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BCP - C

915149

Cmts by 9/15
Review 8/28 NoCTB.

INTERIM REMEDIAL MEASURE REPORT

Scott Aviation
225 Erie Street
Lancaster, New York

Prepared for:

Scott Aviation
225 Erie Street
Lancaster, New York

Submitted to:

New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203-2999

Prepared by:

Versar, INc.
2010 Cabot Boulevard West
Langhorne, Pennsylvania 19047-1811

Required by Consent Order B9-0377-91-06, Section IIA

August 21, 1992

I certify that the IRM report was prepared in accordance with the above-referenced order:

Michael Markels, Jr., P.E.

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TABLES

ATTACHMENTS

1.0 INTRODUCTION

Scott Aviation, located at 225 Erie Street, Buffalo, New York, is a manufacturer of gas/vapor detection instruments, aviation products, and health and safety equipment. In the fall of 1990, stained soils were observed in the lowlands, north of the site of a former concrete pad. Located west of Plant No. 2, the pad had been used for the storage of metal cuttings and 55-gallon drums of cutting oils, lubricating oils, and solvents used in the manufacturing process. A 3,000-gallon underground storage tank (UST), formerly located beneath the concrete pad, had been used to store waste oil and spent chlorinated solvents including trichloroethene and trichloroethane. The analytical results from surface soil samples collected from the area revealed the presence of petroleum hydrocarbons at concentrations of 85,000 ppm.

Upon closer inspection, it was discovered that the drainage ditch located along the western border of the tract had also been impacted by the activities related to the waste storage area. This prompted the removal of the 3,000-gallon waste oil tank in accordance with regulatory requirements.

Following the removal of the waste oil tank, it was apparent that the tank had leaked and there had been a release of contaminants to the subsurface. On April 2, 1991, the New York State Department of Environmental Conservation (NYSDEC) was notified that there had been a release. Under the NYSDEC's direction, 12-18 inches of contaminated soil was removed from the area of the tank along with the concrete pad. Several test pits were also excavated in the area. Ground water samples from the test pits and the drainage ditch located west of the site revealed significant contamination in the immediate area of the former UST.

During a site visit in April 1991, the NYSDEC recommended that an interception trench be constructed downgradient and around the known spill area to restrict the migration of contaminants from the former waste storage area. This containment system was meant to function as an interim remedial measure (IRM) prior to the implementation of a Remedial Investigation/Feasibility Study. The NYSDEC also recommended that the trench be excavated to the ground water table. In a letter dated April 18, 1991, the NYSDEC directed Scott Aviation to place a collection pipe and stone backfill in the trench and to install four ground water monitoring wells around the perimeter of the site to investigate the

potential for the migration of contaminants from the former waste storage area. At that time, Versar, Inc. was contracted by Figgie International, Inc. to provide environmental consulting services for the Scott Aviation site.

In May 1991, Versar installed four ground water monitoring wells at the site. Analytical information obtained from the soil and ground water samples collected from the test borings and wells indicated that the ground water west of the site may have been impacted by activities related to the former waste storage area.

On July 9, 1992, Scott Aviation entered into a Consent Order and Agreement with the New York State Department of Environmental Conservation (No. B9-0377-91-06) to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the plant No. 2 site. As partial fulfillment of the compliance schedule outlined in the Consent Order and Agreement, Versar herein presents the Interim Remedial Measure Report. The purpose of this report is to document the design characteristics of the interception trench and to evaluate trends in VOC concentrations from water samples acquired from both the trench and a downgradient monitoring well. In addition, the effectiveness of the interception trench as a short-term and long-term remedial measure is evaluated. The report also addresses the issue of whether modifications to the IRM are necessary or desirable.

2.0 SITE BACKGROUND AND SETTING

2.1 Facility Description

The Scott Aviation facility occupies land on both the north side and south side of Erie Street. Plant No. 2, located on the north side of Erie Street, is a 43,200 square foot (approximate size) brick structure that was constructed in 1965. Used primarily for product development and manufacturing, this building contains machine shops and an engineering laboratory. A review of available aerial photographs shows a portion of the land currently occupied by Plant No. 2 was formerly used as a parking area prior to 1965. The remainder of the property consisted of, and remains, mostly open/undeveloped ground.

2.2 Topography

The study area is predominantly flat. Low lying wooded/brush areas exist approximately 100 feet due north of the former waste oil tank/waste storage area. Based on observations of land surface topography, surface drainage from the former waste storage pad area flows north-northwest into this low lying area and due west into a drainage ditch.

The topography immediately north of the lowlands becomes irregular. Based on a map illustrating unconsolidated aquifers in upstate New York (Miller, 1988), the small hills and hummocks in the area consist of sand and gravel deposited by glacial ice.

A stream, originating in a marshy area located northwest of Plant No. 2, flows through this lowland area. According to the topographic map of the area, this stream flows southwest and ultimately discharges into Plum Bottom Creek, a tributary of Cayuga Creek. This stream is culverted across the Scott Aviation site. Based on field observations, the culvert begins near Walterwinter Drive, located east of Plant No. 2, and ends on the adjacent property (Quick Cut Rubber and Gasket Co.) located west of the site.

Based on observations from topographic maps, Plant No. 2 is at an approximate elevation of 690 feet (datum is near sea level).

