September 29, 1997

Mr. Daniel King, P. E.
Division of Environmental Remediation
New York State Department of Environmental Conversation
270 Michigan Avenue
Buffalo, New York 14203-2999

Subject: Frontier Chemical - Pendleton Site, Pendleton, New York
Order on Consent (#B9-0270-89-05)
Semi-Annual Report on Post Closure Operation, Maintenance, and Monitoring Activities, September, 1997

Dear Mr. King:

In accordance with the approved Pendleton O & M Manual for the above referenced site, enclosed are three copies of the first Semi-Annual Report on the Post-Closure Operation, Maintenance, and Monitoring of the Closure Components of the Frontier Chemical-Pendleton Site by the Pendleton PRP Group

If you have any questions regarding the above submittals, please call me at 423-336-4057.

Sincerely,
Pendleton PRP Group

John M. Burns
Chairman - Technical Committee for
Pendleton PRP Group

Distribution:

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Niagara County Health Department
Environmental Services Division
Main P.O. Box 428
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Niagara Falls, New York 14302-0428

Pendleton PRP Technical Committee

First Semi-Annual Report

1997

Frontier Chemical - Pendleton Site
Order on Consent (#B9-0270-89-05)
Pendleton, New York

Prepared by Pendleton PRP Group

September 1997

First Semi-Annual Report

1997

Frontier Chemical - Pendleton Site
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Pendleton, New York

Prepared by Pendleton PRP Group

September 1997

Frontier Chemical - Pendleton Site
September 1997

Introduction

This is the first semi-annual report from the Frontier Chemical - Pendleton Site PRP Group (PRP Group) for the Frontier Chemical - Pendleton Site located in Pendleton, New York. This report summarizes the activities performed during the previous six months for Post-Closure Operation, Maintenance, and Monitoring of the Closure Components of the Frontier Chemical-Pendleton Site by the Pendleton PRP Group.

Background

The Frontier Chemical-Pendleton Site is located on Town Line Road in the Town of Pendleton, Niagara County, New York. The total site comprises approximately 22 acres of the 75-acre Frontier Chemical property. Prior to remediation activities, 15 acres of the 22-acre site were occupied by Quarry Lake, a flooded quarry which resulted from the excavation of clay for use in clay brick and tile manufacturing at an on-site facility. The remaining 7 acres, identified as the former Process Area, were utilized by Frontier Chemical Waste Process, Inc. (Frontier) when the site was operated as an industrial waste treatment facility from 1958 to 1974. Plating wastes, pickle liquors and other liquid acid wastes from plating and metal finishing industries were treated at the site, with residuals from the waste treatment process being discharged into Quarry Lake. Much of the former Process Area was filled and graded following termination of waste treatment operations.

The site remediation project, designed by O'Brien & Gere and constructed in 1995 and 1996 by Sevenson Environmental Services, Inc. included the following major components:

1. Dewatering Quarry Lake to allow drying and consolidation of sediments
2. Excavation and relocation of sediments from Quarry Lake after dewatering operations to within the limits of the capped area
3. Excavation and relocation of surface soils, fill or debris to within the limits of the capped area
4. Capping of consolidated sediments, previously dredged materials, and surface soils with a low-permeability cap
5. Installation, in conjunction with a cap, of a low-permeability barrier to ground water flow
6. Construction of a ground water collection trench along the eastern shore of Quarry Lake and the southern portion of the capped area
7. Reconstruction of the berm around Quarry Lake and installation of a new outlet structure
8. Construction of a ground water pumping station consisting of a wet well and dry vault
9. Installation of a ground water pre-treatment system within the dry vault
10. Conveyance of collected and pre-treated ground water to the local Publicly Owned Treatment Works (POTW)
11. Creation of new wetlands at the site
12. Construction of a surface water swale adjacent to the cap access road to direct surface water away from the capped area
13. Installation of piezometers inside and outside the capped area and a standpipe within the ground water collection trench
14. Installation of a chain link fence around the capped area and pump station to limit access.

Discussion

Post-closure operation, maintenance, and monitoring of the closure components of the Frontier Chemical-Pendleton Site are the responsibility of the Pendleton PRP Group. Operation, maintenance, and monitoring activities performed by the Pendleton PRP Group during this reporting period includes the following five elements:

1. Routine inspection and maintenance of constructed features, including the capped area, ground water collection and conveyance system, surface water runoff facilities, constructed wetlands, access road, perimeter and containment berms, and outlet weir,

Regarding routine inspection and maintenance of constructed features, two site inspections were conducted during this reporting period, one on April 16, 1997 and another on June 13, 1997. The completed inspection forms are included in Attachment A-1. Relocated wetlands inside the perimeter berm have not been planted with the species shown in the project specification due to a lack of water in Quarry Lake. The current lake level as of 9/8/97 was 572.34 feet and the broad crested weir has a design elevation of 577.2 - 577.5 feet; therefore the lake needs approximately five(5) foot of water to function as designed. The relocated wetlands have elevations of 574 feet for aquatic bed species(Zone A), 575 feet for non-persistent emergent(Zone B), and 576 feet for persistent emergence(Zone C); therefore the water elevation has not reached the relocated wetlands. A water elevation chart is also included as Attachment A-2. This chart shows the history of the lake elevation starting in April 1996. Considering the water elevation trend shown by the chart, the lake should fill during the coming winter and spring. The PRP Group will plant the required species as soon as possible after the water level in the lake reaches 577 foot elevation.

2. Operation and maintenance of the ground water pre-treatment system, as described in the Pre-Treatment System Operations Plan,

Regarding Operation and maintenance of the ground water pre-treatment system, the monthly submittals to the Niagara Country Sewer District #1 detailing analytical and flow data for this reporting period are included in Attachment B-1. Six months (March - August 1997) of submittals are included with this report. Also included in Attachment B-2 is the table summarizing Operation, Maintenance, and Monitoring Activities for the site during this report period.

3. Performance of a ground water monitoring program to monitor ground water conditions at the site and to verify the inward hydraulic gradient within the capped area,

Regarding performance of a ground water monitoring program, the report "Frontier Chemical - Pendleton Site, Semi-Annual Ground Water Monitoring Report" dated September, 1997 is included as Attachment C-1.

4. Evaluation of operation, maintenance, and monitoring activities and identification of proposed changes to the O&M Manual or site procedures and policies which would provide a safer and/or more cost-effective operation, and

Regarding evaluation of operation, maintenance, and monitoring activities and identification of proposed changes, a letter detailing the status of the maintenance work completed in August and September is include in Attachment D-1. Field observation reports for these activities are detailed in Attachment D-2.

5. Recordkeeping.

Regarding recordkeeeping activities, daily and weekly logs and charts are maintained at the Site and at Olin's Niagara Falls Plant by Jim Reed. Glynn Geotechnical (Jesse Grossman) provides assistance to Jim Reed and updates O&M documentation. Ground water monitoring is provided by O'Brien & Gere (Steve Anagnost). Analytical results and reports to NCSD #1 and NYSDEC are maintained at Olin's Charleston Plant by John Burns. All these records are available for review and inspection upon reasonable notice.

Conclusion

The work performed for the Site from April to September 1997 was reviewed and found to be in accordance with the approved O&M Manual for the Site.

Frontier Chemical - Pendleton Site
September 1997
Attachment A

1 Site Inspection Reports
4/16/97
6/13/97

2 Quarry Lake Level

Table 2-1. Frontier Chemical - Pendleton Site - inspection checklist.

Date Performed: 4-16-97 Weather: Cloudy & Cold

Site Name: FRONTIER CHEMICAL - PENDLETON Inspector Name: JOHN M. BURNS

Site Location: PENDLETON, NEW YORK Inspector Signature: John M Burns

Item	Task	Response		Comments
		Yes	No	
Low-Permeability Cover	**Visually inspect surface conditions.**			
	1. Erosion problem?	✓		RESEEDED AREA ALONG QUARRY LAKE
	2. Lack or thinning of vegetation?		✓	EARLY IN GROWING SEASON
	3. Mowing required?		✓	
	4. Drainage problems?	✓		
	5. Areas of settlement?		✓	
	6. Areas of slope instability?	✓		AREA BETWEEN BERM AND PUMP STATION ERODED
	7. Areas of damage?	✓		
Ground Water Collection and Conveyance System	**Visually inspect manholes and cleanouts.**			
	1. Buildup of solids/precipitates to the extent that the flow of ground water is affected?			
	2. Measure water levels in manholes and Quarry Lake. a. MH-1? b. MH-2? c. MH-3? d. Quarry Lake?	✓	 ✓ ✓	NONE LAST MEASUREMENT 4/4/97 @ 572.6 FT
	3. Closed and opened pinch valve?		✓	
	4. Leakage, degradation or corrosion of valves, pipes, or appurtenances?		✓	
	5. Areas of damage?		✓	

Table 2-1. . .ontier Chemical - Pendleton Site - inspection checklist.

Date Performed: 4-16-97

Weather: Cloudy & Cold

Site Name: FRONTIER CHEMICAL - PENDLETON SITE

Inspector Name: JOHN M BURNS

Site Location: PENDLETON, NEW YORK

Inspector Signature: John M Burns

Item	Task	Response		Comments
		Yes	No	
Ground Water Pre-Treatment System (including Dry Vault and Wet Well)	**Perform inspection in accordance with Pre-Treatment System Operations Plan.**		✓	SYSTEM OPERATING WITHOUT PROBLEMS, NO BUILD UP EVIDENT.
Surface Water Runoff Facilities	**Visually inspect ditches and culverts.**			
	1. Accumulation of debris?		✓	
	2. Excessive scouring?	✓		FRONT OF QUARRY LAKE FROM WATER RUNOFF.
	3. Areas of damage?		✓	
Perimeter Berm, Containment Berm, and Outlet Weir	**Visually inspect condition.**			
	1. Erosion problems?		✓	
	2. Areas of settlement?		✓	
	3. Areas of slope instability?		✓	
	4. Areas of damage?		✓	
Ground Water Monitoring Wells and Piezometers	**Visually inspect condition.**			
	1. Casings secured and locked?	✓		
	2. Areas of damage?		✓	

Table 2-1. Frontier Chemical - Pendleton Site - inspection checklist.

Date Performed: 4-16-97

Weather: cloudy & cold

Site Name: FRONTIER CHEMICAL - PENDLETON SITE

Inspector Name: JOHN M. BORNS

Site Location: PENDLETON, NEW YORK

Inspector Signature: John M Borns

Item	Task	Response		Comments
		Yes	No	
Access Road	**Visually inspect surface conditions of access roads.**			
	1. Rutting?	✓		RUNOFF FROM CAP ERRATICALLY ON QUARRY LANDSIDE
	2. Potholes?		✓	
	3. Settlement?	✓		SOME
	4. Areas of damage?		✓	
Physical Site Security	**Visually inspect fences and gates.**			
	1. Signs intact?	✓		
	2. Fence breached?		✓	
	3. Access gates locked?	✓		
	4. Areas of damage?		✓	
Notes:	**Note any additional comments.**			
1. EROSION ON LAKE/CAPPED AREA INTERFACE				
2. SEEPS IN DRY VAULT				
3. LAKE LEVEL NOT AT OVERFLOW				
4. WETLANDS NOT PLANTED				

Table 2-1. ier Chemical - Pendleton Site - inspection checklist.

