



MONITORING WELL LOCATION	T	TRACE LEVEL BELOW THE LISTED DETECTION LIMIT
OM-2A		
B6		
CF	NA	NOT ANALYZED
VC	ND	VOCs NOT DETECTED
MC		
1,1-DCE		
1,1-DCA		
1,2-DCE		
1,1,1-TCA		
TCE		
PCE		

- NOTES**
- CONCENTRATIONS REPORTED IN MICROGRAM PER LITER.
 - SAMPLES B1 THROUGH B16, B17 AND B18 ANALYZED BY U.S.EPA METHOD 8010. SAMPLES B16, B20 THROUGH B26, M-2A, M-2B AND M-2C ANALYZED BY U.S.EPA METHOD 8240.
 - TEMPORARY WELLS B1 THROUGH B20 SAMPLED DURING NOVEMBER 1992.
 - TEMPORARY WELLS B21 THROUGH B26 SAMPLED DURING JANUARY 1993.
 - MONITORING WELLS M-2A, B, C SAMPLED DURING JUNE 1994.

B20	TCE	100
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FIGURE 4-3
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
VRAP SUMMARY REPORT
GENERAL ALUM & CHEMICAL CORP.
SEARSPORT, MAINE
SEVEE & MAHER ENGINEERS, INC.

During the Phase 3 investigation of June 1994, groundwater samples also were collected from existing monitoring wells M-2A, M-2B, and M-2C for analysis of VOCs by U.S.EPA Method 8240. This monitoring well cluster, installed as part of the 1984 hydrogeologic assessment of the facility, consists of three wells screened in the shallow and deep till, and into the top of bedrock. VOCs were not detected in any of these monitoring wells, which are located approximately 450 feet east of the Old Ammonia Plant toward Stockton Harbor.

TABLE 4-5

SUMMARY OF ANALYTICAL LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
AT GENERAL ALUM AND CHEMICAL CORPORATION FACILITY
SEARSPORT, MAINE

Compound	Range of ($\mu\text{g}/\text{l}$)	Frequency of Detection	Percent Occurrence (%)	Federal MCL	State MEG	No. Wells Exceeding MCL
TCE	5-6,800	21/28	75	5	5	18
PCE	5-9	4/28	14	5	3	2
t-1,2-DCE	5-160	11/17	65	100	70	1
1,2-DCE (Total)	11-18	3/11	27	70	70	0
1,1-DCE	10	1/28	4	7	7	1
VC	10-33	5/28	18	2	0.15	5
1,1,1-TCA	5-53	2/28	7	200	200	0
1,1-DCA	9-12	3/28	11	NA	NA	NA
MECL	17-250	4/28	14	NA	NA	NA
MEK	25	1/11	9	NA	170	NA
Chloroform	22	1/28	4	100 ¹ 100 ¹	0	

Notes

MCL = maximum contaminant level

MEG = maximum exposure guideline

NA = no MCL/MEG

(1) Total trihalomethanes

5.0 SUMMARY OF FINDINGS

Based upon our review of the Phase 1, 2, and 3 site investigations at the site, the following conclusions are presented:

- o Solvents have been detected in the soil and groundwater at the site. The principal areas of solvent handling appear to be the Parts Cleaning Area (Area 1), the Preheater Degreasing Area (Area 2), and a localized area across the access road near the former ammonia spheres.

- o Trichloroethene (TCE), 1,2-dichloroethene, toluene, ethylbenzene, and xylenes were detected at low levels in shallow soil samples collected from the study area. TCE was the predominant chemical detected in the soils at the site, and was the only compound detected in concentrations exceeding 1 mg/kg. TCE concentrations exceeded 1 mg/kg in soil samples collected from B-2 (2.1 mg/kg); B-204 (3.4 mg/kg); and B-207 (1.4 mg/kg).

- o The VOCs were primarily detected in the clayey glaciomarine deposits found at the site. The low hydraulic conductivity of these soils inhibit the

horizontal and vertical movement of the compounds from the site.

- Trichloroethene, 1,2-dichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, tetrachloroethene, methylene chloride, and vinyl chloride were detected in groundwater samples collected from the site. Trichloroethene was the principal compound detected in the groundwater at the site. Laboratory analysis of 25 groundwater samples from the site reported TCE concentrations ranging from non-detect to 6.8 mg/l.

- The degradation products typically associated with TCE (1,1-DCE, 1,2-DCE, 1,1-DCA, and vinyl chloride) were also detected in the groundwater samples from the site. Very low levels of the remaining VOCs 1,1,1-TCA, 1,1-DCA, methylene chloride, 2-butanone, and chloroform were detected sporadically at the site.

- The locations of solvents detected in the soils and groundwater at the site coincide with those locations where interviews with former employees suggested solvents were used to clean parts and machinery in the 1950s and 1960s. Subsequent to the solvent use 30 to 40 years ago, the chemicals have likely been

redistributed, buried, and partially volatilized by plant construction and activities. Therefore, there is no clearly identifiable source of solvents at the site.

- Groundwater flow is generally southeasterly towards the Atlantic Ocean which is located 300 to 700 feet from the site. Due to the low hydraulic conductivities of the site soils, groundwater movement will be limited in both vertical and horizontal directions. It is expected that the levels of TCE in the groundwater will decrease with distance from the site due to dilution, adsorption and biodegradation.

- There are no groundwater users or human receptors located between the site and the ocean. Based on our understanding of the site hydrogeology and the results of the soil and groundwater analyses collected during this study, there does not appear to be a threat to human health from the presence of TCE and associated compounds in the groundwater.

- Because of the sporadic distribution and relatively low concentration of chemicals in the soils at the site, it is impractical to attempt to remediate the VOCs present in the soils.

- o Because of the geologic conditions present at the site, i.e. the presence of low hydraulic conductivity glacial tills and marine sediments, the remediation of groundwater at the site is not practical.

6.0 RECOMMENDATIONS

Consistent with other industrial sites in which historical usage has resulted in contamination but no threat to human or other significant environmental receptors, institutional controls restricting groundwater use in the vicinity of the site appear to be the only necessary action. Because there is no remediation that appears likely to be successful, at least at any cost that can be justified in light of the threat, a deed restriction prohibiting use of groundwater in and around the vicinity of the site should be adequate to address the problem. Additionally, General Alum should develop and implement an excavation monitoring plan to assure that workers are not exposed to adverse levels of volatile organic compounds during construction activities at the site.

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