2.3 Geology

Soils in the study area have been mapped by the United States Department of Agriculture, Soil Conservation Service (U.S.D.A. Soil Survey, Eric County, New

York, 1986) and are identified as distinct soil units. The soil in the vicinity of Plant No. 2 consists of the Odessa silt loam. This soil is described as follows:

Od - Odessa silt loam (0-3 percent slope) - This soil is deep and somewhat poorly drained. The Odessa silt loam is high in clay content and is formed on flat plains that were formerly the bottoms of glacial lakes. In general, this soil is found on intermittent drainage ways. A typical soil profile is as follows:

0-9"	-	Very dark grayish brown silt loam (surface layer)
9-22"	-	Mottled, pinkish gray silty clay in the upper part and mottled, reddish brown silty clay in the lower part (subsoil)
22-60"	-	Varved, reddish brown, gray, reddish gray, and weak red silty clay (substratum)

According to the *Soil Survey of Erie County*, Odessa soils have a perched water table in the upper part of the subsoil from December to May. Permeability is slow to very slow in the subsoil and substratum (<0.2 in/hr.). Runoff is slow, and there is usually no gravel in the soil.

Information contained in *Ground-Water Resources of The Erie-Niagara Basin, New York* (LaSala, 1968) revealed that bedrock in the area of Scott Aviation is covered with unconsolidated glacial deposits consisting of till, a non-sorted mixture of clay, silt, sand, and stones deposited directly from the ice sheet that once covered the region. The characteristics of the till depend upon the types of rocks over which the ice passed and the vigor with which the ice crushed and abraded the rock. Till overlying shale formations in the Erie-Niagara Basin is typically dark gray and clayey or silty. The thickness of the till varies from a thin cover of two or three feet to more than 200 feet.

In areas within the Erie-Ontario Plain, lake deposits form a thin skin over the till. These deposits consist of horizontally bedded clay, silt, and sand.

Based on data collected from four test borings completed at the site, the geologic profile, in general, consists of 8-10 feet of clayey silt/silty clay overlying 15 feet of interbedded sand and silt deposits. Bedrock was encountered at a depth of approximately 25 feet below ground surface.

The bedrock beneath Plant No. 2 consists of the Devonian aged Marcellus Formation. In western New York, this formation consists of predominantly dense fissile, gray to black shale with a few thin limestone and sandstone interbeds. The thickness of this formation is estimated at 30-55 feet.

The contact between the Skaneatles Formation, which underlies Plant No. 1, and the Marcellus Formation, which underlies Plant No. 2, crosses Erie Street between the two buildings. In western New York, the Skaneatles Formation consists of gray limestone overlain by gray to black shale. The thickness of this formation is estimated at 60-90 feet.

The Middle Devonian aged Onondaga Limestone underlies the Marcellus Formation. The thickness of this formation is estimated at 108 feet.

2.4 Hydrogeology

The soil, lake deposits, and till (surficial deposits) and the bedrock differ in the types of water-bearing openings they contain. The surficial deposits are composed of grains packed together with open spaces, or pore spaces between the grains (primary porosity). Water permeates the surficial deposits because it can fill the pore spaces between the grains.

The sediments composing the bedrock initially contained pore spaces. However, these pore spaces were closed when the sediments were compacted and cemented. Ground water in bedrock is encountered mostly within joints and fractures (secondary porosity).

The hydrologic characteristics of the unconsolidated deposits also differ due to their lithology and thickness, and due to their distribution and spatial relationships to one another. The till generally has a low permeability. Typically, only small amounts of water are contained within till.

In general, the permeability of the lake deposits overlying the till is also low. However, in major valleys in upland regions, fine sand horizons are sometimes contained within the lake bed deposits. These sand deposits can contain large volumes of water.

Two stratigraphic units have tentatively been identified in the section overlying bedrock at the Scott Aviation site. The uppermost unit is comprised of approximately 10 feet of silty clay or clayey silt and appears to function as an aquitard. During previous drilling activities, no moisture was observed in

either drill cuttings or split spoon samples. Therefore, no water table is believed to be present in this clay unit in the vicinity of the Scott Aviation site. A lower unit about 15 feet in thickness consists of interstratified/ laminated sand and clay. This latter unit may represent the entire overburden aquifer thickness, unless there is a hydraulic interconnection with the underlying bedrock.

The hydraulic conductivity of the interstratified aquifer has yet to be established via slug testing. However, the low water level recovery rates observed during well purging indicate hydraulic conductivity is likely to be low. The bedding characteristics of this interstratified unit also suggest a strong anisotropy with horizontal hydraulic conductivity much greater than vertical conductivity.

The occurrence of a water table within the upper 10 feet of silty clay unit has not been clearly established. This unit may not have any significant transmissivity and may function more as an aquitard than an aquifer.

3.0 INTERIM REMEDIAL MEASURE: INTERCEPTION TRENCH

In April 1991, in response to NYSDEC directives, Scott Aviation contracted Environmental Service Group, Inc. to install an inception trench in the areas north, west, and south of the known spill area.

3.1 Interception Trench Design

The trench around the former waste storage area was excavated to a depth of approximately 8-9 feet below grade. Excavating ceased when ground water was encountered. A collection system was then installed in the trench. The collection system is constructed of 4 1/2" inch slotted, flexible polyvinyl chloride (PVC) hose. The hose is underlain by 2-inches, and covered with 4-inches, of crushed stone. The remainder of the trench was backfilled with existing site material to a depth of 6-inches below grade. Attachment 1 provides a schematic drawing of the interception trench and other details used as a basis for the descriptions above.

Five collection wells were installed along the trench system to allow for the removal of ground water from the system. Collection well depths are:

Collection Well	Well Depth
RW 1	69"
RW 2	70"
RW 3A	99"
RW 3B	96"
RW 3C	97"

3.2 Interception Trench Operation and Evaluation

Since its construction in April 1992 a total of 598,114 pounds (or 71,670 gallons) of water have been evacuated from the interception trench/ground water collection system. Disposal dates, transporters, manifest numbers and quantities are summarized in Attachment 2.

Ground water samples from the area of the former waste storage pad have been collected from test pits, excavated prior to the installation of the interception trench, and directly from the interception trench collection wells. Analytical results from the sampling of the test pits and interception trench are summarized in Table 1. Analytical results from the analysis of interception trench sampling are provided in Attachment 3.

