SMS Site # 77-10

CDM FEDERAL PROGRAMS CORPORATION
a subsidiary of Camp Dresser & McKee Inc.

February 20, 1996

Dennis Lutz
c/o Town of Essex Public Works Department
81 Main Street
Essex Junction, Vermont 05425

SUBJECT: Contract No.: DACW33-91-D-0004
Delivery Order No.: 012
Final Site Inspection Prioritization Report
Essex Landfill
Essex, Vermont
TDD No.: 9405-35-CCX
CERCLIS No: VTD980915003

DOCUMENT NO.: 6101-012-IN-6411

Dear Mr. Lutz:

Enclosed is a copy of the Final Site Inspection Prioritization Report for Essex Landfill located in Essex, Vermont. A sheet on pollution prevention has been included for your information.

If you have any questions, please contact the U.S. Environmental Protection Agency New England (EPA-New England) Vermont Site Assessment Manager, Don Smith, at (617) 573-9648.

Very truly yours,

CDM FEDERAL PROGRAMS CORPORATION

Tara Abbott Taft
Delivery Order Manager

Approved:

for Julia M. Nault
Boston Branch Manager

TAT/jab
Attachment

cc: Sharon Hayes, EPA-New England Work Assignment Manager (letter only)
Chuck Schwer, Vermont Department of Environmental Conservation (letter only)
Jeffrey A. Bernard, CDM Federal Site Manager (letter only)
Document Control File (letter only)

POLLUTION PREVENTION IS THE USE OF MATERIALS, PROCESSES, OR PRACTICES THAT REDUCE OR ELIMINATE THE CREATION OF POLLUTANTS OR WASTES AT PRODUCTION SITES (INCLUDING AIR EMISSIONS, WATER DISCHARGES, AND SOLID AND HAZARDOUS WASTES), OR THAT PROTECT NATURAL RESOURCES THROUGH CONSERVATION OR MORE EFFICIENT USE.

Does your company use water-based inks instead of solvent-based inks, use renewable natural resource materials, or use fewer toxic solvents or replace solvents with an alternative material?

If so, you have prevented pollution through product design changes.

Has your company changed to mechanical stripping/cleaning devices to avoid solvent use, or changed to a powder-coating system ?

If so, you have implemented pollution prevention measures through process changes.

Has your company covered solvent tanks when not in use, used drip pans and splash guards, or stopped leaks, drips and spills?

If so, you have implemented pollution prevention measures through improved operating practices.

PRODUCT, PROCESS, AND PRACTICE CHANGES ARE THE GENERAL METHODS OF SOURCE REDUCTION THAT CAN BE USED IN A POLLUTION PREVENTION PROGRAM.

Out-of-process recycling, waste treatment, concentrating or diluting constituents to reduce volume or toxicity, and transferring constituents from one environmental medium to another are not pollution prevention measures.

THE BOTTOM LINE IS THAT
POLLUTION PREVENTION IS EVERYONE'S RESPONSIBILITY

Final Site Inspection Prioritization Report

Essex Landfill

Essex, Vermont

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY New England
Office of Site Remediation and Restoration
Boston, MA

Delivery Order No.:	012
CERCLIS No.:	VTD980915003
TDD No.:	9405-35-CCX
Contract No.:	DACW33-91-D-0004
Document No.:	6101-012-FR-6408
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Date Prepared:	December 7, 1995

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Essex, Vermont

CERCLIS No.VTD980915003
TDD No. 9405-35-CCX
6101-012-FR-6408

INTRODUCTION

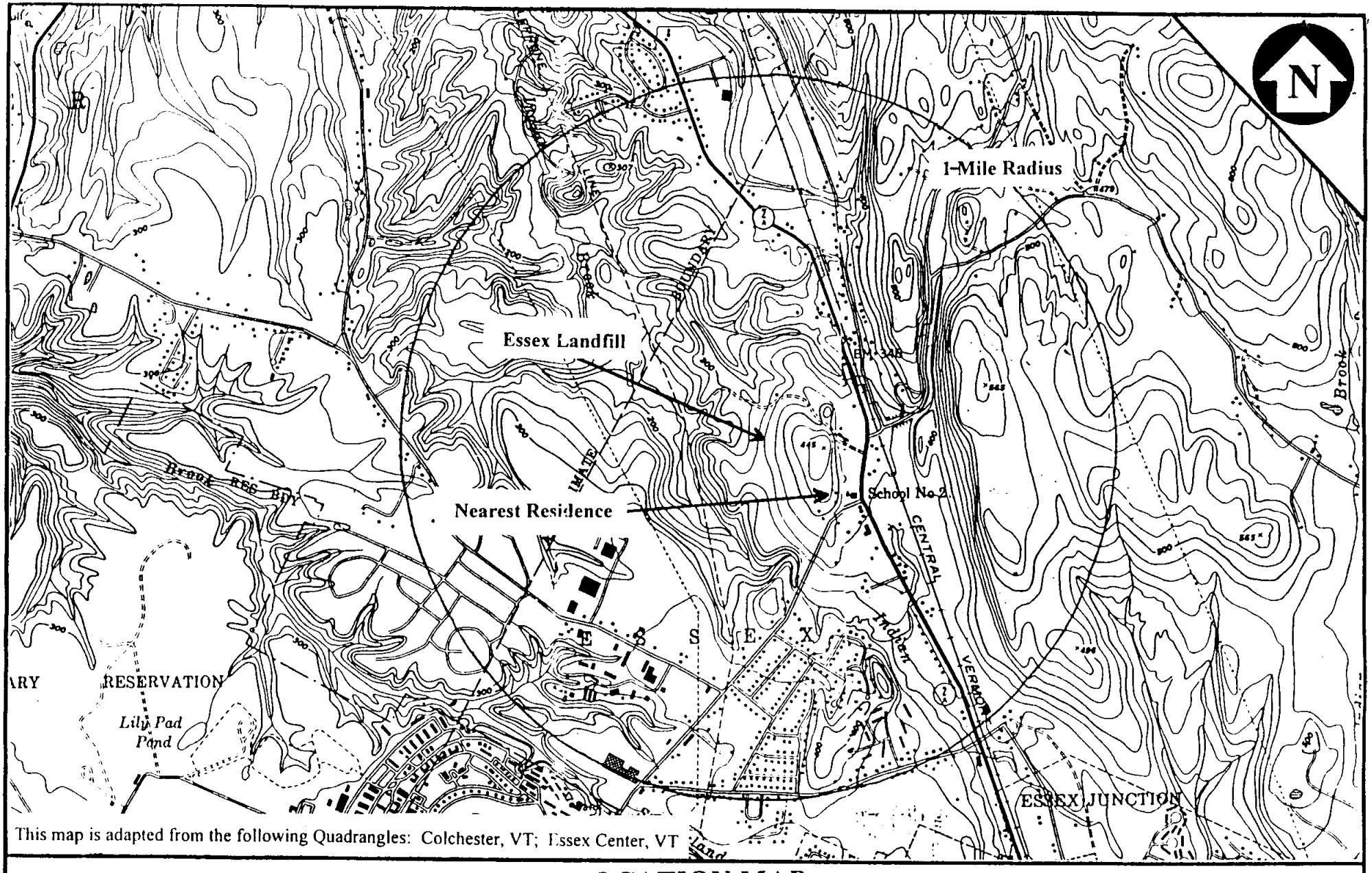
The CDM Federal Programs Corporation (CDM Federal) in coordination with the New England Division, U.S. Army Corps of Engineers (ACOE), was requested by the U.S. Environmental Protection Agency New England (EPA-New England) Office of Remediation and Restoration to perform a Site Inspection Prioritization (SIP) of the Essex Landfill property in Essex, Vermont. Tasks were conducted in accordance with ACOE Contract No. DACW33-91-D-0004, the SIP scope of work dated April 28, 1994, and technical specifications provided by ACOE under Delivery Order No. 012, which was issued to CDM Federal on July 20, 1994. A Preliminary Assessment (PA) was completed by the Vermont Department of Environmental Conservation (VTDEC), Waste Management Division, in November 1987. On the basis of the information provided in the PA report, the Essex Landfill Site Inspection was initiated. A Site Inspection (SI) report was completed by NUS Field Investigation Team (NUS/FIT) in April 1991. Updated information encountered during the SIP process is included in this report.