Date Performed: June 13-16-97 Weather: Fair Conditions

Site Name: Frontier (Pendelton) Inspector Name: James Reed

Site Location: Pendelton, N.Y. (Townline Rd.) Inspector Signature: James Reed

Item	Task	Response		Comments
		Yes	No	
Low-Permeability Cover	**Visually inspect surface conditions.**			
	1. Erosion problem?	~~✓~~	✓	O.K
	2. Lack or thinning of vegetation?	✓		Will weed & Feed on 6/16/97
	3. Mowing required?	✓		Done on 6/14/97
	4. Drainage problems?	✓		
	5. Areas of settlement?	✓		
	6. Areas of slope instability?	✓		
	7. Areas of damage?	✓		
Ground Water Collection and Conveyance System	**Visually inspect manholes and cleanouts.**			
	1. Buildup of solids/precipitates to the extent that the flow of ground water is affected?	✓		
	2. Measure water levels in manholes and Quarry Lake. a. MH-1? b. MH-2? c. MH-3? d. Quarry Lake?			a) Trace - Empty c) Auto Dialer record d) 6/13/97 572.3'
	3. Closed and opened pinch valve?	✓	✓	6/24 Opened + Closed O.K.
	4. Leakage, degradation or corrosion of valves, pipes, or appurtenances?	✓		ordered new safety relief valve for Both discharge pumps
	5. Areas of damage?	✓		

Table 2-1. . er Chemical - Pendleton Site - inspection checklist.

Date Performed: June 13-16-97 Weather: Fair Conditions

Site Name: Frontier (Pendelton) Inspector Name: James Reed

Site Location: Pendelton, N.Y. (Townline Rd.) Inspector Signature: James Reed

Item	Task	Response		Comments
		Yes	No	
Ground Water Pre-Treatment System (including Dry Vault and Wet Well)	**Perform inspection in accordance with Pre-Treatment System Operations Plan.**	✓		Pumped Vault, 324 gallons Pump this amount each Friday becaus of Groun H_2O (Not from Landfill area)
Surface Water Runoff Facilities	**Visually inspect ditches and culverts.**			
	1. Accumulation of debris?	~~✓~~ → ✓		O.K
	2. Excessive scouring?	✓		O.K
	3. Areas of damage?	✓		O.K
Perimeter Berm, Containment Berm, and Outlet Weir	**Visually inspect condition.**			
	1. Erosion problems?	✓		need to install Rip Rap on Lake Side (Fence)
	2. Areas of settlement?	✓		O.K
	3. Areas of slope instability?	✓		again problem of erosion along Fence at Lake
	4. Areas of damage?	✓		
Ground Water Monitoring Wells and Piezometers	**Visually inspect condition.**			
	1. Casings secured and locked?	✓		Repaired #12 & 14 Wells
	2. Areas of damage?	✓		" "

Table 2-1. . er Chemical - Pendleton Site - inspection checklist.

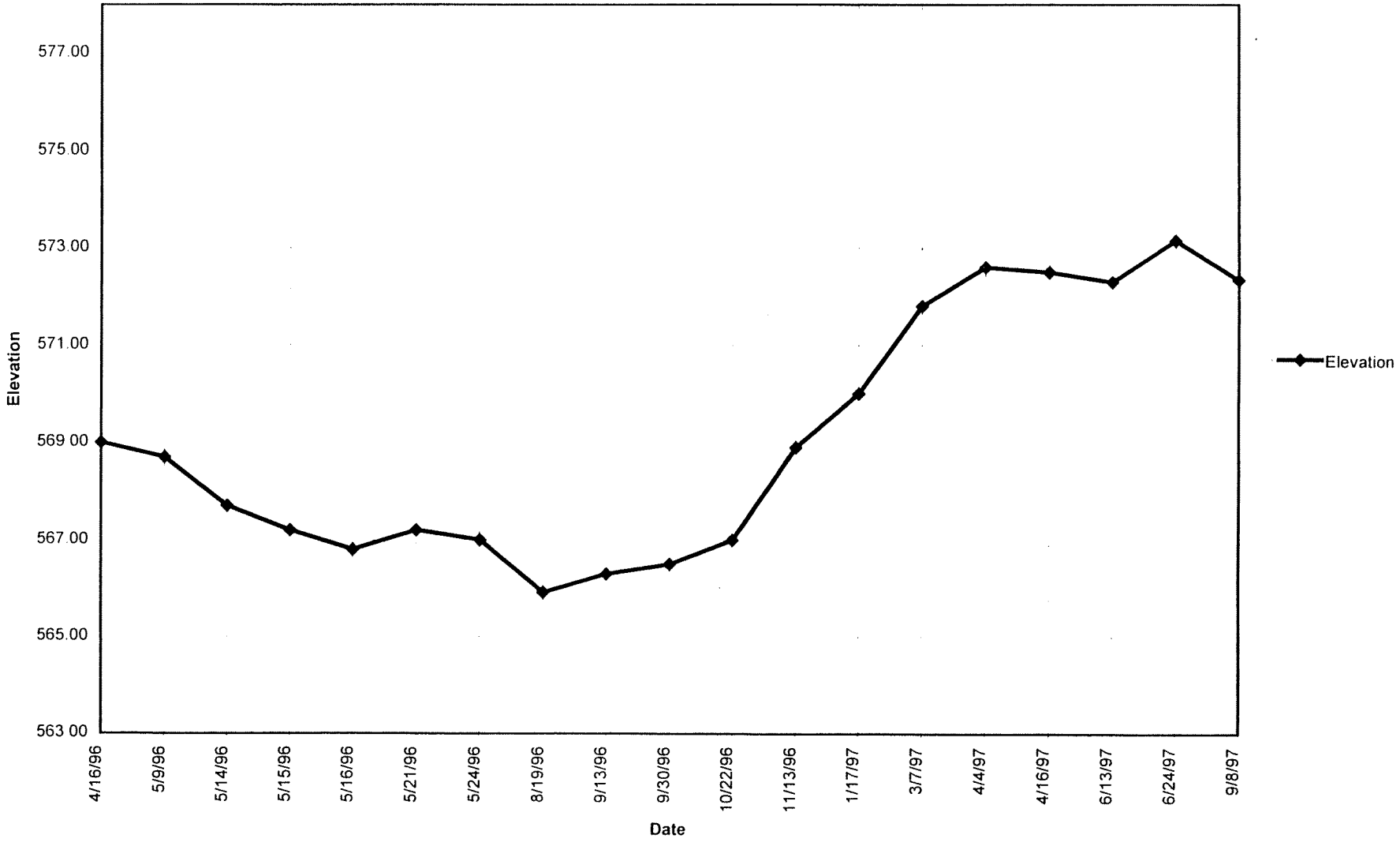
Date Performed: June 13-16/97 Weather: Fair Conditions

Site Name: Frontier (Pendelton) Inspector Name: James Reed

Site Location: Pendelton, N.Y (Townline Rd.) Inspector Signature: James Reed

Item	Task	Response		Comments
		Yes	No	
Access Road	**Visually inspect surface conditions of access roads.**			
	1. Rutting?	✓		need stone to smooth from Snowplowing
	2. Potholes?	✓		" " "
	3. Settlement?	✓		O.K.
	4. Areas of damage?	✓		Same as #1
Physical Site Security	**Visually inspect fences and gates.**			
	1. Signs intact?	✓		O.K.
	2. Fence breached?	DMW I →	✓	O.K
	3. Access gates locked?	✓		O.K
	4. Areas of damage?	MB I →	✓	O.K
Notes:	**Note any additional comments.**			

Quarry Lake Level



Frontier Chemical - Pendleton Site
September 1997
Attachment B

1 Niagara County Sewer District #1 Submittals
- 3/6/97 Sampling Event
- 4/3/97 Sampling Event
- 5/1/97 Sampling Event
- 6/5/97 Sampling Event
- 7/3/97 Sampling Event
- 8/7/97 Sampling Event

2 Operation, Maintenance and Monitoring Activities

April 7, 1997

Mr. Frank Nerone
Chief Operator
Niagara County Sewer District #1
7346 Liberty Drive
Niagara Falls, NY 14304

Subject: Analytical Sampling Results (3/6/97 Sample)
Groundwater Discharge Through Pre-Treatment System
Pendleton (Frontier Chemical) Site

Dear Mr. Nerone:

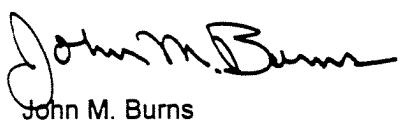
Enclosed for your review are analytical results from the March 6, 1997, monthly sampling event for discharge of collected groundwater from the pre-treatment system. Laboratory blank analyses and discharge flow data are also included for your review. Analytical results for this sampling event are compared against the Permit (#96-11) requirements on the attached Analytical Summary and Daily Flow sheets.

For blank analysis, methylene chloride at 3.9 ug/L was detected in the field blank.

A review of the analytical and flow data shows that all permit parameters are significantly below the stated permit requirements.

This data is being provided for your review and concurrence that all permit parameters are well within their limits. If, following review of the enclosed information, you are not in agreement with the above stated conclusion, please contact me at 423-336-4057 as soon as possible so we may discuss any future monitoring requirements.

Sincerely,



John M. Burns
for the Frontier Chemical - Pendleton Site PRP Group

enclosures: as stated
cc: D. Kummer
Pendleton Site Technical Committee

WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report
Report Date : 03/13/97
Group Number : 9701-143

Prepared For :
Mr. John Burns
Olin Corporation
P.O. Box 248
1186 Lower River Road NW
Charleston, TN 37310

Site : Frontier Chemical (Pendelton)

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
GAC 2 Sample	WS32625	Aqueous	3/6/97	3/7/97	0830
Field Blank	WS32626	Aqueous	3/6/97	3/7/97	0830
Sample Status Upon Receipt : No irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
624	2	5 Business Days
608	1	5 Business Days
Total Metals	1	5 Business Days
Cyanide	1	5 Business Days
Phenol	1	5 Business Days
Total Suspended Solids	1	5 Business Days

Report Released By : Daniel W. Voe

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977 CDHS ELAP #2189

WASTE STREAM TECHNOLOGY

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following analytical method references:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised September 1994, United States EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.

Standard Methods for the Examination of Water and Wastewater. (18th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

ORGANIC DATA QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicates the presence of a compound that meets identification criteria, but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as the sample.

E - This flag identifies all compounds whose concentrations exceed the calibration range of the GC/MS instrument or that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

G - Matrix spike recovery is greater than the expected upper limit of analytical performance.

L - Matrix spike recovery is less than the expected lower limit of analytical performance.