TABLE 1

ANALYTICAL RESULTS: INTERCEPTION TRENCH WATER SAMPLING
(Results in ppb unless otherwise noted)

			Samples from Vicinity of Former Tank		Composite Samples Acquired by Waste Hauler to Meet Wastewater Disposal Permit Requirements							
COMPOUND	TP1[1] 4/12/91	TP2[1] 4/12/91	IT4[3] 10/9/91	IT9[4] 7/28/92	IT1[2] 7/22/91	IT2[2] 8/15/91	IT3[2] 9/11/91	IT5[2] 11/11/91	IT6[2] 11/26/91	IT7[2] 4/21/92	IT8[2] 7/9/92	IT10[2] 7/30/92
Vinyl Chloride	2700	3800	L	60	*	*	*	*	*	*	*	*
Chloroethane	1300	19000	L	-	67	2610	*	*	923	*	*	*
Methylene Chloride	ND	ND	-	-	*	*	*	*	248	18	640	31
1,1-Dichloroethene	650	1100	L	142	*	*	*	*	*	192	*	659
1,1-Dichloroethane	2300	14000	9700	1290	*	2232	1844	1090	526	285	1208	*
Cis-1,2-Dichloroethene	67000	8100	1400	1420	*	*	*	*	*	*	*	*
Trans-1,2-Dichloroethene	87	270	-	-	*	512	1073	*	61	*	1016	580
1,2-Dichloroethane	ND	180	-	50	*	*	*	*	*	*	*	*
1,1,1-Trichloroethane	17000	12000	13000	1600	*	347	1917	454	1480	1116	2796	1179
Trichloroethene	60000	200	ND	-	*	*	*	*	*	*	*	*
Chloroform	ND	ND	-	-	60	*	*	*	*	*	*	*
Dichloropropane	ND	ND	-	-	12	*	*	*	*	*	*	*
Benzene	ND	ND	-	-	*	15	*	*	35	*	*	*
Toluene	590	3700	L	12.6	*	66	82	*	*	50	*	*
Ethylbenzene	ND	180	-	-	*	*	*	*	*	*	*	*
Xylenes (total)	ND	710	-	-	*	*	*	*	*	*	*	*
Total Organic Carbon	-	-	-	-	2770 PPM	50 PPM	120 PPM	150 PPM	50 PPM	-	180 PPM	-
Lead	-	-	-	-	-	-	-	-	0.1 PPM	-	-	-
Cadmium	-	-	-	-	-	-	-	-	0.01 PPM	-	-	-

TP - Test Pit
IT - Interception Trench
ND - Not Detected
- - Not Tested For
L - Present Below Stated Detection Limit
* - Date Not Reported (Analyses Not Required for Waste Disposal Permit)

1. Samples analyzed by Huntingdon Analytical Services
2. Composite samples analyzed by CECOS
3. Sample analyzed by Ecology and Environment, Inc.
4. Sample analyzed by Advanced Environmental Services

In general, the highest concentrations of volatile organic compounds (VOCs) were detected in the test pit ground water samples collected prior to the installation of the interception trench. Therefore, the analytical results from the test pit samples have been used as baseline ground water quality data in the area of the former waste disposal pad. The analytical results for interception trench water samples collected by CECOS, the waste transporter and disposal contractor, revealed that the concentrations and presence of VOCs vary between sampling episodes. Please note that the CECOS laboratory is not NYSDEC certified, and they do not provide QC data to support their results. Therefore, this analytical data has not been validated.

In two other sampling events, water samples from the interception trench were collected and analyzed by two different NYSDEC certified laboratories. The first sample, IT4 collected in October 1991, was analyzed by Ecology and Environment, Inc., from Lancaster, New York. The second sample IT9, collected in July 1992, was analyzed by Advanced Environmental Services from Niagra Falls, New York.

From comparison of the data, it appears that the concentrations of 1,1-Dichloroethane (DCA) and 1,1,1-Trichloroethane (TCA) in ground water at the site have decreased from October 9, 1991, to July 28, 1992. The concentrations of other compounds of concern cannot be compared due to different method detection limits used by the laboratories. It would be expected that the concentrations of contaminants in the interception trench water would decrease with time.

The comparison of analytical data from test pit water samples to analytical results from ground water samples collected from monitoring well MW-4 provides evidence that the interception trench may be deterring the migration of contaminants downgradient of the former waste storage area. Volatile organic compounds were detected in test pit sample TP1, collected in April 1991 prior to the installation of the interception trench, at a total concentration of 151,672 ppb. This value, compared to the 467 ppb total VOCs detected in sample MW-4B collected in July 1991 after the installation of the trench, illustrates that the interception trench could be inhibiting the migration of contaminants through the aquifer and that the system could be useful as a short term, and potentially as a long term, remedial measure.

Additional evaluation of the effectiveness of the interception trench in deterring the migration of contaminants off-site is afforded by MW-4, a downgradient control well located approximately 60 feet west of and beyond the interception trench. In May and July 1991, the analysis of ground water samples from monitoring MW-4 revealed total concentrations of volatile organic compounds of 90.9 ppb and 467 ppb, respectively. The VOC analytical results for monitoring well MW-4 are summarized in Table 2. Analytical reports for ground water samples collected from monitoring well MW-4 are provided in Attachment 4.

TABLE 2
VOC Analytical Results: Monitoring Well MW-4

Compound	MW-4A May 1991	MW-4B July 1991
Vinyl Chloride	7 ppb	15 ppb
1,1-Dichloroethane	4.9 ppb	10 ppb
1,2-Dichloroethene (total)	20 ppb	62 ppb
Trichloroethene	59 ppb	380 ppb

Although it appears that the concentrations of VOCs in MW-4 increased over the period of May 1991 to July 1991, the increase appears likely to be attributable to the expiration of the holding time for the ground water sample collected in May (i.e., if holding times are exceeded, the concentrations of VOCs detected in ground water samples could decrease significantly). Therefore, analytical data from MW-4 is inconclusive. However, during both the May and July 1991 sampling rounds, VOC concentrations were consistently significantly lower than test pit concentrations. This finding supports the conclusion that the interception trench is functioning as intended.