Background information used in the generation of this report was obtained through file searches conducted at VTDEC and EPA-New England, telephone interviews with town officials, conversations with persons knowledgeable of the Essex Landfill property and conversations with other federal, state, and local agencies. Additional information was collected during the CDM Federal onsite reconnaissance on June 27, 1995. No environmental sampling was conducted in preparation of this SIP.

This package follows the guidelines developed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, commonly referred to as Superfund. However, these documents do not necessarily fulfill the requirements of other EPA regulations, such as those under the Resource Conservation and Recovery Act (RCRA), or other federal, state, or local regulations. SIPs are intended to provide a preliminary screening of sites to facilitate EPA-New England's assignment of site priorities. They are limited efforts and are not intended to supersede more detailed investigations.

SITE DESCRIPTION

The Essex Landfill occupies approximately 15 acres of a 100-acre parcel of land off Route 2A, in Essex, Chittenden County, Vermont, approximately 2 miles north of the village of Essex Junction (see Figure 1: Location Map). The geographic coordinates of the landfill are Latitude: 44° 31′ 10.55″ N, Longitude: 73° 11′ 58.25″ W [30]. The landfill is located in a predominantly rural residential area and the closest residence is located approximately 0.5 mile southeast of the property. The landfill has been closed and capped. The Chittenden Solid Waste District currently leases a portion of the 100-acre parcel and uses it as a transfer station/drop-off center [12].



LOCATION MAP
ESSEX LANDFILL
ESSEX, VERMONT

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Figure 1

OPERATIONAL AND REGULATORY HISTORY AND WASTE CHARACTERISTICS

The Essex Landfill property is currently owned by the Town of Essex and was purchased in three separate acquisitions between 1966 and 1967 [21]. The landfill was operated from 1968 to December 1992 [12,21]. Prior to closing, the landfill was accepting approximately 20,900 cubic yards of municipal and industrial waste per year [20]. Municipal waste included refuse, appliances, tires, burnable wood, and other wastes from the residents and businesses. Industrial wastes included silicon carbide and aluminum oxide powders, wood, paper, ferric chloride, asbestos, wastewater from paint racks, and petroleum-contaminated soil [21]. The asbestos was bagged and covered and is believed to be confined [12].

In the spring of 1972, Roger Thompson, Jr. and Edward Costello, Jr. prepared the report, *Some Chemical Parameters of the Effluent From the Essex Sanitary Landfill*. The study focused on selected trace metals, such as cadmium, chromium, cobalt, copper, nickel, zinc and lead, as well as iron, total chlorides, and total dissolved solids (TDS); bacterial tests included biochemical oxygen demand (BOD) and total coliform. No metals, except for iron, were detected. The detection limits were 0.04 parts per million (ppm) for cadmium, 0.05 ppm for zinc. 0.2 ppm for cobalt, 0.01 ppm for chromium, 0.005 ppm for copper, 0.03 ppm for lead, and 0.01 ppm for nickel. Iron concentrations in all upstream samples were greater than downstream samples. The report concluded that the difference indicates that the effluent is changing the solubility of iron in Indian Brook. The BOD increases downstream of the effluent stream as do the total coliform, TDS, and the total chlorides [25].

In January 1981, Civil Engineering Associates, Inc., prepared the report, *Report on Subsurface Hydrologic Conditions at Essex Landfill*, for Donald L. Hamlin Consulting Engineers, Inc. (Hamlin). In preparation of the report, six groundwater observation wells (OBW #1 through OBW #6) were installed at Essex Landfill between May and July 1980. Groundwater elevations were recorded from June 1980 to November 1980 [14].

Essex Landfill was listed in the CERCLA Information System (CERCLIS) in March 1986 [26].

In September 1986, Lamoureux, Consulting Engineer and Land Surveyor, prepared *Engineering Report for the Essex Sanitary Landfill* [18]. Applicable information is presented and referenced throughout this report.

VTDEC, Waste Management Division, completed a PA of the Essex Landfill in November 1987. VTDEC concluded that no evidence was documented indicating that any significant amounts of industrial or hazardous waste had been disposed of at the landfill. Based upon the lack of evidence of hazardous waste disposal, VTDEC recommended a low priority for any further investigation under CERCLA [35].

Lamoureux and Stone Consulting Engineering Inc. (Lamoureux and Stone) prepared the report, *Engineering Report for Phase II of the Essex Sanitary Landfill, Essex, Vermont* in September of 1989 [20]. They prepared the report, *Application for Interim Certification for Phase II of the Essex Sanitary Landfill, Essex, Vermont* in October 1989 [19]. Applicable information is

presented and referenced throughout this report.

In November 1989, Manosh Corporation installed one bedrock monitoring well (RFW-1) on the property under the supervision of Roy F. Weston Inc. (Weston). Three piezometers (P1 through P3) were also installed in November 1989 by Atlantic Testing Laboratories Limited. Piezometer P1 was installed at the till/bedrock interface; P2 and P3 were installed in the overburden sediments [21]. Sampling results from the piezometers and the monitoring well are presented in the Groundwater Pathway section of this report.

In January 1990, Weston prepared the report, *Closure of Municipal Landfill, Town of Essex, Vermont* [22]. The Town of Essex anticipated reaching capacity of the landfill within a few years [22]. The town also planned to expand the landfill prior to closure and had Weston prepare the report, *Preliminary Hydrogeologic Investigation, Essex Landfill Expansion Area, Essex, Vermont* in February 1990 [23].