- Indicates that a surrogate recovery was found to be outside the expected limits of analytical performance.

$ - Indicates that the surrogate compound was diluted out because the sample had to be diluted to obtain analytical results and a recovery could not be calculated.

(%) Indicates that the compound is a surrogate and the values reported for these compounds are in percent recovery. The quality control recovery limits (QC Limits) are indicated in the detection limit column.

Waste Stream Technology, Inc.

40 CFR Part 136 Method 624

EPA 624

Site: Frontier Chemical (Pendelton)
Date Sampled: 03/06/97
Date Received: 03/07/97

Group Number: 9701-143
Report Units: ug/L
Matrix: Aqueous

Lab ID Number	WS32625	
Client ID	GAC 2 Sample	
Date Extracted	NA	
Date Analyzed	03/11/97	

Compound	Detection Limit/ QC Limits (%)	Result	Q
chloromethane	2.0	2.0	U
vinyl chloride	2.0	2.0	U
bromomethane	2.0	2.0	U
chloroethane	2.0	2.0	U
Trichlorofluoromethane	2.0	2.0	U
1,1-dichloroethene	1.0	1.0	U
methylene chloride	2.8	2.8	U
trans-1,2-dichloroethene	1.0	1.0	U
1,1-dichloroethane	1.0	1.0	U
chloroform	1.0	1.0	U
1,1,1-trichloroethane	1.0	1.0	U
carbon tetrachloride	1.0	1.0	U
benzene	1.0	1.0	U
1,2-dichloroethane	1.0	1.0	U
trichloroethene	1.0	1.0	U
1,2-dichloropropane	1.0	1.0	U
bromodichloromethane	1.0	1.0	U
2-chloroethylvinyl ether	2.0	2.0	U
cis-1,3-dichloropropene	1.0	1.0	U
toluene	1.0	1.0	U
trans-1,3-dichloropropene	1.0	1.0	U
1,1,2-trichloroethane	1.0	1.0	U
tetrachloroethene	1.2	1.2	U
dibromochloromethane	1.0	1.0	U
chlorobenzene	1.0	1.0	U
ethylbenzene	1.0	1.0	U
bromoform	1.0	1.0	U
1,1,2,2-tetrachloroethane	1.0	1.0	U
1,3-dichlorobenzene	1.0	1.0	U
1,4-dichlorobenzene	1.0	1.0	U
1,2-dichlorobenzene	1.0	1.0	U
4-methyl-2-pentanone	5.0	5.0	U
1,2-Dichloroethane-d4 (%)	76-114	110.0	
Toluene-d8 (%)	88-110	107.0	
Bromofluorobenzene (%)	86-115	108.0	

Dilution Factor 1

Waste Stream Technology, Inc.

40 CFR Part 136 Method 624

EPA 624

Site: Frontier Chemical (Pendelton)
Date Sampled: 03/06/97
Date Received: 03/07/97

Group Number: 9701-143
Report Units: ug/L
Matrix: Aqueous

Lab ID Number	WS32626	
Client ID	Field Blank	
Date Extracted	NA	
Date Analyzed	03/11/97	

Compound	Detection Limit/ QC Limits (%)	Result	Q
chloromethane	2.0	2.0	U
vinyl chloride	2.0	2.0	U
bromomethane	2.0	2.0	U
chloroethane	2.0	2.0	U
Trichlorofluoromethane	2.0	2.0	U
1,1-dichloroethene	1.0	1.0	U
methylene chloride	2.8	3.9	
trans-1,2-dichloroethene	1.0	1.0	U
1,1-dichloroethane	1.0	1.0	U
chloroform	1.0	1.0	U
1,1,1-trichloroethane	1.0	1.0	U
carbon tetrachloride	1.0	1.0	U
benzene	1.0	1.0	U
1,2-dichloroethane	1.0	1.0	U
trichloroethene	1.0	1.0	U
1,2-dichloropropane	1.0	1.0	U
bromodichloromethane	1.0	1.0	U
2-chloroethylvinyl ether	2.0	2.0	U
cis-1,3-dichloropropene	1.0	1.0	U
toluene	1.0	1.0	U
trans-1,3-dichloropropene	1.0	1.0	U
1,1,2-trichloroethane	1.0	1.0	U
tetrachloroethene	1.2	1.2	U
dibromochloromethane	1.0	1.0	U
chlorobenzene	1.0	1.0	U
ethylbenzene	1.0	1.0	U
bromoform	1.0	1.0	U
1,1,2,2-tetrachloroethane	1.0	1.0	U
1,3-dichlorobenzene	1.0	1.0	U
1,4-dichlorobenzene	1.0	1.0	U
1,2-dichlorobenzene	1.0	1.0	U
4-methyl-2-pentanone	5.0	5.0	U
1,2-Dichloroethane-d4 (%)	76-114	108.0	
Toluene-d8 (%)	88-110	106.0	
Bromofluorobenzene (%)	86-115	109.0	

Dilution Factor 1

Waste Stream Technology, Inc.
Method 624 Method Blank Results
EPA 624

Site: Frontier Chemical (Pendelton)
Date Sampled: NA
Date Received: NA

Group Number: 9701-143
Report Units: PPB

Lab ID Number	IB031197	
Client ID	NA	
Date Extacted	NA	
Date Analyzed	03/11/97	

Compound	Detection Limit/ QC Limits (%)	Result	Q
chloromethane	2.0	2.0	U
vinyl chloride	2.0	2.0	U
bromomethane	2.0	2.0	U
chloroethane	2.0	2.0	U
trichlorofluoromethane	2.0	2.0	U
1,1-dichloroethene	1.0	1.0	U
methylene chloride	2.8	2.8	U
trans-1,2-dichloroethene	1.0	1.0	U
1,1-dichloroethane	1.0	1.0	U
chloroform	1.0	1.0	U
1,1,1,-trichloroethane	1.0	1.0	U
carbon tetrachloride	1.0	1.0	U
benzene	1.0	1.0	U
1,2-dichloroethane	1.0	1.0	U
trichloroethene	1.0	1.0	U
1,2-dichloropropane	1.0	1.0	U
bromodichloromethane	1.0	1.0	U
2-chloroethylvinyl ether	2.0	2.0	U
cis-1,3-dichloropropene	1.0	1.0	U
toluene	1.0	1.0	U
trans-1,3-dichloropropene	1.0	1.0	U
1,1,2-trichloroethane	1.0	1.0	U
tetrachloroethene	1.2	1.2	U
dibromochloromethane	1.0	1.0	U
chlorobenzene	1.0	1.0	U
ethylbenzene	1.0	1.0	U
bromoform	1.0	1.0	U
1,1,2,2-tetrachloroethane	1.0	1.0	U
1,3-dichlorobenzene	1.0	1.0	U
1,4-dichlorobenzene	1.0	1.0	U
1,2-dichlorobenzene	1.0	1.0	U
4-methyl-2-pentanone	5.0	5.0	U
Bromofluorobenzene (%)	86-115	109.0	
1,2-Dichloroethane-d4 (%)	76-114	108.0	
Toluene-d8 (%)	88-110	106.0	

Dilution Factor 1
IB denotes Instrument Blank.
NA denotes Not Applicable.

Waste Stream Technology, Inc.

40 CFR 136 Method 608 Pest-PCBs

EPA 608

Site: Frontier Chemical (Pendelton)
Date Sampled: 03/06/97
Date Received: 03/07/97

Group Number: 9701-143
Report Units: ug/L
Matrix: Aqueous

Lab ID Number	WS32625	
Client ID	GAC 2 Sample	
Date Extracted	03/11/97	
Date Analyzed	03/11/97	
Compound	**Detection Limit/ QC Limits (%)**	**Result**	**Q**
alpha-BHC	0.003	0.003	U
beta-BHC	0.006	0.006	U
gamma-BHC	0.003	0.003	U
delta-BHC	0.009	0.009	U
heptachlor	0.020	0.020	U
aldrin	0.017	0.017	U
heptachlor epoxide	0.008	0.008	U
4,4-DDE	0.005	0.005	U
methoxychlor	0.006	0.006	U
Tetrachloro-m-xylene (%)	60-150	103.000	
Decachlorobiphenyl (%)	60-150	116.000	

Dilution Factor 1

Waste Stream Technology, Inc.
Method 608 Method Blank Results
EPA 608

Site: Frontier Chemical (Pendelton)
Date Sampled: NA
Date Received: NA

Group Number: 9701-143
Report Units: PPB

	Lab ID Number	MB97070
	Client ID	NA
	Date Extracted	03/11/97
	Date Analyzed	03/11/97

Compound	Detection Limit/ QC Limits (%)	Result	Q
alpha-BHC	0.003	0.003	U
beta-BHC	0.006	0.006	U
gamma-BHC	0.003	0.003	U
delta-BHC	0.009	0.009	U
heptachlor	0.020	0.020	U
aldrin	0.017	0.017	U
heptachlor epoxide	0.008	0.008	U
4,4'-DDE	0.005	0.005	U
methoxychlor	0.006	0.006	U
Tetrachloro-m-xylene (%)	60-150	99.700	
Decachlorobiphenyl (%)	60-150	111.000	

Dilution Factor 1
MB denotes Method Blank
NA denotes Not Applicable

Waste Stream Technology, Inc.

Analysis Result Report

Site: Frontier Chemical (Pendelton)
Date Sampled: 03/06/97
Date Received: 03/07/97

Group Number: 9701-143
Report Units: mg/L
Matrix: Aqueous

	Lab ID Number:	WS32625		
	Client ID:	GAC 2 Sample		
Analyte	**Detection Limit**	**Result**	**Date Analyzed**	**Analysis Method**
Total Recoverable Phenol	0.005	< 0.005	03/10/97	EPA 420.1
Cyanide in Water	0.005	< 0.005	03/10/97	EPA 335.2
Total Suspended Solids	4.000	< 4.000	03/10/97	EPA 160.2

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Metals Analysis Result Report

Site: Frontier Chemical (Pendelton)
Date Sampled: 03/06/97
Date Received: 03/07/97

Group Number: 9701-143
Report Units: mg/L
Matrix: Aqueous

Lab ID Number:	WS32625	
Client ID:	GAC 2 Sample	
Date Digested:	03/11/97	

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Antimony by GFAA	0.009	< 0.009	03/12/97	EPA 204.2
Chromium by ICP	0.011	< 0.011	03/11/97	EPA 200.7
Boron by ICP	0.200	0.431	03/11/97	EPA 200.7

WASTE STREAM TECHNOLOGY

WASTESTREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

CHAIN OF CUSTODY RECORD

9701-143

PROJECT NO: E 414

SITE NAME: Frontier Chemical (Pendleton)