4.0 SUMMARY

On April 2, 1991, the NYSDEC was notified that there had been a release of contaminants to soil and ground water near the waste storage area of the Scott Aviation facility on Erie Street, Lancaster, New York. During a site visit, the NYSDEC recommended that an interception trench be constructed downgradient and around the known spill area to restrict the migration of contaminants from the waste storage area. In a letter dated April 18, 1991, the NYSDEC directed Scott Aviation to place a collection pipe and stone backfill in the trench and install four ground water monitoring wells around the perimeter of the site to investigate the potential for the migration of contaminants from the waste area downgradient from the site. As partial fulfillment of the compliance schedule outlined in the Consent Order and Agreement between Scott Aviation and the NYSDEC, Versar, Inc., was contracted to prepare an IRM report evaluating the effectiveness of the above mentioned interception trench in deterring downgradient migration of contaminants from the former waste storage area.

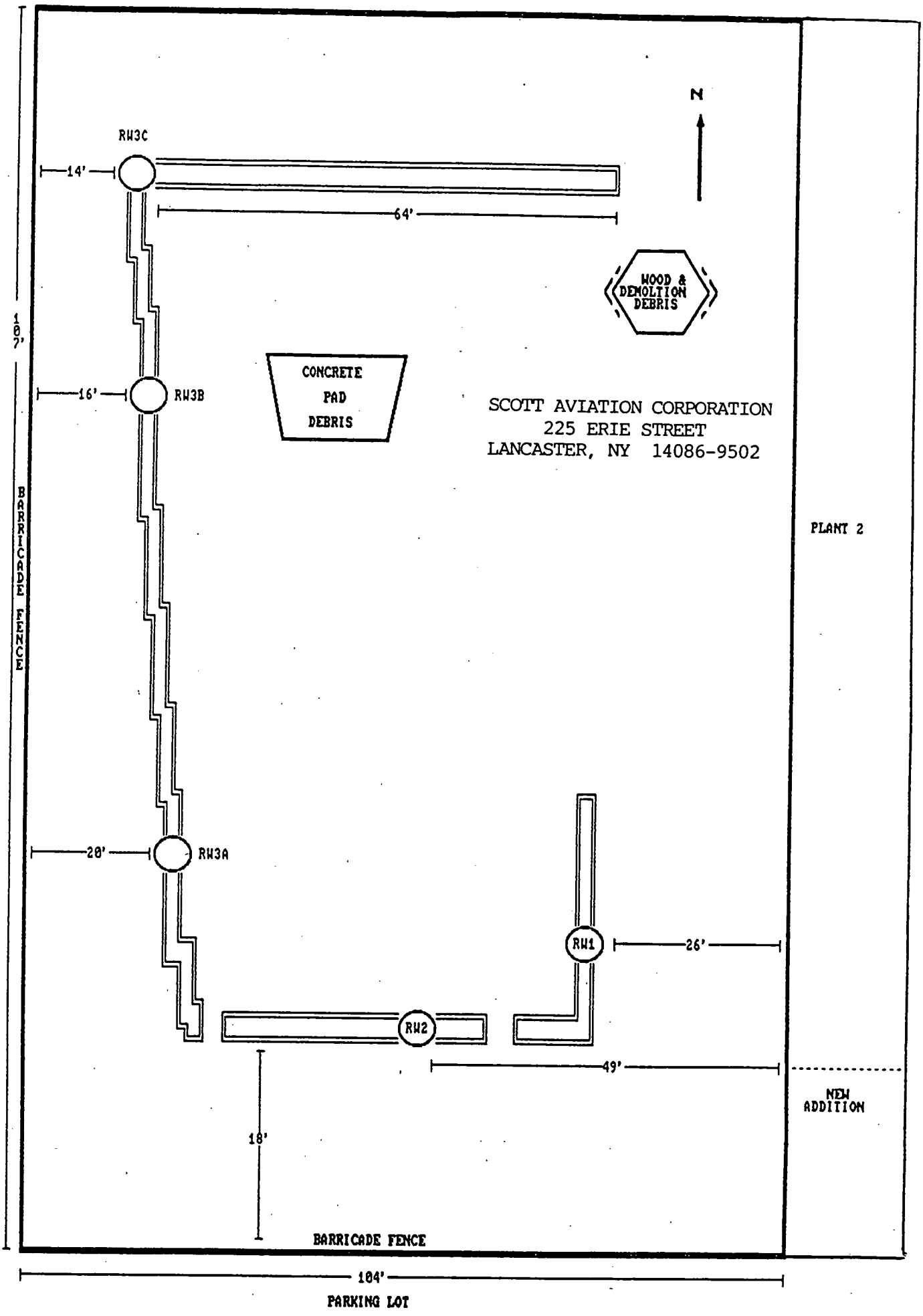
The comparison of analytical data from test pit ground water samples (collected in the area of the former waste storage pad prior to the trench construction) to analytical data collected from downgradient monitoring well MW-4 (collected after the trench was constructed), indicates that the existing system appears to be inhibiting the migration of contaminants off-site.

Although the limitations of the data prohibit an absolute statement regarding the effectiveness of the interception trench in preventing the off-site migration of VOC contamination, it appears likely that the interception trench is effective in this regard. Of course, during the RI/FS process, the full impact of site conditions will be thoroughly assessed.

At this point, there is no need to modify or expand the IRM. Any future IRM modification or expansion will depend upon a complete review of all relevant data as part of the RI/FS process at the site.