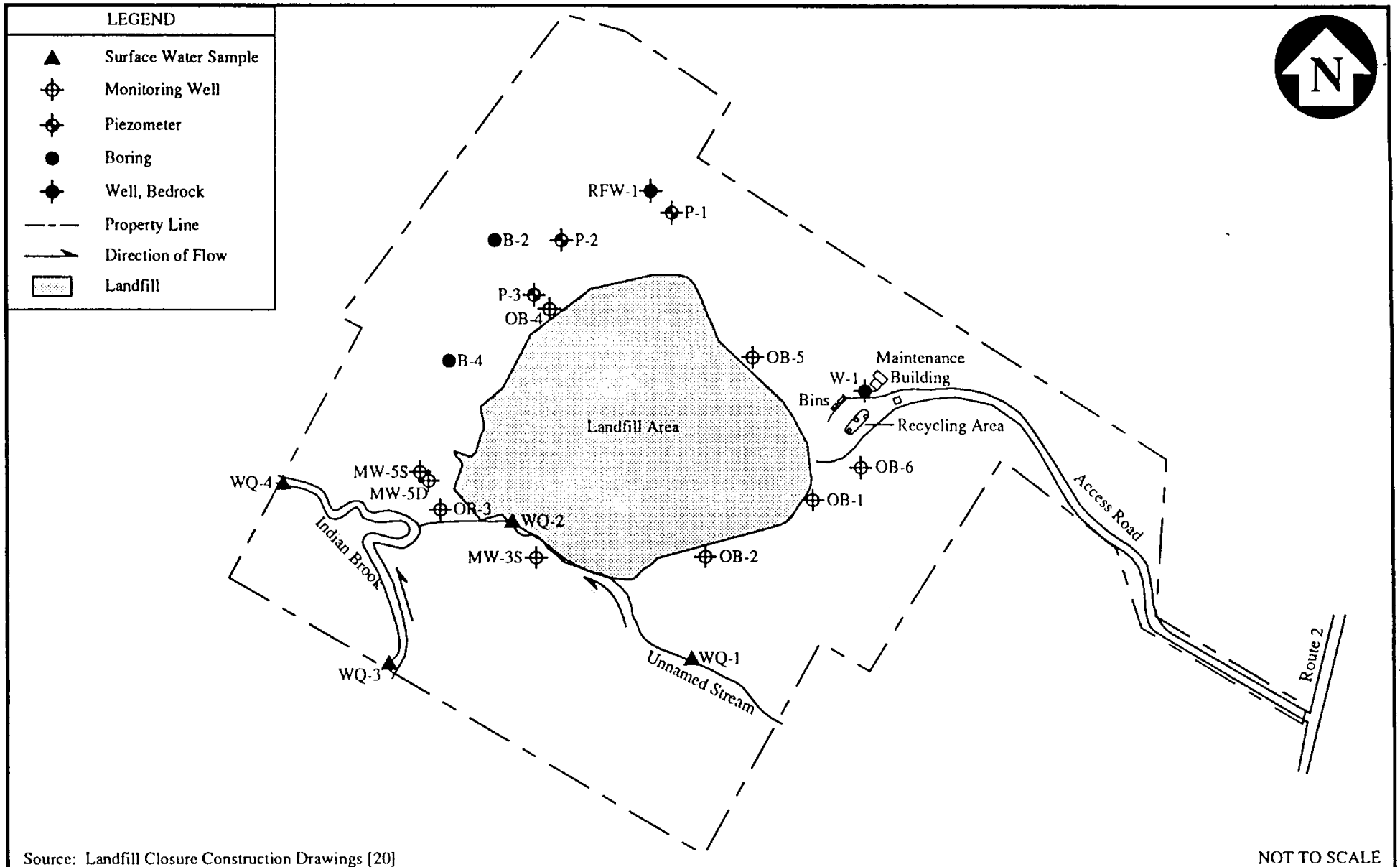
In April 1991, NUS/FIT completed an SI of the Essex Landfill for EPA-New England. NUS/FIT did not conduct any sampling at the property [21].

The Essex Landfill stopped accepting waste in December 1992 and the landfill was capped by Weston in October 1993 [12]. The state of Vermont requires that bi-annual monitoring of groundwater and surface water be conducted at the landfill. Analytical results are presented in the appropriate sections of this report.

In June 1995, CDM Federal conducted a reconnaissance at the Essex Landfill to meet with appropriate personnel and to document the current conditions of the property [13]. The following areas were identified onsite during a CDM Federal reconnaissance (see Figure 2: Site Sketch):

- The transfer station is located northeast of the landfill area. An attendant's booth and a maintenance building are associated with the transfer station. A 500-gallon waste oil tank is located on the southern part of the transfer station. A fence around the drop-off center limits vehicular access; pedestrian access is available from the ends of the fence [12,24].

- The unlined landfill has been capped with clean fill (silty sand), packed clay, a synthetic polyethylene cover, clean fill (silty sand), and topsoil. Groundwater flow controls have been engineered into the cap below the synthetic cover to discharge to Indian Brook. Surface water controls have been engineered into the cap above the synthetic cover to discharge to Indian Brook. Gas vents extend to the bottom of the landfill. A locked fence surrounding the landfill limits vehicular and pedestrian access [12,24].



Source: Landfill Closure Construction Drawings [20]

NOT TO SCALE

SITE SKETCH
ESSEX LANDFILL
ESSEX, VERMONT

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- Indian Brook flows north at the western corner of the property and an unnamed stream flows west through the southern portion of the property [24].

Table 1 presents identified structures or areas on the Essex Landfill property that are potential sources of contamination, the containment factors associated with each source, and the relative location of each source.

TABLE 1

Source Evaluation for Essex Landfill

Potential Source Area	Containment Factors	Spatial Location
Landfill	36 - 48 inches of cover including clay cap and polyethylene liner	center of property

[21,24]

Table 2 summarizes the types of potentially hazardous substances that have been disposed of, used, or stored on the property.

TABLE 2

Hazardous Waste Quantity for Essex Landfill

Substance	Quantity or Volume/Area	Years of Use/Storage	Years of Disposal	Source Area
municipal waste	15 acres	NA	1968 - 1992	landfill
asbestos	unknown	NA	unknown	landfill
aluminum oxide	unknown	NA	unknown	landfill
ferric chloride	unknown	NA	unknown	landfill
silicon carbide	unknown	NA	unknown	landfill

NA = Not Applicable

[21]

GROUNDWATER PATHWAY

Soils in the vicinity of the landfill have been mapped predominantly as Windsor loamy sands. At the northern end of the landfill, sand deposits form the upper 13 to 17 feet. Permeability rates of these sands are reported to be 1.69×10^{-4} and 3.04×10^{-4} centimeters per second (cm/sec) [23]. At the center of the property, bedrock was measured at a depth of 9 to 13 feet; it is covered by silty clays and silty clay loams with permeability ranging between 7.06×10^{-6} and 2.1×10^{-6} cm/sec. To the southwest, adjacent to the landfill, tree trunks and stumps are mixed with sandy till and cover the upper 8 to 10.5 feet [20].

Bedrock beneath the site consists of primarily dolomites, possibly interbedded with limestones, marble, sandstones, and quartzites. The site is located between, or on, two major regional north-trending fault systems [21]. During the drilling performed by Weston, no return water and no large fractures were noticed in the bedrock [21,22]. Data collected by Lamoureux and Stone and by Weston suggest that, locally, groundwater in overburden flows west towards Indian Brook with small components of flow south toward the intermittent stream [21]. According to information provided by the Vermont Agency of Natural Resources (VTANR), depth to groundwater, under the landfill property, is approximately 13 feet [21].