SAMPLERS (SIGNATURE): James Reed

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CONTAINERS	Pest. 608	Phenolics	Cyanide	Sb, Cr & B	T.S.S.	V.O.C. 624 Full	PRESERVATIVES	REMARKS
7C 06522	3/6 97		✓		AQ	GAC 2 Sample Pt.	1L	✓						Ø	Note:
7C 06523			✓				1L		✓					H_2SO_4	Pesticides to be
7C 06524			✓				1-500ml			✓				NaOH	analyzed by
7C 06525			✓				1-500ml				✓			HNO_3	Method 608
7C 06526			✓				1-500ml					✓		Ø	—
7C 06527		2:50 PM		X			1-40ml		WS32625				X	HCL	Composite
7C 06528		3:05 PM		X			1-40ml						X	HCL	
7C 06529		3:20 PM		X			1-40ml						X	HCL	
7C 06530		3:28 PM		X			1-40ml						X	HCL	
7C 06531		2:00 PM		X		Field Blank	1-40ml		WS32624				X	HCL	

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
James Reed	3/7/97 8:00	Tony Pavlatos			
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)

SPECIAL INSTRUCTIONS:

TURNAROUND TIME _____

LAB USE: REFRIGERATOR # _____ SHELF # _____ GROUP # _____ DUE DATE

DAILY FLOW DATA - PENDLETON SITE
MARCH, 1997

DATE	TOTALIZER READING	DAILY FLOW	
3/1/97	184762	148	
3/2/97	184910	106	
3/3/97	185016	100	
3/4/97	185116	147	avg
3/5/97		147	avg
3/6/97	185410	31	
3/7/97	185441	379	
3/8/97	185820	103	
3/9/97	185923	120	
3/10/97	186043	309	
3/11/97	186352	261	
3/12/97	186613	157	
3/13/97	186770	210	
3/14/97	186980	706	
3/15/97	187686	102	
3/16/97	187788	157	
3/17/97	187945	151	
3/18/97	188096	101	
3/19/97	188197	156	
3/20/97	188353	156	
3/21/97	188509	318	avg
3/22/97		318	avg
3/23/97	189145	100	
3/24/97	189245	156	
3/25/97	189401	210	
3/26/97	189611	237	
3/27/97	189848	150	
3/28/97	189998	563	
3/29/97	190561	99	
3/30/97	190660	100	
3/31/97	190760		
AVERAGE DAILY FLOW IN GALLONS		200	

	= DRY VAULT GROUNDWATER RELIEF		
	3/7/97	250	gallons
	3/14/97	484	gallons
	3/21/97	404	gallons
	3/26/97	84	gallons
	3/28/97	423	gallons
	TOTAL GALLONS	1,645	

avg =flow between data points divided by days of missing data
avg =(185410-185116)/2 or 147 gallons per day for data between 3/4/97 and 3/5/97

Frontier Chemical - Pendleton Site
Analytical Summary for WS 001
Permit # 96-11
Groundwater Discharge Point: D 002

178,652 **Gallons Discharged Prior To** 2/6/97

6,758 **Gallons Since Last Report**

241 **Average Daily Flow Based on 28 days Between Samples**

Parameters Treatment System Discharge	Permit Limit GPD	Detection Limits		3/6/97 Sample Results GPD
Discharge Rate(1)	662			
624 Analytes	**ug/L**	**ug/L**		**ug/L**
Toluene	10.0	1.0		1.0 U
1,2-Dichloroethane	10.0	1.0		1.0 U
4-Methyl-2-Pentanone	10.0	5.0		5.0 U
Vinyl Chloride	10.0	2.0		2.0 U
Methylene Chloride	10.0	2.8	(a)	2.8 U
trans-1,2-Dichloroethene	10.0	1.0		1.0 U
1,1,1-Trichloroethane	10.0	1.0		1.0 U
Trichloroethene	10.0	1.0		1.0 U
Benzene	10.0	1.0		1.0 U
Chloromethane		2.0		2.0 U
Bromomethane		2.0		2.0 U
Chloroethane		2.0		2.0 U
Chloroform		1.0		1.0 U
Carbon Tetrachloride		1.0		1.0 U
1,1-Dichloroethene		1.0		1.0 U
Trichlorofluoromethane		2.0		2.0 U
1,1-Dichloroethane		1.0		1.0 U
1,2-Dichloropropane		1.0		1.0 U
Bromodichloromethane		1.0		1.0 U
2-Chloroethylvinyl ether		2.0		2.0 U
cis-1,3-Dichloropropene		1.0		1.0 U
trans-1,3-Dichloropropene		1.0		1.0 U
1,1,2-Trichloroethane		1.0		1.0 U

624 Analytes	ug/L	ug/L	ug/L
Tetrachloroethene		1.2	1.2 U
Dibromochloromethane		1.0	1.0 U
Chlorobenzene		1.0	1.0 U
Ethylbenezene		1.0	1.0 U
Bromoform		1.0	1.0 U
1,1,2,2-Tetrachloroethane		1.0	1.0 U
1,3-Dichlorobenzene		1.0	1.0 U
1,4-Dichlorobezene		1.0	1.0 U
1,2-Dichlorobenzene		1.0	1.0 U
Sum of 624 Analytes		100.0	< 44.0
608 Pesticides	**ug/L**	**ug/L**	**ug/L**
alpha BHC	10.0	0.003	0.003 U
beta BHC	20.0	0.006	0.006 U
delta BHC	10.0	0.009	0.009 U
gamme BHC	10.0	0.003	0.003 U
Heptachlor	8.0	0.020	0.020 U
Aldrin	8.0	0.017	0.017 U
Heptachlor Epoxide	9.0	0.008	0.008 U
4,4-DDE	20.0	0.005	0.005 U
Methoxychlor	18.0	0.006	0.006 U
Metals	**mg/L**	**mg/L**	**mg/L**
Antimony	0.1	0.009	< 0.009
Boron	4.00	0.200	0.431
Chromium	5.33	0.011	< 0.011
Cyanide(T)	2.0	0.005	< 0.005
Other	**mg/L**	**mg/L**	**mg/L**
Total Phenolics	NA	0.005	< 0.005
TSS	300	4.000	< 4.000

Legend:

(1) Permit limit @ 662 GPD with maximum daily discharged @ 950 GPD

(a) Detected in blank

NA Not applicable

May 6, 1997

Mr. Frank Nerone
Chief Operator
Niagara County Sewer District #1
7346 Liberty Drive
Niagara Falls, NY 14304

Subject: Analytical Sampling Results (4/3/97 Sample)
Groundwater Discharge Through Pre-Treatment System
Pendleton (Frontier Chemical) Site

Dear Mr. Nerone:

Enclosed for your review are analytical results from the April 3, 1997, monthly sampling event for discharge of collected groundwater from the pre-treatment system. Laboratory blank analyses and discharge flow data are also included for your review. Analytical results for this sampling event are compared against the Permit (#96-11) requirements on the attached Analytical Summary and Daily Flow sheets.

For blank analysis, methylene chloride at 4.0 ug/L was detected in the field blank.

A review of the analytical and flow data shows that all permit parameters are significantly below the stated permit requirements.

This data is being provided for your review and concurrence that all permit parameters are well within their limits. If, following review of the enclosed information, you are not in agreement with the above stated conclusion, please contact me at 423-336-4057 as soon as possible so we may discuss any future monitoring requirements.

The permit changes regarding sampling for volatile organics from monthly to semi-annually, for a daily maximum flow of 2,500 gpd and for elimination of pesticide monitoring per your April 14, 1997 letter were received on April 18, 1997. The changes were implemented in April and the next volatile organics sample will be for the October sampling event.

Sincerely,

John M Burns

John M. Burns
for the Frontier Chemical - Pendleton Site PRP Group

enclosures: as stated
cc: D. Kummer
Pendleton Site Technical Committee

Frontier Chemical - Pendleton Site
Analytical Summary for WS 001
Permit # 96-11
Groundwater Discharge Point: D 002

185,410 Gallons Discharged Prior To 3/6/97
5,836 Gallons Since Last Report
201 Average Daily Flow Based on 29 days Between Samples

Parameters Treatment System Discharge	Permit Limit GPD	Detection Limits		4/3/97 Sample Results GPD
Discharge Rate(1)	662			
624 Analytes	**ug/L**	**ug/L**		**ug/L**
Toluene	10.0	1.0		1.0 U
1,2-Dichloroethane	10.0	1.0		1.0 U
4-Methyl-2-Pentanone	10.0	5.0		5.0 U
Vinyl Chloride	10.0	2.0		2.0 U
Methylene Chloride	10.0	2.8		2.8 U
trans-1,2-Dichloroethene	10.0	1.0	(a)	1.0 U
1,1,1-Trichloroethane	10.0	1.0		1.0 U
Trichloroethene	10.0	1.0		1.0 U
Benzene	10.0	1.0		1.0 U
Chloromethane		2.0		2.0 U
Bromomethane		2.0		2.0 U
Chloroethane		2.0		2.0 U
Chloroform		1.0		1.0 U
Carbon Tetrachloride		1.0		1.0 U
1,1-Dichloroethene		1.0		1.0 U
Trichlorofluoromethane		2.0		2.0 U
1,1-Dichloroethane		1.0		1.0 U
1,2-Dichloropropane		1.0		1.0 U
Bromodichloromethane		1.0		1.0 U
2-Chloroethylvinyl ether		2.0		2.0 U
cis-1,3-Dichloropropene		1.0		1.0 U
trans-1,3-Dichloropropene		1.0		1.0 U
1,1,2-Trichloroethane		1.0		1.0 U
624 Analytes	**ug/L**	**ug/L**		**ug/L**
Tetrachloroethene		1.2		1.2 U
Dibromochloromethane		1.0		1.0 U
Chlorobenzene		1.0		1.0 U
Ethylbenezene		1.0		1.0 U
Bromoform		1.0		1.0 U
1,1,2,2-Tetrachloroethane		1.0		1.0 U
1,3-Dichlorobenzene		1.0		1.0 U
1,4-Dichlorobezene		1.0		1.0 U
1,2-Dichlorobenzene		1.0		1.0 U
Sum of 624 Analytes		100.0	<	44.0
608 Pesticides	**ug/L**	**ug/L**		**ug/L**
alpha BHC	10.0	0.003		0.003 U
beta BHC	20.0	0.006		0.006 U
delta BHC	10.0	0.009		0.009 U
gamma BHC	10.0	0.003		0.003 U
Heptachlor	8.0	0.020		0.020 U
Aldrin	8.0	0.017		0.017 U
Heptachlor Epoxide	9.0	0.008		0.008 U
4,4-DDE	20.0	0.005		0.005 U
Methoxychlor	18.0	0.003		0.003 U
Metals	**mg/L**	**mg/L**		**mg/L**
Antimony	0.1	0.009	<	0.009
Boron	4.00	0.200		0.491
Chromium	5.33	0.011	<	0.011
Cyanide(T)	2.0	0.005		0.006
Other	**mg/L**	**mg/L**		**mg/L**
Total Phenolics	NA	0.005		0.009
TSS	300	4.000	<	4.000