ATTACHMENT 1

Schematic Drawing: Interception Trench


N
RW3C
14'
64'
WOOD & DEMOLITION DEBRIS
CONCRETE PAD DEBRIS
16'
RW3B
SCOTT AVIATION CORPORATION
225 ERIE STREET
LANCASTER, NY 14086-9502
PLANT 2
107'
BARRICADE FENCE
20'
RW3A
RW1
26'
RW2
49'
NEW ADDITION
18'
BARRICADE FENCE
104'
PARKING LOT

SCOTT AVIATION CORPORATION
225 ERIE STREET
LANCASTER, NY 14086-9502

Collection system constructed of 8" slotted PVC flexible hose with 8" PVC pipe as risers. Slotted hose based on 2" of crushed stone with 4" covering of stone, backfilled with existing site material, 6" below grade.

COLLECTION WELL DEPTHS

RW1 - 69"
RW2 - 70"
RW3A - 99"
RW3B - 96"
RW3C - 97"

ATTACHMENT 2

Interception Trench Evacuation and Disposal Information

Scott Aviation (IRM Groundwater disposal)

DATE OF DISPOSAL	WASTE ID	DISPOSAL FIRM	MANIFEST NUMBER	QUANTITY (LBS.)	DISPOSAL METHOD
April 24,1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267846-3	41650.00	Treatment
April 25,1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267850-8	41650.00	Treatment
April 25,1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267848-1	41650.00	Treatment
April 26,1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267896-7	41650.00	Treatment
April 26,1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267895-8	41650.00	Treatment
May 3, 1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267988-5	41650.00	Treatment
May 29,1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267990-3	49680.00	Treatment
June 7, 1991	Plant 2 Waste Liq (NA 9189)	Frontier	NY B267991-2	41525.00	Treatment
July 22, 1991	Plant 2 Waste Liq (NA 9189)	Cecos	NY B267927-3	49966.00	Treatment
Aug 15,1991	Plant 2 Waste Liq (NA 9189)	Cecos	NY B282425-4	38346.00	Treatment
Sept 11, 1991	Plant 2 Waste Liq (NA 9189)	Cecos	NY B282491-1	23754.00	Treatment
Nov. 11, 1991	Plant 2 Waste Liq (NA 9189)	Cecos	NY B 440523-9	34860.00	Treatment
Nov. 26,1991	Plant 2 Waste Liq (NA 9189)	Cecos	NY B 440543-7	36544.90	Treatment
		Total Lbs. In 1991		524575.90	
		Tons		262.29	

DATE OF DISPOSAL	WASTE ID	DISPOSAL FIRM	MANIFEST NUMBER	QUANTITY (LBS.)	Quantity (gals)
April 28, 199	Haz. Waste Liquid (plant 2) -	Cecos Interna	NY B 282417-3	42330.00	5100
June 2, 1992	Haz. Waste Liquid (Pl 2) - ORM	Cecos	NY B 100947 6	31208.00	3760
		Total Lbs. in 1992		73538.00	
		Tons		36.77	

ATTACHMENT 3

Analytical Laboratory Reports:
Test Pit and Interception Trench Water Sampling

ANALYTICAL REPORT:

Test Pit Water Samples

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 601
PURGEABLE HALOCARBONS

SAMPLE IDENTIFICATION :	S-1 Test Pit #1 Ground Water	S-2 Ditch Surface Water	S-3 Test Pit #2 Ground Water	METHOD BLANK
HAS SAMPLE #91-596-	001	002	003	----
DATE ANALYZED:	4/12/91	4/12/91	4/12/91	4/12/91
COMPOUND	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l
CHLOROMETHANE	<100	<10	<200	<1.0
BROMOMETHANE	<100	<10	<200	<1.0
VINYL CHLORIDE	2700	55	3800	<1.0
DICHLORODIFLUOROMETHANE	<100	<10	<200	<1.0
CHLOROETHANE	1300	<10	19000	<1.0
METHYLENE CHLORIDE	<50	<5.0	<100	<0.50
TRICHLOROFLUOROMETHANE	<50	<5.0	<100	<0.50
1,1-DICHLOROETHENE	650	<5.0	1100	<0.50
1,1-DICHLOROETHANE	2300	53	14000	<0.50
CIS-1,2-DICHLOROETHENE	67000 *	1100 *	8100 *	<0.50
TRANS-1,2-DICHLOROETHENE	87	27	270	<0.50
CHLOROFORM	<50	<5.0	<100	<0.50
1,2-DICHLOROETHANE	<50	<5.0	180	<0.50
1,1,1-TRICHLOROETHANE	17000	350	12000	<0.50
CARBON TETRACHLORIDE	<50	<5.0	<100	<0.50
BROMODICHLOROMETHANE	<50	<5.0	<100	<0.50
1,2-DICHLOROPROPANE	<50	<5.0	<100	<0.50
cis-1,3-DICHLOROPROPENE	<50	<5.0	<100	<0.50
TRICHLOROETHENE	60000	240	200	<0.50
trans 1,3-DICHLOROPROPENE	<50	<5.0	<100	<0.50
DIBROMOCHLOROMETHANE	<50	<5.0	<100	<0.50
1,1,2-TRICHLOROETHANE	<50	<5.0	<100	<0.50
2-CHLOROETHYLVINYL ETHER	<500	<50	<1000	<5.0
BROMOFORM	<500	<50	<1000	<5.0
1,1,2,2-TETRACHLOROETHANE	<50	<5.0	<100	<0.50
TETRACHLOROETHENE	<50	<5.0	<100	<0.50
CHLOROBENZENE	<50	<5.0	<100	<0.50
1,4-DICHLOROBENZENE	<100	<10	<200	<1.0
1,2-DICHLOROBENZENE	<100	<10	<200	<1.0
1,3-DICHLOROBENZENE	<100	<10	<200	<1.0