Two community supply wells, screened in bedrock, are located approximately 2.6 and 1.8 miles northwest of the landfill and serve 40 and 95 residents, respectively, in the town of Colchester. The Williston Station Water system uses a bedrock supply well approximately 3.6 miles south of the landfill serving 150 people [21]. Wellhead protection areas are associated with each of these wells [36]. Table 3 presents the public groundwater supply sources within 4 miles of Essex Landfill.

TABLE 3

Public Groundwater Supply Sources within 4 Miles of Essex Landfill

Distance/ Direction from Property	Source Name	Location of Source (Town)	Estimated Population Served	Source Type
1.8 miles NW	Colchester Community Well	Colchester	95	Bedrock
2.6 miles NW	Colchester Community Well	Colchester	40	Bedrock
3.6 miles S	Williston Station Water system	Williston	150	Bedrock

[21]

Frost Associates (Frost) estimated the populations served by private wells by summing the total number of drilled and dug wells within each CENTRACTS block (a Cartesian data management system used by the Census Bureau) and multiplying this total by the average number of people in each household [16]. According to Frost, the nearest private well is within 0.25 mile of Essex Landfill and an estimated 897 people rely on private sources within 4 miles of the property for

their drinking water [16]. CDM Federal documented the nearest private residence to be between 0.25 and 0.5 mile from Essex Landfill [12]. The discrepancy between the Frost report and CDM Federal documentation indicates that the Cartesian system used by Frost Associates and the radial system, used to calculate the number of people within each distance ring, are not comparable. Table 4 presents the population served by groundwater sources within 4 miles of Essex Landfill.

TABLE 4

Estimated Drinking Water Populations Served by Groundwater Sources within 4 Miles of Essex Landfill

Radial Distance from Essex Landfill (miles)	Estimated Population Served by Private Wells	Estimated Population Served by Public Wells	Total Estimated Population Served by Groundwater Sources within the Ring
0.00 - 0.25	0*	0	0*
> 0.25 - 0.50	30	0	30
> 0.50 - 1.00	71	0	71
> 1.00 - 2.00	145	95	240
> 2.00 - 3.00	235	40	275
> 3.00 - 4.00	416	150	566
TOTAL	897	285	1,182

* Population added to 0.25 - 0.50 mile distance ring

[16,21]

In May 1986, groundwater samples were collected by Hamlin from monitoring wells OBW#3 and OBW#4 and were analyzed by Industrial & Environmental Analysts, Inc. (IEA) for cadmium, chromium and iron in addition to nitrates, temperature, conductivity, chemical oxygen demand (COD), and pH. Cadmium and chromium were not detected in the samples. Total iron concentrations were 84.8 milligrams per liter (mg/l) and 35.5 mg/l for OBW#3 and OBW#4, respectively. No background sample was collected for comparison [21].

In June 1988, groundwater samples were collected by Lamoureux & Stone from monitoring wells OBW#3, OBW#4, and OBW#6. Samples were analyzed for volatile organic compounds (VOCs) by Aquatec, Inc. (Aquatec). Benzene; chlorobenzene; chloroethene; 1,2-dichloropropane; vinyl chloride; and o-dichlorobenzene were all detected in sample OBW#4 but at concentrations below the detection limits of the background sample (OBW#6). The detection limits for benzene; chlorobenzene; 1,2-dichloropropane; and o-dichlorobenzene were 5 micrograms per liter (µg/l). The detection limits for vinyl chloride and chloroethene were 10 µg/l. Tetrahydrofuran, diethyl ether, dichlorodifluoromethane, and dichloro-fluoromethane were detected in sample OBW#4 but are not listed in the other sampling results [4,5,6,7]. Complete analytical results are presented in Attachment B. Table 5 presents the results of the analyses of the samples.

TABLE 5

Summary of Analytical Results
Groundwater Sample Analysis for Essex Landfill
Samples Collected by Lamoureux & Stone, June 1, 1988

Sample Location No.	Compound	Concentration (µg/l)	Reference Concentration (µg/l)
MATRIX: Groundwater			
OB-4	benzene	4 J	ND (5)
	chlorobenzene	2 J	ND (5)
	chloroethane	1 J	ND (10)
	1,2-dichloropropane	2 J	ND (5)
	tetrahydrofuran	58 C	ND (NA)
	vinyl chloride	1 J	ND (10)
	o-dichlorobenzene	2 J	ND (5)
	dichlorodifluoromethane	2 *	ND (NA)
	dichlorofluoromethane	4 *	ND (NA)
	diethyl ether	17 *	ND (NA)

ND = Not Detected (detection limit in parentheses)
NA = Not Available
J = An estimated value. The mass spectrum indicates the presence of the compound, but the calculated result is less than the reliable detection limit for this compound.
C = The result has been corrected for the presence of the compound in the blank.
* = Estimated concentration.
[1,2,3]

Groundwater has been sampled by Dufresne-Henry, Inc. (Dufresne-Henry) bi-annually since May 1993 from the following wells: B-2, B-4 (first sampled October 1993), MW-3S (destroyed October 1993), MW-5D, MW-5S, MW-7, P1 (reference sample), P3, and W-1. Samples were analyzed by Scitest Laboratory Services (Scitest) for arsenic, cadmium, chromium, lead, nickel, copper, iron, manganese, zinc, sodium, chloride, and VOCs. Cadium was detected in the groundwater (MW-5D) at a concentration greater than the Maximum Contaminant Level (MCL) of 5 ppb established by EPA. Table 6 presents the greatest concentration of each analyte and compound for each sample location.

TABLE 6

Summary of Analytical Results
Groundwater Sample Analysis for
Essex Landfill

Sample Location No.	Date	Compound/ Element	Concentration		Reference Concentration	Comments
B-2	10/31/94	naphthalene	1.4	µg/l	ND (NA)	---
	5/17/94	cadmium	1.6	µg/l	ND (0.5 µg/l)	3.2 x DL
	10/6/93	iron	0.04	mg/l	ND (0.03 mg/l)	1.3 x DL
	5/16/95	manganese	3.79	mg/l	ND (0.02 mg/l)	200 x DL
B-4	10/6/93	arsenic	5	µg/l	ND (5 µg/l)	1 x DL
	5/17/94	lead	3	µg/l	ND (3 µg/l)	1 x DL
	5/17/94	iron	10.6	mg/l	ND (0.03 mg/l)	350 x DL
	5/16/95	manganese	5	mg/l	ND (0.02 mg/l)	250 x DL
	5/17/94	zinc	0.008	mg/l	ND (0.005 mg/l)	1.6 x DL
MW-5D	10/31/94	cadmium	7	µg/l	ND (0.5 µg/l)	14 x DL
	10/6/93	iron	0.04	mg/l	ND (0.03 mg/l)	1.3 x DL
	5/17/94	manganese	0.11	mg/l	ND (0.02 mg/l)	5.5 x DL
MW-5S	5/14/95	manganese	0.1	mg/l	ND (0.02 mg/l)	5 x DL
MW-7	5/27/93	lead	9	µg/l	ND (3 µg/l)	3 x DL
	5/17/94	iron	0.04	mg/l	ND (0.03 mg/l)	1.3 x DL
	5/27/93	manganese	0.09	mg/l	ND (0.02 mg/l)	4.5 x DL
P-3	5/17/94	cadmium	1.4	µg/l	ND (0.5 µg/l)	2.8 x DL
	10/6/93	iron	0.08	mg/l	ND (0.03 mg/l)	2.7 x DL
	10/31/94	manganese	0.07	mg/l	ND (0.02 mg/l)	3.5 x DL
	5/17/94	zinc	0.020	mg/l	ND (0.005 mg/l)	4 x DL
W-1	10/31/94	naphthalene	1.3	µg/l	ND (NA)	---
	10/6/93	arsenic	12	µg/l	ND (5 µg/l)	2.4 x DL
	5/17/94	cadmium	1.4	µg/l	ND (0.5 µg/l)	2.8 x DL
	5/27/93	lead	9	µg/l	ND (3 µg/l)	3 x DL
	5/16/95	iron	0.74	mg/l	ND (0.03 mg/l)	25 x DL
	5/17/94	zinc	9.9	mg/l	ND (0.005 mg/l)	2,000 x DL