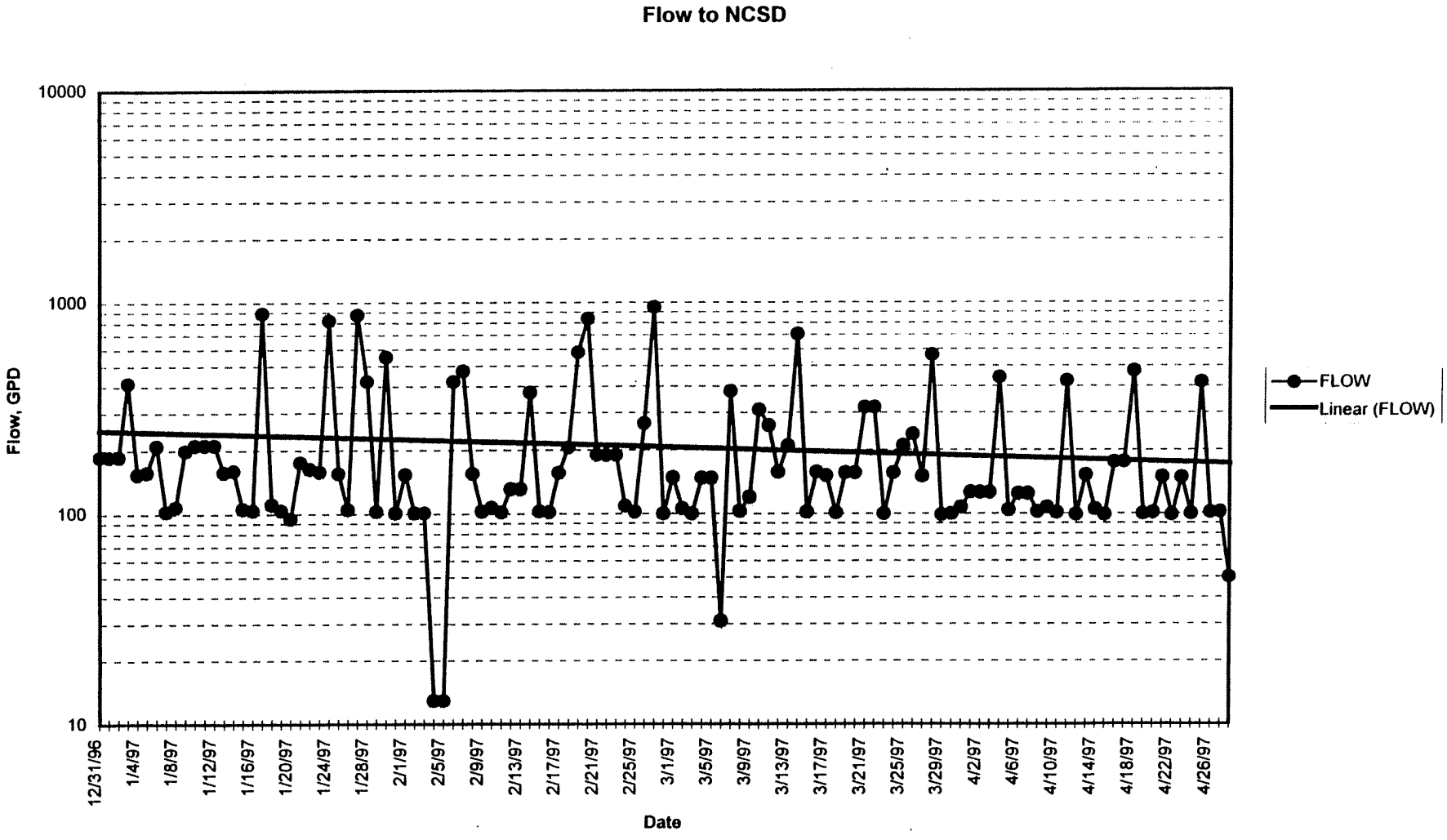
Legend:
(1) Permit limit @ 662 GPD with maximum daily discharged @ 950 GPD
(a) Detected in blank
NA Not applicable

DAILY FLOW DATA - PENDLETON SITE
APRIL,1997

DATE	TOTALIZER READING	DAILY FLOW	
4/1/97	190867	126	avg
4/2/97		126	avg
4/3/97		126	avg
4/4/97	191246	441	
4/5/97	191687	104	
4/6/97	191791	124	avg
4/7/97		124	avg
4/8/97	192039	102	
4/9/97	192141	107	
4/10/97	192248	101	
4/11/97	192349	425	
4/12/97	192774	99	
4/13/97	192873	152	
4/14/97	193025	105	
4/15/97	193130	99	
4/16/97	193229	176	avg
4/17/97		176	avg
4/18/97	193481	474	
4/19/97	193955	100	
4/20/97	194055	101	
4/21/97	194156	149	
4/22/97	194305	99	
4/23/97	194404	148	
4/24/97	194552	100	
4/25/97	194652	419	
4/26/97	195071	102	avg
4/27/97		102	avg
4/28/97	195274	50	
4/29/97	195324		
4/30/97			
AVERAGE DAILY FLOW IN GALLONS		197	

	= DRY VAULT GROUNDWATER RELIEF		
	4/4/97	328	gallons
	4/11/97	301	gallons
	4/17/97	340	gallons
	4/25/97	313	gallons
	TOTAL GALLONS	1,282	

avg =flow between data points divided by days of missing data
avg =(191246-190867)/3 or 126 gallons per day for data betw


Flow to NCSD
10000
1000
100
10
Flow, GPD
12/31/96
1/4/97
1/8/97
1/12/97
1/16/97
1/20/97
1/24/97
1/28/97
2/1/97
2/5/97
2/9/97
2/13/97
2/17/97
2/21/97
2/25/97
3/1/97
3/5/97
3/9/97
3/13/97
3/17/97
3/21/97
3/25/97
3/29/97
4/2/97
4/6/97
4/10/97
4/14/97
4/18/97
4/22/97
4/26/97
Date
FLOW
Linear (FLOW)

WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report

Report Date : 04/11/97
Group Number : 9701-196

Prepared For :
Mr. John Burns
Olin Corporation
P.O. Box 248
1186 Lower River Road NW
Charleston, TN 37310

Site : Frontier Chemical

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
GAC 2 SAMPLE Pt.	WS32960	Aqueous	4/3/97	4/4/97	1600
FIELD BLANK	WS32961	Aqueous	4/3/97	4/4/97	1600
Sample Status Upon Receipt : No irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
624	2	Standard
608	1	Standard
Metals	1	Standard
Cyanide	1	Standard
Phenol	1	Standard
Total Suspended Solids	1	Standard

Report Released By : Daniel W. Voll

Daniel Vollmer, Laboratory QA/QC Officer

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977 CDHS ELAP #2189

WASTE STREAM TECHNOLOGY

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following analytical method references:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised September 1994, United States EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.

Standard Methods for the Examination of Water and Wastewater. (18th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

ORGANIC DATA QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicates the presence of a compound that meets identification criteria, but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as the sample.

E - This flag identifies all compounds whose concentrations exceed the calibration range of the GC/MS instrument or that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

G - Matrix spike recovery is greater than the expected upper limit of analytical performance.

L - Matrix spike recovery is less than the expected lower limit of analytical performance.

- Indicates that a surrogate recovery was found to be outside the expected limits of analytical performance.

$ - Indicates that the surrogate compound was diluted out because the sample had to be diluted to obtain analytical results and a recovery could not be calculated.

(%) Indicates that the compound is a surrogate and the values reported for these compounds are in percent recovery. The quality control recovery limits (QC Limits) are indicated in the detection limit column.

Waste Stream Technology, Inc.

40 CFR Part 136 Method 624

EPA 624

Site: FRONTIER CHEMICAL
Date Sampled: 04/03/97
Date Received: 04/04/97

Group Number: 9701-196
Report Units: ug/L
Matrix: Aqueous

Lab ID Number	WS32960	
Client ID	GAC 2 SAMPLE PT.	
Date Extracted	NA	
Date Analyzed	04/09/97	

Compound	Detection Limit/ QC Limits (%)	Result	Q
chloromethane	2.0	2.0	U
vinyl chloride	2.0	2.0	U
bromomethane	2.0	2.0	U
chloroethane	2.0	2.0	U
Trichlorofluoromethane	2.0	2.0	U
1,1-dichloroethene	1.0	1.0	U
methylene chloride	2.8	2.8	U
trans-1,2-dichloroethene	1.0	1.0	U
1,1-dichloroethane	1.0	1.0	U
chloroform	1.0	1.0	U
1,1,1-trichloroethane	1.0	1.0	U
carbon tetrachloride	1.0	1.0	U
benzene	1.0	1.0	U
1,2-dichloroethane	1.0	1.0	U
trichloroethene	1.0	1.0	U
1,2-dichloropropane	1.0	1.0	U
bromodichloromethane	1.0	1.0	U
2-chloroethylvinyl ether	2.0	2.0	U
cis-1,3-dichloropropene	1.0	1.0	U
toluene	1.0	1.0	U
trans-1,3-dichloropropene	1.0	1.0	U
1,1,2-trichloroethane	1.0	1.0	U
tetrachloroethene	1.2	1.2	U
dibromochloromethane	1.0	1.0	U
chlorobenzene	1.0	1.0	U
ethylbenzene	1.0	1.0	U
bromoform	1.0	1.0	U
1,1,2,2-tetrachloroethane	1.0	1.0	U
1,3-dichlorobenzene	1.0	1.0	U
1,4-dichlorobenzene	1.0	1.0	U
1,2-dichlorobenzene	1.0	1.0	U
4-methyl-2-pentanone	5.0	5.0	U
1,2-Dichloroethane-d4 (%)	76-114	93.0	
Toluene-d8 (%)	88-110	104.0	
Bromofluorobenzene (%)	86-115	99.0	

Dilution Factor 1

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
40 CFR Part 136 Method 624
EPA 624

Site: FRONTIER CHEMICAL
Date Sampled: 04/03/97
Date Received: 04/04/97

Group Number: 9701-196
Report Units: ug/L
Matrix: Aqueous

Lab ID Number	WS32961	
Client ID	FIELD BLANK	
Date Extracted	NA	
Date Analyzed	04/09/97	