* ESTIMATED VALUE

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8C2
PURGEABLE AROMATICS

SAMPLE IDENTIFICATION :	S-1	S-2	S-3	METHOD BLANK
HAS SAMPLE #01 598-	001	002	003	----
DATE ANALYZED:	4/12/91	4/12/91	4/12/91	4/12/91
COMPOUND	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l
BENZENE ----------	<50	<5.0	<100	<0.50
TOLUENE ----------	590	9.0	3700	<0.50
ETHYL BENZENE ----------	<50	<5.0	180	<0.50
TOTAL XYLENES ----------	<100	<10	710	<1.0
CHLOROBENZENE ----------	<50	<5.0	<100	<0.50
1,4 DICHLOROBENZENE ----	<100	<5.0	<100	<0.50
1,3-DICHLOROBENZENE ----	<50	<5.0	<100	<0.50
1,2-DICHLOROBENZENE ----	<100	<10	<200	<1.0

ANALYTICAL REPORTS

CECOS

MK-FERGUSON COMPANY
ENVIRONMENTAL CHEMISTRY & CONSULTATION SERVICES

WO # 274096

REQUEST FOR ANALYSIS

DATE: 1-22-92 REQUESTED BY: QC

SAMPLE DISPOSITION:
( ) DISCARD
( ) RETURN
( ) HOLD

SAMPLE CHARACTERISTICS:
(Toxic, Explosive, etc.) Toxic "F-waste"

SPECIAL HANDLING PRECAUTIONS: ESE

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
12046AAB	Ni Cr - spots Neg T.N.	
	TOC	
	VOA	

APPROVAL:

TEST RESULTS:

SAMPLE	TEST	RESULTS	ANALYST	NOTEBOOK
12046AAB (WO# 274096)	TOC	2,770 mg/L	mf	188-100
	VOA	Chloroethane - 12 mg/L	JS	184-91
		Chloroform - 60 mg/L	↓	↓
		Dichloropropane - 12 mg/L	↓	↓

REVIEWED BY: [signature] DATE: 1/25/92

REV 6/89.

INTERNATIONAL RINSE
CHEMICAL AND ENVIRONMENTAL CONSULTATION SERVICES

WO # 274262

REQUEST FOR ANALYSIS

DATE: 8/15/91 REQUESTED BY: Q-C

SAMPLE DISPOSITION:
(X) DISCARD
( ) RETURN
( ) HOLD

SAMPLE CHARACTERISTICS: (Toxic, Explosive, etc.) Toxic

SPECIAL HANDLING PRECAUTIONS: Rush

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
2046-AAB	Ni & Spot test Ni	(S)
	TOC	
	VOA	

APPROVAL:

TEST RESULTS:

SAMPLE	TEST	RESULTS	ANALYST	NOTEBOOK
2046AAB (WO#274262)	TOC	50 mg/l	MA	191-10
	VOA	Chloroethane = 2.6 ug/l J	JS	184-95
		1,1-Dichloroethane = 2.3 ug/l		
		1,2,T-Dichloroethane = 5.2 ug/l		
		1,1,1-Dichloroethane = 34 ug/l		
		Toluene = 6.6 ug/l		
		Benzene = 1.5 ug/l		

REVIEWED BY: [signature] DATE: 8-16-91

REV 6/86

CECOS INTERNATIONAL INC.
CHEMICAL AND ENVIRONMENTAL CONSERVATION SYSTEMS

WO# 274380

REQUEST FOR ANALYSIS

DATE: 9/11/91 REQUESTED BY: D.C

SAMPLE DISPOSITION:
( ) DISCARD
( ) RETURN
( ) HOLD

SAMPLE CHARACTERISTICS:
(Toxic, Explosive, etc.) Toxic

SPECIAL HANDLING PRECAUTIONS: Routine

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
12046-AAB	TOC	
	Nitro Shock Test Neg	
	VOA	

APPROVAL:

TEST RESULTS:

SAMPLE	TEST	RESULTS	ANALYST	NOTEBOOK
12046AAB (WO#274380)	VOA	1,1 Dichloroethane = 1844 ug/l IS		184-99
		1,2 T-Dichloroethene = 1073 ug/l		
		1,1,1 - Trichloroethane = 191 ug/l		
		Toluene = 92 ug/l		
	TOC	120 mg/l	mt	191-19

REVIEWED BY [signature] DATE: 9-13-91

REV 6/85

REQUEST FOR ANALYSIS

TREATMENT LOCATION

CECOS INTERNATIONAL INC

WO# 274682

GALLONS 42005L

DATE: 11/8/91

REQUESTED BY: SH

- X PHASE II — ATUS, T105, T104
- ___ PHASE I — LR, REACTOR SLUDGE
- ___ OTHER ___

SAMPLE CHARACTERISTICS:
(Toxic, Explosive, etc.) Toxic
SPECIAL HANDLING PRECAUTIONS: Rubbergloves

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
12046-AAB	VOA	
	TOC	<1000 ppm
	Ni Ca Spot Test Neg (SH)	

TEST RESULTS:

SAMPLE	TEST	RESULT	ANALYST	NOTEBOOK
12046-AAB (WO# 274682)	TOC	150 mg/l	MC	191-43
	VOA	1,1,Dichloroethane - 1090 ug/l J 5		193-2
		1,1,1-Trichloroethane - 454 ug/l 1544		

REVIEWED BY LAB: MCoulter DATE: 11-11-91

REVIEWED BY QC: SH DATE: 11-11-91

REV 10/91

REQUEST FOR ANALYSIS

TREATMENT LOCATION

CECOS INTERNATIONAL INC

WO# 274750

GALLONS 4403

DATE: 11/26/91

REQUESTED BY: T.N.