µg/l = Micrograms per liter.
mg/l = Milligrams per liter.
ND = Not Detected (Detection Limit in parentheses)
NA = Not Available
DL = Detection Limit
--- = Comparison not possible

[17]

No groundwater sampling was conducted for this SIP.

SURFACE WATER PATHWAY

The Essex Landfill is located in the Malletts Bay drainage basin. Indian Brook flows through the landfill property approximately 450 feet from the landfill area. A smaller unnamed perennial stream, south to southwest of the landfill, drains into Indian Brook [24,30]. The flow rates of Indian Brook and the unnamed stream are estimated to be less than 10 cubic feet per second (cfs) at the probable point of entry (PPE) of contaminants migrating from the landfill and at the confluence of the streams. Indian Brook drains into Malletts Bay approximately 5.2 stream miles northwest of the property. Malletts Bay is part of Lake Champlain [30]. Lake Champlain flows to the north at a rate of approximately 4,000 cfs at a gauge at Rouse's Point, New York [15]. Table 7 presents the surface water bodies within 15 downstream miles of Essex Landfill.

TABLE 7

Water Bodies within the Surface Water Segment of Essex Landfill

Surface Water Body	Descriptor[a]	Length of Reach	Flow Characteristics (cfs)[b]	Length of Wetlands
Unnamed stream	minimal stream	< 500 feet	< 10	0 mile
Indian Brook	minimal stream	5.2 miles	< 10	8.0 miles
Lake Champlain	large stream to river	9.8 miles	4,000	4.2 miles

[a] Minimal stream. Small to moderate stream. Moderate to large stream. Large stream to river. Very large river. Coastal tidal waters. Shallow ocean zone or Great Lake. Deep ocean zone or Great Lake. Three-mile mixing zone in quiet flowing river.

[b] Cubic feet per second.

[24,30,31]

Indian Brook and Lake Champlain are both rated as class B water bodies by the state of Vermont [8]. This indicates that the brook and lake are suitable for use as a public water supply with filtration and disinfectation; irrigation and other agricultural uses; swimming, and recreational use [39]. Approximately 8 miles of wetland frontage exists along Indian Brook, and approximately 4.2 miles of wetland frontage exists on Lake Champlain [28, 29]. Lake Champlain supplies drinking water to the city of Burlington, Vermont, and to the Champlain Water District from an intake approximately 18 downstream miles of Essex Landfill [37]. Two state parks and one wildlife management area are located on Lake Champlain within 15 downstream miles of Essex Landfill [30,31,32]. Lake Champlain is also used for recreational activities, including fishing, boating, and swimming [21].

Populations of brook trout, parasitic sea lamprey, and non-parasitic American brook lamprey inhabit Indian Brook. Indian Brook is a known fishery in locations near Malletts Bay. The American brook lamprey is a Vermont-designated threatened species [9,21]. The following fish are commonly taken from Lake Champlain: rainbow, brown and lake trout; landlock salmon; smelt; yellow perch; walleye; northern pike; chain pickerel; large- and smallmouth bass; bullhead;

and panfish [38].

Surface water samples have been collected bi-annually from four locations (WQ-1 through WQ-4) since May 1983 in the unnamed stream and Indian Brook. Sample locations WQ-1 and WQ-2 are on the unnamed stream, upstream and downstream of the landfill respectively. Sample location WQ-3 is on Indian Brook where it enters the property, upstream of its confluence with the unnamed stream. Sample location WQ-4 is on Indian Brook where it exits the property, downstream of the confluence of the unnamed stream [21].

Prior to November 1986, samples were collected by Hamlin and analyzed by IEA. Between November 1986 and November 1991, samples were collected by Lamoureux and Stone and analyzed by IEA. No samples were collected in 1992. Since May 1993, samples have been collected by Dufresne-Henry, Inc. (Dufresne-Henry) and analyzed by Scitest Laboratory Services (Scitest) [17].

Prior to 1993, samples were analyzed only for chloride, dissolved iron, total iron, COD, conductivity, pH, and temperature. Samples collected in 1986 were also analyzed for cadmium, chromium, and nitrate. Neither cadmium or chromium was detected in any samples. Since 1993, the samples have been analyzed for arsenic, cadmium, chromium, lead, nickel, copper, manganese, zinc, sodium in addition to pre-1993 analyses [17].

Arsenic, cadmium, chromium, lead, nickel, and copper have never been detected in either sample location WQ-1 or WQ-3. Analyses of samples collected from WQ-2 have detected nickel, iron, manganese, and zinc at concentrations significantly above background concentrations (WQ-1). Analyses of samples collected from WQ-4 have detected cadmium, lead, and nickel [17]. The concentration of cadmium detected in the surface water is greater than the MCL established by EPA-New England. Table 8 presents the greatest concentration of each analyte and compound for each downstream sample location.

TABLE 8

Summary of Analytical Results
Surface Water Sample Analysis for
Essex Landfill

Sample Location No.	Date	Compound/ Element	Concentration	Reference Concentration	Comments
WQ-2	5/17/94	nickel	17 µg/l	ND (5 µg/l) {WQ-1}	3.4 x DL
	5/27/93	iron	84 mg/l	0.06 mg/l {WQ-1}	1,400 x REF
	10/6/93	manganese	12.1 mg/l	0.18 mg/l {WQ-1}	67 x REF
	10/6/93	zinc	0.126 mg/l	ND (0.005 mg/l) {WQ-1}	25 x DL
WQ-4	10/31/94	cadmium	9 µg/l	ND (0.5 µg/l) {WQ-1 & WQ-3}	18 x DL
	5/16/95	nickel	6 µg/l	ND (5 µg/l) {WQ-1 & WQ-3}	1.2 x DL
	5/17/94	lead	3 µg/l	ND (3 µg/l) {WQ-1 & WQ-3}	1 x DL

REF = Reference concentration.
µg/l = Micrograms per liter.
mg/l = Milligrams per liter.
ND = Not Detected (Detection Limit in paretheses) {reference sample in brackets}
NA = Not Avaialable
DL = Detection Limit

[17]

In June 1988, surface water was collected from locations WQ-1 through WQ-4 by Lamoureux & Stone. Samples were analyzed for VOCs by Aquatec. No VOCs were detected in any surface water samples [4,5,6,7]. Complete analytical results are presented in Attachment A.