Compound	Detection Limit/ QC Limits (%)	Result	Q
chloromethane	2.0	2.0	U
vinyl chloride	2.0	2.0	U
bromomethane	2.0	2.0	U
chloroethane	2.0	2.0	U
Trichlorofluoromethane	2.0	2.0	U
1,1-dichloroethene	1.0	1.0	U
methylene chloride	2.8	4.0	
trans-1,2-dichloroethene	1.0	1.0	U
1,1-dichloroethane	1.0	1.0	U
chloroform	1.0	1.0	U
1,1,1-trichloroethane	1.0	1.0	U
carbon tetrachloride	1.0	1.0	U
benzene	1.0	1.0	U
1,2-dichloroethane	1.0	1.0	U
trichloroethene	1.0	1.0	U
1,2-dichloropropane	1.0	1.0	U
bromodichloromethane	1.0	1.0	U
2-chloroethylvinyl ether	2.0	2.0	U
cis-1,3-dichloropropene	1.0	1.0	U
toluene	1.0	1.0	U
trans-1,3-dichloropropene	1.0	1.0	U
1,1,2-trichloroethane	1.0	1.0	U
tetrachloroethene	1.2	1.2	U
dibromochloromethane	1.0	1.0	U
chlorobenzene	1.0	1.0	U
ethylbenzene	1.0	1.0	U
bromoform	1.0	1.0	U
1,1,2,2-tetrachloroethane	1.0	1.0	U
1,3-dichlorobenzene	1.0	1.0	U
1,4-dichlorobenzene	1.0	1.0	U
1,2-dichlorobenzene	1.0	1.0	U
4-methyl-2-pentanone	5.0	5.0	U
1,2-Dichloroethane-d4 (%)	76-114	94.0	
Toluene-d8 (%)	88-110	104.0	
Bromofluorobenzene (%)	86-115	101.0	

Dilution Factor 1

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Method 624 Method Blank Results
EPA 624

Site: FRONTIER CHEMICAL
Date Sampled: NA
Date Received: NA

Group Number: 9701-196
Report Units: PPB

Lab ID Number	IB040997	
Client ID	NA	
Date Extacted	NA	
Date Analyzed	04/09/97	

Compound	Detection Limit/ QC Limits (%)	Result	Q
chloromethane	2.0	2.0	U
vinyl chloride	2.0	2.0	U
bromomethane	2.0	2.0	U
chloroethane	2.0	2.0	U
trichlorofluoromethane	2.0	2.0	U
1,1-dichloroethene	1.0	1.0	U
methylene chloride	2.8	2.8	U
trans-1,2-dichloroethene	1.0	1.0	U
1,1-dichloroethane	1.0	1.0	U
chloroform	1.0	1.0	U
1,1,1,-trichloroethane	1.0	1.0	U
carbon tetrachloride	1.0	1.0	U
benzene	1.0	1.0	U
1,2-dichloroethane	1.0	1.0	U
trichloroethene	1.0	1.0	U
1,2-dichloropropane	1.0	1.0	U
bromodichloromethane	1.0	1.0	U
2-chloroethylvinyl ether	2.0	2.0	U
cis-1,3-dichloropropene	1.0	1.0	U
toluene	1.0	1.0	U
trans-1,3-dichloropropene	1.0	1.0	U
1,1,2-trichloroethane	1.0	1.0	U
tetrachloroethene	1.2	1.2	U
dibromochloromethane	1.0	1.0	U
chlorobenzene	1.0	1.0	U
ethylbenzene	1.0	1.0	U
bromoform	1.0	1.0	U
1,1,2,2-tetrachloroethane	1.0	1.0	U
1,3-dichlorobenzene	1.0	1.0	U
1,4-dichlorobenzene	1.0	1.0	U
1,2-dichlorobenzene	1.0	1.0	U
4-methyl-2-pentanone	5.0	5.0	U
Bromofluorobenzene (%)	86-115	100.0	
1,2-Dichloroethane-d4 (%)	76-114	93.0	
Toluene-d8 (%)	88-110	102.0	

Dilution Factor 1

IB denotes Instrument Blank.
NA denotes Not Applicable.

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
40 CFR 136 Method 608 Pest-PCBs
EPA 608

Site: FRONTIER CHEMICAL
Date Sampled: 04/03/97
Date Received: 04/04/97

Group Number: 9701-196
Report Units: ug/L
Matrix: Aqueous

Lab ID Number	WS32960	
Client ID	GAC 2 SAMPLE PT.	
Date Extracted	04/07/97	
Date Analyzed	04/07/97	
Compound	**Detection Limit/ QC Limits (%)**	**Result**	**Q**
alpha-BHC	0.003	0.003	U
beta-BHC	0.006	0.006	U
gamma-BHC	0.003	0.003	U
delta-BHC	0.009	0.009	U
heptachlor	0.020	0.020	U
aldrin	0.017	0.017	U
heptachlor epoxide	0.008	0.008	U
4,4-DDE	0.005	0.005	U
methoxychlor	0.003	0.003	U
Tetrachloro-m-xylene (%)	60-150	84.600	
Decachlorobiphenyl (%)	60-150	86.900	

Dilution Factor 1

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Method 608 Method Blank Results
EPA 608

Site: FRONTIER CHEMICAL
Date Sampled: NA
Date Received: NA

Group Number: 9701-196
Report Units: PPB

	Lab ID Number	MB97097	
	Client ID	NA	
	Date Extracted	04/07/97	
	Date Analyzed	04/07/97	
Compound	**Detection Limit/ QC Limits (%)**	**Result**	**Q**
alpha-BHC	0.003	0.003	U
beta-BHC	0.006	0.006	U
gamma-BHC	0.003	0.003	U
delta-BHC	0.009	0.009	U
heptachlor	0.020	0.020	U
aldrin	0.017	0.017	U
heptachlor epoxide	0.008	0.008	U
4,4'-DDE	0.005	0.005	U
methoxychlor	0.003	0.003	U
Tetrachloro-m-xylene (%)	60-150	91.400	
Decachlorobiphenyl (%)	60-150	102.000	

Dilution Factor 1
MB denotes Method Blank
NA denotes Not Applicable

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Metals Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: 04/03/97
Date Received: 04/04/97

Group Number: 9701-196
Report Units: mg/L
Matrix: Aqueous

Lab ID Number:	WS32960
Client ID:	GAC 2 SAMPLE PT.
Date Digested:	04/07/97

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Antimony by GFAA	0.009	< 0.009	04/10/97	EPA 200.9
Chromium by ICP	0.011	< 0.011	04/08/97	EPA 200.7
Boron by ICP	0.200	0.491	04/08/97	EPA 200.7

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.

Metals Method Blank Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: NA
Date Received: NA

Group Number: 9701-196
Report Units: PPM

Lab ID Number:	MB040797-HP1
Client ID:	NA
Date Digested:	04/07/97

Analyte	Detection Limit	Result		Date Analyzed	Analysis Method
Boron by ICP Method Blank	0.200	<	0.200	04/08/97	SW-846 6010
Cr water Method Blank	0.011	<	0.011	04/08/97	SW-846 6010
Sb water Method Blank	0.009	<	0.009	04/10/97	SW-846 7041

MB denotes Method Blank.
NA denotes Not Applicable.

Waste Stream Technology, Inc.

Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: 04/03/97
Date Received: 04/04/97

Group Number: 9701-196
Report Units: mg/L
Matrix: Aqueous

Lab ID Number:	WS32960	
Client ID:	GAC 2 SAMPLE PT.	

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Total Recoverable Phenol	0.005	0.009	04/10/97	EPA 420.1
Cyanide in Water	0.005	0.006	04/08/97	EPA 335.2
Total Suspended Solids	4.000	< 4.000	04/07/97	EPA 160.2

WASTE STREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

CHAIN OF CUSTODY RECORD

9701-196

PROJECT NO: E 414

SITE NAME: Frontier Chem. (Pendelton)

SAMPLERS (SIGNATURE): James Reed

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CON-TAINERS	Pest 608	Phenolics	Cyanide	Sb,Cr+B	T.S.S.	V.O.C. 624 Full		PRESERVATIVES	REMARKS
7D 03532	4/3/97	11:05	✓		AQ	GAC 2 Sample Pt.	1L	✓							Ø	Note:
7D 03533	↓	↓	✓		↓		1L		✓						H_2SO_4	Pesticides to be
7D 03534	↓	↓	✓		↓		1-500ml			✓					NaOH	analyzed by
7D 03535	↓	↓	✓		↓		1-500ml				✓				HNO_3	Method 608
7D 03536	↓	↓	✓		↓		1-500ml					✓			Ø	
7D 03537	↓	10:33		X	↓		1-40ml						X		HCL	composite
7D 03538	↓	10:43		X	↓		1-40ml		WS32960				X		HCL	composite
7D 03539	↓	10:53		X	↓		1-40ml						X		HCL	composite
7D 03540	↓	11:03		X	↓		1-40ml						X		HCL	composite
7D 03541	↓			X	↓	Field Blank	1-40ml		WS32961				X		HCL	

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
Thomas C. Hessel	4/4/97 4:42	Tony Poretti			
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)

SPECIAL INSTRUCTIONS:

TURNAROUND TIME ______

LAB USE: REFRIGERATOR # ______ SHELF # ______ GROUP # ______ DUE DATE ______

June 6, 1997

Mr. Frank Nerone
Chief Operator
Niagara County Sewer District #1
7346 Liberty Drive
Niagara Falls, NY 14304

Subject: Analytical Sampling Results (5/1/97 Sample)
Groundwater Discharge Through Pre-Treatment System
Pendleton (Frontier Chemical) Site

Dear Mr. Nerone:

Enclosed for your review are analytical results from the May 1, 1997, monthly sampling event for discharge of collected groundwater from the pre-treatment system. Analytical results for this sampling event are compared against the Permit (#96-11) requirements on the attached Analytical Summary and Daily Flow sheets.

A review of the analytical and flow data shows that all permit parameters are significantly below the stated permit requirements.

This data is being provided for your review and concurrence that all permit parameters are well within their limits. If, following review of the enclosed information, you are not in agreement with the above stated conclusion, please contact me at 423-336-4057 as soon as possible so we may discuss any future monitoring requirements.

Sincerely,

John M. Burns
for the Frontier Chemical - Pendleton Site PRP Group

enclosures: as stated
cc: D. Kummer
Pendleton Site Technical Committee

Frontier Chemical - Pendleton Site
Analytical Summary for WS 001
Permit # 96-11
Groundwater Discharge Point: D 002

191,246 Gallons Discharged Prior To 4/3/97

4,078 Gallons Since Last Report

141 Average Daily Flow Based on 29 days Between Samples

Parameters Treatment System Discharge	Permit Limit GPD	Detection Limits		5/1/97 Sample Results GPD
Discharge Rate(1)	662			
624 Analytes	ug/L	ug/L		ug/L
Toluene	10.0	1.0		
1,2-Dichloroethane	10.0	1.0		
4-Methyl-2-Pentanone	10.0	5.0		
Vinyl Chloride	10.0	2.0		
Methylene Chloride	10.0	2.8		
trans-1,2-Dichloroethene	10.0	1.0		
1,1,1-Trichloroethane	10.0	1.0		
Trichloroethene	10.0	1.0		
Benzene	10.0	1.0		
Chloromethane		2.0		
Bromomethane		2.0		
Chloroethane		2.0		
Chloroform		1.0		
Carbon Tetrachloride		1.0		
1,1-Dichloroethene		1.0		
Trichlorofluoromethane		2.0		
1,1-Dichloroethane		1.0		
1,2-Dichloropropane		1.0		
Bromodichloromethane		1.0		
2-Chloroethylvinyl ether		2.0		
cis-1,3-Dichloropropene		1.0		
trans-1,3-Dichloropropene		1.0		
1,1,2-Trichloroethane		1.0		
624 Analytes	ug/L	ug/L		ug/L
Tetrachloroethene		1.2		
Dibromochloromethane		1.0		
Chlorobenzene		1.0		
Ethylbenezene		1.0		
Bromoform		1.0		
1,1,2,2-Tetrachloroethane		1.0		
1,3-Dichlorobenzene		1.0		
1,4-Dichlorobezene		1.0		
1,2-Dichlorobenzene		1.0		
Sum of 624 Analytes		100.0		
608 Pesticides	ug/L	ug/L		ug/L
alpha BHC	10.0	0.003		
beta BHC	20.0	0.006		
delta BHC	10.0	0.009		
gamme BHC	10.0	0.003		
Heptachlor	8.0	0.020		
Aldrin	8.0	0.017		
Heptachlor Epoxide	9.0	0.008		
4,4-DDE	20.0	0.005		
Methoxychlor	18.0	0.003		
Metals	mg/L	mg/L		mg/L
Antimony	0.1	0.009	<	0.009
Boron	4.00	0.200		0.509
Chromium	5.33	0.011	<	0.011
Cyanide(T)	2.0	0.005	<	0.005
Other	mg/L	mg/L		mg/L
Total Phenolics	NA	0.005	<	0.005
TSS	300	4.000	<	4.000