- ✓ PHASE II (ATUS) T106 T104
- ___ PHASE I LR REACTOR SLUDGE
- ___ OTHER ___

SAMPLE CHARACTERISTICS:

(Toxic, Explosive, etc.) Toxic

SPECIAL HANDLING PRECAUTIONS: SSE

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
12046AAB	TOC	<200ppm
	Ni Cr-spots	Neg. T.N
	Pb Cd-AA	≤5
	VOA	<10ppm Total

TEST RESULTS:

SAMPLE	TEST	RESULT	ANALYST	NOTEBOOK
12046AAB (WO#274750)	VOA	methylene chloride - 249 ug/l	TS	193-9
		1,1-Dichloroethane - 526 ug/l		
		1,2 T-Dichloroethene - 61 ug/l		
		1,1,1-Trichloroethane - 1490 ug/l		
		Chloroethene - 923 ug/l		
		Benzene - 35 ug/l		
	Pb	0.1 mg/l	TS	AA-267
	Cd	0.01 mg/l	TS	191-50
	TOC	50 mg/l		

REVIEWED BY LAB: T. Schneider DATE: 11/27/91

REVIEWED BY QC: J.N. DATE: 12/2/91

REV 10/91

REQUEST FOR ANALYSIS

TREATMENT LOCATION

X PHASE II ATUS T105 T104

___ PHASE I LR REACTOR SLUDGE

___ OTHER _____

CECOS INTERNATIONAL INC

WO# 225.242

GALLONS 5100 gl

DATE: 7/21/92

REQUESTED BY: SE

SAMPLE CHARACTERISTICS:
(Toxic, Explosive, etc.) TOXIC

SPECIAL HANDLING PRECAUTIONS: Refrigerate

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
12046-AAB	VOA	

TEST RESULTS:

SAMPLE	TEST	RESULT	ANALYST	NOTEBOOK
12046AAB	VOA	18 PPB methylene chloride	TS	193-34
27574A		285 PPB Dichloroethene		
		193 PPB Dichloroethylene		
		1116 PPB Trichloroethane		
		50 PPB Toluene		
		(Not Obs) 1.66 l/gm		

REVIEWED BY LAB: _____ DATE: _____

REVIEWED BY QC: _____ DATE: _____

REV 10/91

VOA 8/4 [illegible]

REQUEST FOR ANALYSIS

TREATMENT LOCATION

PHASE II ATUS T105 T104

PHASE I LR REACTOR SLUDGE

OTHER

CECOS INTERNATIONAL INC

WON 276157

GALLONS 4945

DATE: 7-9-92

REQUESTED BY: JBS

F-WASTE

SAMPLE CHARACTERISTICS:
(Toxic, Explosive, etc.) Toxic

SPECIAL HANDLING PRECAUTIONS: Rubber Gloves

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
12074-AAB	Ni Spot	Neg Pos
	VOA	
	TOC	

TEST RESULTS:

SAMPLE	TEST	RESULT	ANALYST	NOTEBOOK
12074AAB (276157)	VOA	methyl chloride - 1640 ppb	TS	193-46
		[illegible]		
		1,1-Dichloroethane - 1205 ppb		
		1,2 t-Dichloroethene - 1816 ppb		
		1,1,1-Trichloroethane - 2796 ppb		
		(0.12 lbs → pound 2 [illegible]	0.15 lbs/lbs)	
	TOC	180 mg/l	[illegible]	196-45

REVIEWED BY LAB: [signature] DATE: 7-10-92

REVIEWED BY QC: JBS DATE: 7-10-92

REV 10/91

LOAD

REQUEST FOR ANALYSIS

TREATMENT LOCATION

CECOS INTERNATIONAL INC

WO# 276211

GALLONS 3900

DATE: 7-30-92

REQUESTED BY: JES

F-WASTE

- ATUS
- ✓ PHASE II T105 T104
- ___ PHASE I LR REACTOR SLUDGE
- ___ OTHER _____

SAMPLE CHARACTERISTICS:

(Toxic, Explosive, etc.) Toxic

SPECIAL HANDLING PRECAUTIONS: Rubber Gloves

TEST(S) REQUESTED (BE SPECIFIC):

SAMPLE	TEST OR ANALYSIS	EXPECTED RANGE
12074-MB	SAT N.	Neg ppb
	VOA	Trichloroethane ≥ 1 ppm

TEST RESULTS:

SAMPLE	TEST	RESULT	ANALYST	NOTEBOOK
12074 AAB (276211)	VOA	CH_2Cl_2 - 31 ppb	JS	193-48
		1,1-DCE - 1059 ppb		
		1,2T-DCENE - 580 ppb		
		1,1,1-TCE - 1179 ppb	SZ	
		(0.039 lbs)		

REVIEWED BY LAB: _____ DATE: 7-30-92

REVIEWED BY QC: _____ DATE: 7-30-92

REV 10/91

ANALYTICAL REPORT:

Ecology and Environment, Inc.

ecology and environment, inc.
BUFFALO CORPORATE CENTER
368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060
International Specialists in the Environment

November 1, 1991

Theodore Hadzi-Antich, Esq.
Jaeckle, Fleischmann & Mugel
Norstar Building
Twelve Fountain Plaza
Buffalo, New York 14202-2292

Re: Analytical Results From Scott Aviation Sampling

Dear Mr. Hadzi-Antich:

Attached are the analytical results for the sampling performed by Ecology and Environment, Inc. (E & E) on October 9, 1991 at Scott Aviation in Lancaster, New York, under the direction of Greg Sutton of the New York State Department of Environmental Conservation (NYSDEC). This sampling was requested by Scott Aviation through their counsel, Jaeckle, Fleischmann & Mugel (JF&M).