No surface water or sediment samples were collected for this SIP.

SOIL EXPOSURE PATHWAY

No areas of observed surface soil contamination have been documented at Essex Landfill [21]. Three or four people work at the transfer station/drop-off center and approximately 1,479 people live within 1 mile of the landfill [10,16]. No terrestrial sensitive environments, schools, or day-care facilities have been documented at Essex Landfill.

No surface soil sampling has been conducted at Essex Landfill since the landfill was capped in October 1993.

AIR PATHWAY

The nearest individuals to the landfill are the employees at the transfer station [10]. An estimated 58,323 live within 4 miles of the property [16]. Approximately 800 acres of wetland exist within 4 miles of Essex Landfill [28,29]. No other sensitive environments have been documented within 4 miles of the property [30,31,32,33,34]. Table 9 presents the estimated population within 4 miles of the property.

TABLE 9

Estimated Population within 4 Miles of Essex Landfill

Radial Distance from Essex Landfill (miles)	Estimated Population
0.00 - 0.25	82
> 0.25 - 0.50	260
> 0.50 - 1.00	1,137
> 1.00 - 2.00	9,265
> 2.00 - 3.00	27,015
> 3.00 - 4.00	20,564
TOTAL	58,323

[16]

No air sampling was conducted as part of this SIP or any previous environmental investigation. Air monitoring for detections of VOCs was not performed during the June 27, 1995, onsite reconnaissance because the MiniRAE Photoionization Detector (PID) equipped with an 11.7 eV lamp did not calibrate properly.

SUMMARY

The Essex Landfill occupies approximately 15 acres of a 100-acre parcel of land off Route 2A in Essex, Vermont. The area around the landfill is predominantly rural with the nearest residence located approximately 0.5 mile southeast of the property. The landfill stopped accepting waste in December 1992, and was capped in October 1993. The Chittenden Solid Waste District currently leases a portion of the 100-acre parcel and uses it as transfer station/drop-off center. The landfill and the transfer station/drop-off center are separated by a locked fence that completely surrounds the landfill. Another fence restricts vehicular access to the transfer station from the road. Indian Brook flows through the western corner of the property approximately 450 feet from the landfill area and an unnamed stream flows through the southern portion of the property.

During operation, the landfill accepted municipal waste, and occasionally, industrial waste. Municipal waste included refuse, appliances, tires, burnable wood, and other wastes from residents and businesses. Industrial waste included silicon carbide and aluminum oxide powders, wood, paper, ferric chloride, asbestos, wastewater from paint racks, and petroleum-contaminated soil.

In November 1987, a Preliminary Assessment of Essex Landfill was completed by the Vermont Department of Environmental Conservation for the U.S. Environmental Protection Agency New England (EPA-New England). NUS Field Investigation Team completed a Site Inspection of Essex Landfill for EPA-New England in April 1991. In June 1995, CDM Federal Programs Corporation conducted a reconnaisance at the Essex Landfill to meet with appropriate personnel and to document current conditions at the property.

Two community supply wells, screened in bedrock, are located approximately 2.6 and 1.8 miles northwest of the landfill and serve 40 and 95 residents respectively, in the town of Colchester. Williston Station Water System uses a bedrock supply well approximately 3.6 miles south of the landfill serving 150 people. Frost Associates estimated that 897 people derive their drinking water from private sources within 4 miles of Essex Landfill.

In May 1986, groundwater samples were collected by Hamlin from monitoring wells OBW#3 and OBW#4 and were analyzed by Industrial & Environmental Analysts, Inc., for cadmium, chromium and iron in addition to nitrates, temperature, conductivity, chemical oxygen demand (COD), and pH. Cadmium and chromium were not detected in the samples.

In June 1988, groundwater was collected from wells OBW#3, OBW#4, and OBW#6. Samples were analyzed for volatile organic compounds (VOCs) by Aquatec, Inc. Benzene; chlorobenzene; chloroethene; 1,2-dichloropropane; vinyl chloride; and o-dichlorobenzene were all detected in sample OBW#4 but at concentrations below the detection limits of the background sample (OBW#6). Tetrahydrofuran, diethyl ether, dichlorodifluoromethane, and dichloro-fluoromethane were detected in sample OBW#4 but are not listed in the other sampling results.

Groundwater has been sampled by Dufresne-Henry, Inc., bi-annually since May 1993 from the following wells: B-2, B-4 (first sampled October 1993), MW-3S (destroyed October 1993), MW-5D, MW-5S, MW-7, P1 (reference sample), P3, and W-1. Samples were analyzed by Scitest Laboratory Services for arsenic, cadmium, chromium, lead, nickel, copper, iron, manganese, zinc, sodium, chloride, and VOCs. Except for zinc, none of the analytes or VOCs have been

detected in the reference sample since sampling began. Cadmium, iron, manganese, and naphthalene have been detected in well B-2. Arsenic, lead, iron, manganese, and zinc have been detected in well B-4. Cadmium, iron, and manganese have been detected in well MW-5D. Only manganese has been detected in samples collected from well MW-5S. Lead, iron, and manganese have been detected in well MW-7. Cadmium, iron, manganese, and zinc have been detected in piezometer P-3. Naphthalene, arsenic, cadmium, lead, iron, and zinc have been detected in production well W-1.

Indian Brook flows through the landfill property approximately 450 feet from the landfill area. A smaller unnamed perennial stream, south to southwest of the landfill, drains into Indian Brook. The flow rates of Indian Brook and the unnamed stream are estimated to be less than 10 cubic feet per second at the probable point of entry and the confluence of the streams. Indian Brook drains into Malletts Bay approximately 5.2 stream miles northwest of the property. Malletts Bay is part of Lake Champlain. The remaining 9.8 miles of the 15-mile downstream pathway extends from the confluence of Indian Brook into Lake Champlain.

Indian Brook and Lake Champlain are each rated as a class B water body by the state of Vermont. This indicates that the brook and lake are suitable for fishing and body contact recreational use. Approximately 8 miles of wetland frontage exists along Indian Brook and approximately 4.2 miles of wetland frontage exists on Lake Champlain. Lake Champlain supplies drinking water to the city of Burlington, Vermont and to the Champlain Water District from an intake approximately 18 downstream miles of Essex Landfill. Two state parks and one wildlife management area are located on Lake Champlain within 15 downstream miles of Essex Landfill. Lake Champlain is also used for recreational activities including fishing, boating, and swimming. Indian Brook is a known fishery in locations near Malletts Bay. The American brook lamprey, which inhabits Indian Brook, is a Vermont-designated threatened species.