Legend

(1) Permit limit @ 662 GPD with maximum daily discharged @ 2500 GPD

(a) Detected in blank

NA Not applicable

DAILY FLOW DATA - PENDLETON SITE
MAY, 1997

DATE	TOTALIZER READING	DAILY FLOW	
5/1/97	195324	414	
5/2/97	195738	340	
5/3/97	196078	99	
5/4/97	196177	150	
5/5/97	196327	99	
5/6/97	196426	100	
5/7/97	196526	100	
5/8/97	196626	150	
5/9/97	196776	461	
5/10/97	197237	98	
5/11/97	197335	99	
5/12/97	197434	152	
5/13/97	197586	99	
5/14/97	197685	127	avg
5/15/97		127	avg
5/16/97	197939	468	
5/17/97	198407	100	
5/18/97	198507	102	
5/19/97	198609	150	
5/20/97	198759	153	
5/21/97	198912	154	
5/22/97	199066	148	
5/23/97	199214	400	
5/24/97	199614	154	
5/25/97	199768	99	
5/26/97	199867	99	
5/27/97	199966	99	
5/28/97	200065	151	
5/29/97	200216	97	
5/30/97	200313	493	
5/31/97	200806		
AVERAGE DAILY FLOW IN GALLONS		197	

	= DRY VAULT GROUNDWATER RELIEF		
	5/2/97	206	gallons
	5/9/97	251	gallons
	5/16/97	312	gallons
	5/23/97	322	gallons
	5/30/97	354	gallons
	TOTAL GALLONS	1,445	

avg =flow between data points divided by days of missing data
avg =(197939-197685)/2 or 127 gallons per day for data between 5/14/97 and 5/16/97

WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report

Report Date : 05/16/97
Group Number : 9701-304

Prepared For :
Mr. John Burns
Olin Corporation
P.O. Box 248
1186 Lower River Road NW
Charleston, TN 37310

Site : Frontier Chemical

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
GAC #2 7E01542	WS33319	Aqueous	5/1/97	5/2/97	0830
Sample Status Upon Receipt : No irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
Metals	1	Standard
Cyanide	1	Standard
Phenol	1	Standard
Total Suspended Solids	1	Standard

Report Released By : Daniel W. Voll

Daniel Vollmer, Laboratory QA/QC Officer

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977 CDHS ELAP #2189

WASTE STREAM TECHNOLOGY

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following analytical method references:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised September 1994, United States EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.

Standard Methods for the Examination of Water and Wastewater. (18th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

Waste Stream Technology, Inc.
Metals Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: 05/01/97
Date Received: 05/02/97

Group Number: 9701-304
Report Units: mg/L
Matrix: Aqueous

Lab ID Number	WS33319	
Client ID	GAC #2 7E01542	
Date Digested	05/02/97	

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Antimony by GFAA	0.009	< 0.009	05/15/97	EPA 200.9
Boron by ICP	0.200	0.509	05/16/97	EPA 200.7
Chromium by ICP	0.011	< 0.011	05/16/97	EPA 200.7

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.

Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: 05/01/97
Date Received: 05/02/97

Group Number: 9701-304
Report Units: mg/L
Matrix: Aqueous

	Lab ID Number:	WS33319			
	Client ID:	GAC #2 7E01542			
Analyte	**Detection Limit**	**Result**		**Date Analyzed**	**Analysis Method**
Total Suspended Solids	4.000	<	4.000	05/06/97	EPA 160.2
Total Recoverable Phenol	0.005	<	0.005	05/02/97	EPA 420.1
Cyanide in Water	0.005	<	0.005	05/06/97	EPA 335.2

WASTE STREAM TECHNOLOGY

WASTE STREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

9701-304
9702-087-DR

CHAIN OF CUSTODY RECORD

PROJECT NO: Frontier Site

SITE NAME: E414 (Pendelton)

SAMPLERS (SIGNATURE): James Reed

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CONTAINERS	Phenolics	Cyanide	B, G, + Sb	T.S.				PRESERVATIVES	REMARKS
1	5/1/97	10:45	✓		H_2O	7E01542 (GAG 2)	1L	✓			✓				H_2SO_4	All Samples
2			✓		H_2O	7E01543 (GAG 2)	500ml		✓						NaOH	Taken after
3			✓		H_2O	7E01544 (GAG 2)	500ml			✓					HNO_3	G.A.C. II
4			✓		H_2O	7E01545 (GAG 2)	500ml				✓				Θ	

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
	5/2/97 8:30	Tony Pontillo	Tony Pontillo	5/2/97 8:30	
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)

SPECIAL INSTRUCTIONS:

TURNAROUND TIME _____

LAB USE: REFRIGERATOR # _____ SHELF # _____ GROUP # _____ DUE DATE

July 7, 1997

Mr. Frank Nerone
Chief Operator
Niagara County Sewer District #1
7346 Liberty Drive
Niagara Falls, NY 14304

Subject: Analytical Sampling Results (6/5/97 Sample)
Groundwater Discharge Through Pre-Treatment System
Pendleton (Frontier Chemical) Site

Dear Mr. Nerone:

Enclosed for your review are analytical results from the June 5, 1997, monthly sampling event for discharge of collected groundwater from the pre-treatment system. Analytical results for this sampling event are compared against the Permit (#96-11) requirements on the attached Analytical Summary and Daily Flow sheets.

A review of the analytical and flow data shows that all permit parameters are significantly below the stated permit requirements.

This data is being provided for your review and concurrence that all permit parameters are well within their limits. If, following review of the enclosed information, you are not in agreement with the above stated conclusion, please contact me at 423-336-4057 as soon as possible so we may discuss any future monitoring requirements.

Sincerely,

John M. Burns
for the Frontier Chemical - Pendleton Site PRP Group

enclosures: as stated
cc: D. Kummer
Pendleton Site Technical Committee

Frontier Chemical - Pendleton Site
Analytical Summary for WS 001
Permit # 96-11
Groundwater Discharge Point: D 002

195 324 Gallons Discharged Prior To 5/1/97
6 182 Gallons Since Last Report
172 Average Daily Flow Based on 36 days Between Samples

Parameters Treatment System Discharge	Permit Limit GPD	Detection Limits		6/5/97 Sample Results GPD
Discharge Rate(1)	662			
624 Analytes	ug/L	ug/L		ug/L
Toluene	10.0	1.0		
1,2-Dichloroethane	10.0	1.0		
4-Methyl-2-Pentanone	10.0	5.0		
Vinyl Chloride	10.0	2.0		
Methylene Chloride	10.0	2.8		
trans-1,2-Dichloroethene	10.0	1.0		
1,1,1-Trichloroethane	10.0	1.0		
Trichloroethene	10.0	1.0		
Benzene	10.0	1.0		
Chloromethane		2.0		
Bromomethane		2.0		
Chloroethane		2.0		
Chloroform		1.0		
Carbon Tetrachloride		1.0		
1,1-Dichloroethene		1.0		
Trichlorofluoromethane		2.0		
1,1-Dichloroethane		1.0		
1,2-Dichloropropane		1.0		
Bromodichloromethane		1.0		
2-Chloroethylvinyl ether		2.0		
cis-1,3-Dichloropropene		1.0		
trans-1,3-Dichloropropene		1.0		
1,1,2-Trichloroethane		1.0		
624 Analytes	ug/L	ug/L		ug/L
Tetrachloroethene		1.2		
Dibromochloromethane		1.0		
Chlorobenzene		1.0		
Ethylbenezene		1.0		
Bromoform		1.0		
1,1,2,2-Tetrachloroethane		1.0		
1,3-Dichlorobenzene		1.0		
1,4-Dichlorobezene		1.0		
1,2-Dichlorobenzene		1.0		
Sum of 624 Analytes		100.0		
608 Pesticides	ug/L	ug/L		ug/L
alpha BHC	10.0	0.003		
beta BHC	20.0	0.006		
delta BHC	10.0	0.009		
gamma BHC	10.0	0.003		
Heptachlor	8.0	0.020		
Aldrin	8.0	0.017		
Heptachlor Epoxide	9.0	0.008		
4,4-DDE	20.0	0.005		
Methoxychlor	18.0	0.003		
Metals	mg/L	mg/L		mg/L
Antimony	0.1	0.009	<	0.009
Boron	4.00	0.200		0.525
Chromium	5.33	0.011	<	0.011
Cyanide(T)	2.0	0.005	<	0.005
Other	mg/L	mg/L		mg/L
Total Phenolics	NA	0.005	<	0.005
TSS	300	4.000	<	4.000

Legend:
(1) Permit limit @ 662 GPD with maximum daily discharged @ 2500 GPD
(a) Detected in blank
NA Not applicable

DAILY FLOW DATA - PENDLETON SITE
JUNE, 1997

DATE	TOTALIZER READING	DAILY FLOW	
6/1/97	200903	153	
6/2/97	201056	148	
6/3/97	201204	225	avg
6/4/97		225	avg
6/5/97	201506	98	
6/6/97	201604	272	avg
6/7/97		272	avg
6/8/97		272	avg
6/9/97	202321	284	
6/10/97	202605	100	
6/11/97	202705	150	
6/12/97	202855	101	
6/13/97	202956	520	
6/14/97	203476	171	
6/15/97	203647	189	
6/16/97	203836	144	
6/17/97	203980	165	
6/18/97	204145	511	
6/19/97	204656	291	
6/20/97	204947	457	
6/21/97	205404	97	
6/22/97	205501	101	
6/23/97	205602	154	
6/24/97	205756	843	
6/25/97	206599	397	
6/26/97	206996	251	
6/27/97	207247	484	
6/28/97	207731	144	
6/29/97	207875	95	
6/30/97	207970		
AVERAGE DAILY FLOW IN GALLONS		252	

	= DRY VAULT GROUNDWATER RELIEF		
	6/6/97	329	gallons
	6/13/97	324	gallons
	6/24/97	577	gallons
	6/28/97	301	gallons
	TOTAL GALLONS	1,531	

avg =flow between data points divided by days of missing data
avg =(20232-201604)/3 or 272 gallons per day for data between 6/6/97 and 6/9/97

WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report
Report Date : 06/23/97
Group Number : 9701-435

Prepared For :
Mr. John Burns
Olin Corporation
P.O. Box 248
1186 Lower River Road NW
Charleston, TN 37310

Site : Frontier Chemical

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
COMP 7F05546	WS34115	Aqueous	06/05/97	06/06/97	0830
Sample Status Upon Receipt : No irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
Metals	1	Standard
Cyanide	1	Standard
Phenol	1	Standard
Total Suspended Solids	1	Standard

Report Released By : Daniel W. Voe
Daniel Vollmer, Laboratory QA/QC Officer

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977 CDHS ELAP #2189

WASTE STREAM TECHNOLOGY

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following analytical method references:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised September 1994, United States EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.