The samples are documented in E & E's Data Package 9102.455. This set of samples consisted of 3 composite soil samples (SA001, SA006 and SA007) from the stockpile, and one water sample (SA003) from a pipe network near the underground storage tank. These samples were analyzed for the specific parameters required by NYSDEC.

The soil sample results (SA001, 006, 007) showed no significant concentrations of the parameters NYSDEC chose for analysis. The only parameter above detection limits was 1,1,1-trichloroethane (1,1,1-TCA) in two of the samples. The highest 1,1,1-TCA level found was 7 micrograms/liter (parts per billion). This very low level of 1,1,1,-TCA in soil does not appear to pose a threat. The applicability of utilizing this soil as fill at the site will need NYSDEC approval, however, it does appear that this alternative may be feasible.

The NYSDEC water sample results (SA003); however, showed significant concentrations of 9700 micrograms/liter 1,1-dichloroethane (1,1-DCA); 13,000 micrograms/liter 1,1,1-TCA and 1400 micrograms/liter total-1,2-dichloroethene (Cis 1,2-DCE).

As requested by JF&M, E & E is revieving alternatives for treatment and disposal of the water based on the above analytical data. This information and an estimate to complete this work will be provided to JF&M under separate cover.

If you have any questions on the data package, please feel free to contact me at (716)684-8060.

Sincerely,

Paul Malozewski for

Timothy J. Grady, P.E.
Project Director

PM/sg-2766
Enclosures

TEST CODE :WPURG 1 JOB NUMBER :9102.455

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : SE-4000 SCOTT AVIATION
TEST NAME : PURGEABLES UNITS : UG/L
SAMPLE ID LAB : EE-91-23494 MATRIX: WATER
SAMPLE ID CLIENT: SA003

PARAMETER	RESULTS	Q	QNT. LIMIT
Vinyl Chloride	PRESENT	L	500
Chloroethane	PRESENT	L	500
1,1-Dichloroethene	PRESENT	L	250
1,1-Dichloroethane	9700	X	250
Cis-1,2-Dichloroethene	1400		250
1,1,1-Trichloroethane	13000	X	250
Trichloroethene	ND		250
Toluene	PRESENT	L	250

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
L = PRESENT BELOW STATED DETECTION LIMIT
X = EXCEEDS CALIBRATION LIMIT

Scott Aviation EF4207314

WATER GRAB SAMPLE 7/29/92

1,1 Dichloroethane	1,290
1,2 Dichloroethane	50.0
1,1 Dichloroethene	142
1,1,1 Trichloroethane	1,600
Trichloroethene	<25
Vinyl chloride	60
Toluene	12.6
cis-1,2 Dichloroethene	1,420

The Lab which did the analysis is

Advanced Environmental Services, Inc
2186 Liberty Drive
Niagara Falls, NY 14304

ATTACHMENT 4

Analytical Laboratory Reports: Monitoring Well MW-4

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 601
PURGEABLE HALOCARBONS

SAMPLE IDENTIFICATION :	MW-1A	MW-2A	MW-3A	MW-4A	TRIP BLANK	METHOD BLANK
HAE SAMPLE #91-647-	001	002	003	004	005	----
DATE ANALYZED:	6/15/91	6/15/91	6/15/91	6/15/91	6/15/91	6/15/91
COMPOUND	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l
CHLOROMETHANE	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0
BROMOMETHANE	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0
VINYL CHLORIDE	<1.0	<1.0	<1.0	7.0	<1.0	<1.0
DICHLORODIFLUOROMETHANE	<1.0	<1.0	<1.0	<12	<1.0	<1.0
CHLOROETHANE	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0
METHYLENE CHLORIDE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
TRICHLOROFLUOROMETHANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
1,1-DICHLOROETHENE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
1,1-DICHLOROETHANE	<0.50	<0.50	<0.50	4.9	<0.50	<0.50
TOTAL 1,2-DICHLOROETHENE	<0.50	<0.50	<0.50	20	<0.50	<0.50
CHLOROFORM	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
1,2-DICHLOROETHANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
1,1,1-TRICHLOROETHANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
CARBON TETRACHLORIDE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
BROMODICHLOROMETHANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
1,2-DICHLOROPROPANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
cis-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
TRICHLOROETHENE	<0.50	<0.50	<0.50	59	<0.50	<0.50
trans-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
DIBROMOCHLOROMETHANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
1,1,2-TRICHLOROETHANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
2-CHLOROETHYLVINYL ETHER	<5.0	<5.0	<5.0	<25	<5.0	<5.0
BROMOFORM	<5.0	<5.0	<5.0	<25	<5.0	<5.0
1,1,2,2-TETRACHLOROETHANE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
TETRACHLOROETHENE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
CHLOROBENZENE	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50
1,4-DICHLOROBENZENE	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0
1,2-DICHLOROBENZENE	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0
1,3-DICHLOROBENZENE	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 602
PURGEABLE AROMATICS

SAMPLE IDENTIFICATION :	MW-1A	MW-2A	MW-3A	MW-4A	TRIP BLANK	METHOD BLANK
HAS SAMPLE #91-847-	001	002	003	004	005	----
DATE ANALYZED:	6/14/91	6/14/91	6/14/91	6/14/91	6/14/91	6/14/91
COMPOUND	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l
BENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
TOLUENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
ETHYL BENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
TOTAL XYLENES	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-DICHLOROBENZENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4B

Lab Name: HAS Contract: —

Lab Code: — Case No.: — SAS No.: — SDG No.: —

Matrix: (soil/water) WATER Lab Sample ID: 91-1038-001

Sample wt/vol: 5 (g/mL) ML Lab File ID: V7091

Level: (low/med) LOW Date Received: 7-08-91

% Moisture: not dec. NA Date Analyzed: 7-09-91

Column: (pack/cap) PACK Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	15	
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	10	
540-59-0	1,2-Dichloroethene (total)	62	
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	380	E
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U