Surface water samples have been collected bi-annually since May 1983 from the unnamed stream and Indian Brook. Prior to 1993, samples were analyzed only for chloride, dissolved iron, total iron, COD, conductivity, pH, and temperature. Samples collected in 1986 were also analyzed for cadmium, chromium, and nitrate. Neither cadmium or chromium was detected in any samples.

Since 1993, the samples have been analyzed for arsenic, cadmium, chromium, lead, nickel, copper, manganese, zinc, sodium in addition to pre-1993 analyses. Analyses of surface water samples collected from locations downstream of the landfill have detected cadmium, iron, lead, manganese, nickel, and zinc at concentrations significantly above background concentrations. In June 1988, surface water samples were collected from locations WQ-1 through WQ-4. Samples were analyzed for VOCs by Aquatec, Inc. No VOCs were detected in any surface water samples.

No areas of observed surface soil contamination have been documented at Essex Landfill. Three or four people work at the transfer station/drop-off center and approximately 1,479 people live within 1 mile of the landfill. No terrestrial sensitive environments, schools, or day-care facilities have been documented at Essex Landfill. The nearest individuals are the employees at the transfer station. An estimated 58,323 people live within 4 miles of the property. Approximately 800 acres of wetland exist within 4 miles of Essex Landfill.

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ATTACHMENT A

Essex Landfill

Volatile Organic Compounds in Surface Water Samples
Lamoureux & Stone

June 20, 1988

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83964
EIR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureaux, surface water sample labeled Essex landfill, WQ1, 6/1/88.

Volatile Organic Compounds in ug/l

benzene	5 U	methylene chloride	LCB
carbon tetrachloride	5 U	chloromethane	10 U
chlorobenzene	5 U	bromomethane	10 U
1,2-dichloroethane	5 U	bromoform	5 U
1,1,1-trichloroethane	5 U	bromodichloromethane	5 U
1,1-dichloroethane	5 U	dibromochloromethane	5 U
1,1,2-trichloroethane	5 U	tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U	toluene	5 U
chloroethane	10 U	trichloroethene	5 U
2-chloroethyl vinyl ether	10 U	vinyl chloride	10 U
chloroform	5 U	acetone	LCB
1,1-dichloroethene	5 U	2-butanone	LCB
1,2-dichloroethene	5 U	carbon disulfide	5 U
1,2-dichloropropane	5 U	2-hexanone	10 U
trans-1,3-dichloropropene	5 U	4-methyl-2-pentanone	10 U
cis-1,3-dichloropropene	5 U	styrene	5 U
ethylbenzene	5 U	vinyl acetate	10 U
acrolein	10 U	total xylenes	5 U
acrylonitrile	10 U	trichlorofluoromethane	5 U
		o-dichlorobenzene	5 U

No other volatile organic compounds were found in reportable concentrations.

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the detection limit for the compound.

LCB - Compound was found but at low concentration, comparable to that in the blank. Quantitation is not possible.

J - An estimated value. The mass spectrum indicates the presence of the compound, but the calculated result is less than the reliable detection limit for this compound.

C - The result has been corrected for the presence of the compound in the blank.

Quality controls were analyzed with the sample as part of Aquatec's standard analytical procedures. The results of these are maintained on file at Aquatec.

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83965
ETR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureaux, surface water sample labeled Essex landfill, WQ2, 6/1/88.

Volatile Organic Compounds in ug/l

benzene	5 U	methylene chloride	LCB
carbon tetrachloride	5 U	chloromethane	10 U
chlorobenzene	5 U	bromomethane	10 U
1,2-dichloroethane	5 U	bromoform	5 U
1,1,1-trichloroethane	5 U	bromodichloromethane	5 U
1,1-dichloroethane	5 U	dibromochloromethane	5 U
1,1,2-trichloroethane	5 U	tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U	toluene	5 U
chloroethane	10 U	trichloroethene	5 U
2-chloroethyl vinyl ether	10 U	vinyl chloride	10 U
chloroform	5 U	acetone	LCB
1,1-dichloroethene	5 U	2-butanone	LCB
1,2-dichloroethene	5 U	carbon disulfide	5 U
1,2-dichloropropane	5 U	2-hexanone	10 U
trans-1,3-dichloropropene	5 U	4-methyl-2-pentanone	10 U
cis-1,3-dichloropropene	5 U	styrene	5 U
ethylbenzene	5 U	vinyl acetate	10 U
acrolein	10 U	total xylenes	5 U
acrylonitrile	10 U	trichlorofluoromethane	5 U
		o-dichlorobenzene	5 U

No other volatile organic compounds were found in reportable concentrations.

Key to the letters used to qualify the results of the analysis:

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83966
EIR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureaux, surface water sample labeled Essex landfill, WQ3, 6/1/88.

Volatile Organic Compounds in ug/l

benzene	5 U	methylene chloride	LCB
carbon tetrachloride	5 U	chloromethane	10 U
chlorobenzene	5 U	bromomethane	10 U
1,2-dichloroethane	5 U	bromoform	5 U
1,1,1-trichloroethane	5 U	bromodichloromethane	5 U
1,1-dichloroethane	5 U	dibromochloromethane	5 U
1,1,2-trichloroethane	5 U	tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U	toluene	5 U
chloroethane	10 U	trichloroethene	5 U
2-chloroethyl vinyl ether	10 U	vinyl chloride	10 U
chloroform	5 U	acetone	LCB
1,1-dichloroethene	5 U	2-butanone	LCB
1,2-dichloroethene	5 U	carbon disulfide	5 U
1,2-dichloropropane	5 U	2-hexanone	10 U
trans-1,3-dichloropropene	5 U	4-methyl-2-pentanone	10 U
cis-1,3-dichloropropene	5 U	styrene	5 U
ethylbenzene	5 U	vinyl acetate	10 U
acrolein	10 U	total xylenes	5 U
acrylonitrile	10 U	trichlorofluoromethane	5 U
		o-dichlorobenzene	5 U

No other volatile organic compounds were found in reportable concentrations.

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the detection limit for the compound.

LCB - Compound was found but at low concentration, comparable to that in the blank. Quantitation is not possible.

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C - The result has been corrected for the presence of the compound in the blank.

Quality controls were analyzed with the sample as part of Aquatec's standard analytical procedures. The results of these are maintained on file at Aquatec.

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83967
ETR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureaux, surface water sample labeled Essex landfill, WQ4, 6/1/88.

Volatile Organic Compounds in ug/l

benzene	5 U	methylene chloride	LCB
carbon tetrachloride	5 U	chloromethane	10 U
chlorobenzene	5 U	bromomethane	10 U
1,2-dichloroethane	5 U	bromoform	5 U
1,1,1-trichloroethane	5 U	bromodichloromethane	5 U
1,1-dichloroethane	5 U	dibromochloromethane	5 U
1,1,2-trichloroethane	5 U	tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U	toluene	5 U
chloroethane	10 U	trichloroethene	5 U
2-chloroethyl vinyl ether	10 U	vinyl chloride	10 U
chloroform	5 U	acetone	LCB
1,1-dichloroethene	5 U	2-butanone	LCB
1,2-dichloroethene	5 U	carbon disulfide	5 U
1,2-dichloropropane	5 U	2-hexanone	10 U
trans-1,3-dichloropropene	5 U	4-methyl-2-pentanone	10 U
cis-1,3-dichloropropene	5 U	styrene	5 U
ethylbenzene	5 U	vinyl acetate	10 U
acrolein	10 U	total xylenes	5 U
acrylonitrile	10 U	trichlorofluoromethane	5 U
		o-dichlorobenzene	5 U

No other volatile organic compounds were found in reportable concentrations.

