DCE	VC	Comments
<b>OELs</b>		<b>OSHA-PEL</b>	<b>ACGIH-TLV</b>	<b>NIOSH-REL</b>	
<b>OSHA PEL</b>		100	200	1	
<b>NIOSH REL</b>		N/A	200	N/A	
<b>ACGIH TLV</b>		10	200	1	
<b>Employee Results</b>					
Jeff VanDeventer Shipping & Receiving Workshift: 7:00 – 15:30	8:07 – 15:40	<9.5	<11	<0.092	
Tucker Lehigh Facilities Maintenance Supervisor Workshift: 7:00 – 10:15	8:32 – 10:15	<8.7	<9.7	<0.076	Monitored in the AM (1/2 of an 8-hour work shift)
Joel Rouillard Environmental Manager Workshift: 8:00 – 16:00	11:09 – 16:19	<5.4	<6.1	<0.43	Monitored in the PM (1/2 of an 8-hour work shift)
Fred Higgins Facilities Maintenance Workshift: 7:00 – 15:20	8:02 – 14:00	<10	<12		Spent 50% of his time conducting maintenance outdoors
Todd MacPhee Day Plant Engineer Workshift: 7:00 – 19:00	8:40 – 18:23	<3.0	<3.3	<0.15	
David Moore Evening Plant Engineer Workshift: 19:00 – 7:00	19:15 – 6:15	<2.1	<2.3		
Roger Doherty Shop Services Manager Workshift: 7:00 – 19:00	8:07 – 16:36	<4.1	<4.6	<0.20	
Jim Kossuth Cal Lab Workshift: 6:30 – 15:00	7:47 – 15:00	<5.7	<6.3	<0.18	
Jim Doucette DI Plant Workshift: 7:30 – 15:30	7:16 – 13:50	<2.5	<2.8		
Jim Daniels Security Workshift: 5:30 – 16:30	7:26 – 17:35	<3.0	<3.3		

**Notes:**

ppm: parts per million (unit of measurement)

OELs: Occupational Exposure Limits

TCE: trichloroethylene

DCE: 1,2-dichloroethylene

VC: Vinyl Chloride

OSHA-PEL: Occupational Safety and Health Permissible Exposure Limit based on an 8-hour time weighted average

ACGIH-TLV: American Conference of Governmental Industrial Hygienist Threshold Limit Value based on an 8-hour time weighted average

NIOSH-REL: National Institute for Occupational Safety and Health Recommended Exposure Limit based on a 10-hour time weighted average.

*From a GEI report dated July 16, 2010 that is included as Attachment A in SME's July 20, 2010 letter to DEP*