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the detection limit for the compound.

LCB - Compound was found but at low concentration, comparable to that in the blank. Quantitation is not possible.

J - An estimated value. The mass spectrum indicates the presence of the compound, but the calculated result is less than the reliable detection limit for this compound.

C - The result has been corrected for the presence of the compound in the blank.

Quality controls were analyzed with the sample as part of Aquatec's standard analytical procedures. The results of these are maintained on file at Aquatec.

ATTACHMENT B

Essex Landfill

Volatile Organic Compounds in Groundwater Samples
Lamoureux & Stone

June 20, 1988

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83963
EIR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureaux, ground water sample labeled Essex landfill, OB6, 6/1/88.

Volatile Organic Compounds in ug/l

benzene	5 U	methylene chloride	LCB
carbon tetrachloride	5 U	chloromethane	10 U
chlorobenzene	5 U	bromomethane	10 U
1,2-dichloroethane	5 U	bromoform	5 U
1,1,1-trichloroethane	5 U	bromodichloromethane	5 U
1,1-dichloroethane	5 U	dibromochloromethane	5 U
1,1,2-trichloroethane	5 U	tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U	toluene	5 U
chloroethane	10 U	trichloroethene	5 U
2-chloroethyl vinyl ether	10 U	vinyl chloride	10 U
chloroform	5 U	acetone	LCB
1,1-dichloroethene	5 U	2-butanone	LCB
1,2-dichloroethene	5 U	carbon disulfide	14
1,2-dichloropropane	5 U	2-hexanone	10 U
trans-1,3-dichloropropene	5 U	4-methyl-2-pentanone	10 U
cis-1,3-dichloropropene	5 U	styrene	5 U
ethylbenzene	5 U	vinyl acetate	10 U
acrolein	10 U	total xylenes	5 U
acrylonitrile	10 U	trichlorofluoromethane	5 U
		o-dichlorobenzene	5 U

No other volatile organic compounds were found in reportable concentrations.

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the detection limit for the compound.

LCB - Compound was found but at low concentration, comparable to that in the blank. Quantitation is not possible.

J - An estimated value. The mass spectrum indicates the presence of the compound, but the calculated result is less than the reliable detection limit for this compound.

C - The result has been corrected for the presence of the compound in the blank.

Quality controls were analyzed with the sample as part of Aquatec's standard analytical procedures. The results of these are maintained on file at Aquatec.

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83961
ETR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureaux, ground water sample labeled Essex landfill, OB3, 6/1/88.

Volatile Organic Compounds in ug/l

benzene	5 U	methylene chloride	ICB
carbon tetrachloride	5 U	chloromethane	10 U
chlorobenzene	5 U	bromomethane	10 U
1,2-dichloroethane	5 U	bromoform	5 U
1,1,1-trichloroethane	5 U	bromodichloromethane	5 U
1,1-dichloroethane	5 U	dibromochloromethane	5 U
1,1,2-trichloroethane	5 U	tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U	toluene	5 U
chloroethane	10 U	trichloroethene	5 U
2-chloroethyl vinyl ether	10 U	vinyl chloride	10 U
chloroform	5 U	acetone	ICB
1,1-dichloroethene	5 U	2-butanone	ICB
1,2-dichloroethene	5 U	carbon disulfide	1J
1,2-dichloropropane	5 U	2-hexanone	10 U
trans-1,3-dichloropropene	5 U	4-methyl-2-pentanone	10 U
cis-1,3-dichloropropene	5 U	styrene	5 U
ethylbenzene	5 U	vinyl acetate	10 U
acrolein	10 U	total xylenes	5 U
acrylonitrile	10 U	trichlorofluoromethane	5 U
		o-dichlorobenzene	5 U

No other volatile organic compounds were found in reportable concentrations.

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the detection limit for the compound.

ICB - Compound was found but at low concentration, comparable to that in the blank. Quantitation is not possible.

J - An estimated value. The mass spectrum indicates the presence of the compound, but the calculated result is less than the reliable detection limit for this compound.

C - The result has been corrected for the presence of the compound in the blank.

Quality controls were analyzed with the sample as part of Aquatec's standard analytical procedures. The results of these are maintained on file at Aquatec.

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83962
EIR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureaux, ground water sample labeled Essex landfill, OB4, 6/1/88.

Volatile Organic Compounds in ug/l

benzene	4J	methylene chloride	LCB
carbon tetrachloride	5 U	chloromethane	10 U
chlorobenzene	2J	bromomethane	10 U
1,2-dichloroethane	5 U	bromoform	5 U
1,1,1-trichloroethane	5 U	bromodichloromethane	5 U
1,1-dichloroethane	5 U	dibromochloromethane	5 U
1,1,2-trichloroethane	5 U	tetrachloroethene	5 U
1,1,2,2-tetrachloroethane	5 U	toluene	5 U
chloroethane	1J	trichloroethene	5 U
2-chloroethyl vinyl ether	10 U	vinyl chloride	1J
chloroform	5 U	acetone	LCB
1,1-dichloroethene	5 U	2-butanone	LCB
1,2-dichloroethene	5 U	carbon disulfide	5 U
1,2-dichloropropane	2J	2-hexanone	10 U
trans-1,3-dichloropropene	5 U	4-methyl-2-pentanone	10 U
cis-1,3-dichloropropene	5 U	styrene	5 U
ethylbenzene	5 U	vinyl acetate	10 U
acrolein	10 U	total xylenes	5 U
acrylonitrile	10 U	trichlorofluoromethane	5 U
tetrahydrofuran	58C	o-dichlorobenzene	2J

See enclosed report of other volatile organic compounds found.

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the detection limit for the compound.

LCB - Compound was found but at low concentration, comparable to that in the blank. Quantitation is not possible.

J - An estimated value. The mass spectrum indicates the presence of the compound, but the calculated result is less than the reliable detection limit for this compound.

C - The result has been corrected for the presence of the compound in the blank.

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ANALYTICAL REPORT

Date: 20 June 1988
Aquatec Lab No.: 83962
EIR No.: 13879
Sample Received On: 1 June 1988
Sample Identification: Lamoureux, ground water sample labeled Essex landfill, OB4, 6/1/88.

Other Volatile Organic Compounds

Scan No.	Name	Estimated Conc.* (ug/l)
39	dichlorodifluoromethane	2
73	dichlorofluoromethane	4
194	diethyl ether	17

* Indicates relative location of chromatographic peak in a total of 700 scans in the chromatogram, at three seconds per scan.

** Concentration estimated from ratio of Enhanced Reconstructed Ion Chromatogram (ERIC) of compound to ERIC of nearest internal standard, assuming a response factor of 1.