Standard Methods for the Examination of Water and Wastewater. (18th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

Waste Stream Technology, Inc.
Metals Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: 06/05/97
Date Received: 06/06/97

Group Number: 9701-435
Report Units: mg/L
Matrix: Aqueous

Lab ID Number	WS34115	
Client ID	COMP 7F05546	
Date Digested	06/18/97	

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Antimony by GFAA	0.009	< 0.009	06/19/97	EPA 200.9
Boron by ICP	0.200	0.525	06/20/97	EPA 200.7
Chromium by ICP	0.011	< 0.011	06/20/97	EPA 200.7

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.

Metals Method Blank Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: NA
Date Received: NA

Group Number: 9701-435
Report Units: PPM

Lab ID Number	MB061897-HPI
Client ID	NA
Date Digested	06/18/97

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Sb Method Blank	0.009	< 0.009	06/19/97	EPA 200.9
B Method Blank	0.200	< 0.200	06/20/97	EPA 200.7
Cr Method Blank	0.011	< 0.011	06/20/97	EPA 200.7

MB denotes Method Blank.
NA denotes Not Applicable.

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Cyanide in Water
EPA 335.2

Site: FRONTIER CHEMICAL
Date Sampled: 06/05/97
Date Received: 06/06/97

Group Number: 9701-435
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS34115	COMP 7F05546	06/16/97	0.005	< 0.005

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Total Recoverable Phenol
EPA 420.1

Site: FRONTIER CHEMICAL
Date Sampled: 06/05/97
Date Received: 06/06/97

Group Number: 9701-435
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS34115	COMP 7F05546	06/18/97	0.005	< 0.005

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Total Suspended Solids
EPA 160.2

Site: FRONTIER CHEMICAL
Date Sampled: 06/05/97
Date Received: 06/06/97

Group Number: 9701-435
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS34115	COMP 7F05546	06/10/97	4.000	< 4.000

WASTE STREAM TECHNOLOGY

WASTE STREAM TECHNOLOGY
302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

9701-435

CHAIN OF CUSTODY RECORD

PROJECT NO:

SITE NAME: Frontier Chemicals

SAMPLERS (SIGNATURE): James Reed

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CONTAINERS	Br. Gr + Sb	Cn	Phenol	TSS				PRESERVATIVES	REMARKS
1	6/3/97	9:20 9:50 am	✓			comp. 7F05546	1-1L	✓							HNO_3	WS34115
2	|		✓			7F05547	1-500ml		✓						NaOH	
3	|		✓			7F05548	1-1L			✓					H_2SO_4	
4	|		✓			7F05549	1-500ml				✓				Ø	

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
[signature]	6/6/97 7:30	Tony [signature]	Tony [signature]	6/6/97 8:10	Debra [signature]
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)

SPECIAL INSTRUCTIONS:

TURNAROUND TIME ______

LAB USE: REFRIGERATOR # ______ SHELF # ______ GROUP # ______ DUE DATE ______

FILE COPY

August 7. 1997

Mr. Frank Nerone
Chief Operator
Niagara County Sewer District #1
7346 Liberty Drive
Niagara Falls, NY 14304

Subject: Analytical Sampling Results (7/3/97 Sample)
Groundwater Discharge Through Pre-Treatment System
Pendleton (Frontier Chemical) Site

Dear Mr. Nerone:

Enclosed for your review are analytical results from the July 3, 1997, monthly sampling event for discharge of collected groundwater from the pre-treatment system. Analytical results for this sampling event are compared against the Permit (#96-11) requirements on the attached Analytical Summary and Daily Flow sheets.

A review of the analytical and flow data shows that all permit parameters are significantly below the stated permit requirements.

This data is being provided for your review and concurrence that all permit parameters are well within their limits. If, following review of the enclosed information, you are not in agreement with the above stated conclusion, please contact me at 423-336-4057 as soon as possible so we may discuss any future monitoring requirements.

Sincerely,

John M. Burns

John M. Burns
for the Frontier Chemical - Pendleton Site PRP Group

enclosures: as stated
cc: D. Kummer
Pendleton Site Technical Committee

Frontier Chemical - Pendleton Site
Analytical Summary for WS 001
Permit # 96-11
Groundwater Discharge Point: D 002

201,506 Gallons Discharged Prior To 6/5/97
5,996 Gallons Since Last Report
233 Average Daily Flow Based on 30 days Between Samples

Parameters Treatment System Discharge	Permit Limit GPD	Detection Limits	7/3/97 Sample Results GPD
Discharge Rate(1)	662		
624 Analytes	ug/L	ug/L	ug/L
Toluene	10.0	1.0	
1,2-Dichloroethane	10.0	1.0	
4-Methyl-2-Pentanone	10.0	5.0	
Vinyl Chlonde	10.0	2.0	
Methylene Chlonde	10.0	2.8	
trans-1,2-Dichloroethene	10.0	1.0	
1,1,1-Trichloroethane	10.0	1.0	
Trichloroethene	10.0	1.0	
Benzene	10.0	1.0	
Chloromethane		2.0	
Bromomethane		2.0	
Chloroethane		2.0	
Chloroform		1.0	
Carbon Tetrachloride		1.0	
1,1-Dichloroethene		1.0	
Trichlorofluoromethane		2.0	
1,1-Dichloroethane		1.0	
1,2-Dichloropropane		1.0	
Bromodichloromethane		1.0	
2-Chloroethylvinyl ether		2.0	
cis-1,3-Dichloropropene		1.0	
trans-1,3-Dichloropropene		1.0	
1,1,2-Trichloroethane		1.0	
Tetrachloroethene		1.2	
Dibromochloromethane		1.0	
Chlorobenzene		1.0	
Ethylbenezene		1.0	
Bromoform		1.0	
1,1,2,2-Tetrachloroethane		1.0	
1,3-Dichlorobenzene		1.0	
1,4-Dichlorobezene		1.0	
1,2-Dichlorobenzene		1.0	
Sum of 624 Analytes		100.0	
608 Pesticides	ug/L	ug/L	ug/L
alpha BHC	10.0	0.003	
beta BHC	20.0	0.006	
delta BHC	10.0	0.009	
gamme BHC	10.0	0.003	
Heptachlor	8.0	0.020	
Aldrin	8.0	0.017	
Heptachlor Epoxide	9.0	0.008	
4,4-DDE	20.0	0.005	
Methoxychlor	18.0	0.003	
Metals	mg/L	mg/L	mg/L
Antimony	0.1	0.009	< 0.009
Boron	4.00	0.200	0.772
Chromium	5.33	0.011	< 0.011
Cyanide(T)	2.0	0.005	0.012
Other	mg/L	mg/L	mg/L
Total Phenolics	NA	0.005	0.008
TSS	300	4.000	< 4.000

Legend:
(1) Permit limit @ 662 GPD with maximum daily discharged @ 2500 GPD
(a) Detected in blank
NA Not applicable

DAILY FLOW DATA - PENDLETON SITE
JULY, 1997

DATE	TOTALIZER READING	DAILY FLOW	
7/1/97	208118	128	avg.
7/2/97		128	avg.
7/3/97		128	avg.
7/4/97	208502	463	
7/5/97	208965	152	
7/6/97	209117	152	
7/7/97	209269	101	
7/8/97	209370	149	
7/9/97	209519	96	
7/10/97	209615	160	
7/11/97	209775	234	avg.
7/12/97		234	avg.
7/13/97		234	avg.
7/14/97		234	avg.
7/15/97	210710	154	
7/16/97	210864	101	
7/17/97	210965	150	
7/18/97	211115	195	
7/19/97	211310	103	
7/20/97	211413	152	
7/21/97	211565	103	avg.
7/22/97		103	avg.
7/23/97	211770	152	
7/24/97	211922	152	
7/25/97	212074	127	avg.
7/26/97		127	avg.
7/27/97	212328	153	
7/28/97	212481	154	
7/29/97	212635	102	
7/30/97	212737	152	
7/31/97	212889		
AVERAGE DAILY FLOW IN GALLONS		158	

	= DRY VAULT GROUNDWATER RELIEF		
	7/4/97	317	gallons
	7/11/97	393	gallons
			gallons
	TOTAL GALLONS	710	

avg =flow between data points divided by days of missing data
avg =(208502-208118)/3 or 128 gallons per day for data between 7/1/97 and 7/4/97

WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report
Report Date : 07/11/97
Group Number : 9701-567

Prepared For :
Mr. John Burns
Olin Corporation
P.O. Box 248
1186 Lower River Road NW
Charleston, TN 37310

Site : Frontier Chemical

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
G.A.C. II	WS34834	Aqueous	07/03/97	07/03/97	1315
Sample Status Upon Receipt : No irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
Cyanide	1	Standard
Phenol	1	Standard
Total Metals	1	Standard
Total Suspended Solids	1	Standard

Report Released By : Daniel W. Vollmer
Daniel Vollmer, Laboratory QA/QC Officer

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977 CDHS ELAP #2189

WASTE STREAM TECHNOLOGY

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following analytical method references:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised September 1994, United States EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.

Standard Methods for the Examination of Water and Wastewater. (18th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

Waste Stream Technology, Inc.
Cyanide in Water
EPA 335.2

Site: FRONTIER CHEMICAL
Date Sampled: 07/03/97
Date Received: 07/03/97

Group Number: 9701-567
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS34834	G.A.C. II	07/07/97	0.005	0.012

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Total Recoverable Phenol
EPA 420.1

Site: FRONTIER CHEMICAL
Date Sampled: 07/03/97
Date Received: 07/03/97

Group Number: 9701-567
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS34834	G.A.C. II	07/07/97	0.005	0.008

Waste Stream Technology, Inc.
Metals Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: 07/03/97
Date Received: 07/03/97

Group Number: 9701-567
Report Units: mg/L
Matrix: Aqueous

Lab ID Number	WS34834	
Client ID	G.A.C. II	
Date Digested	07/09/97	

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Boron by ICP	0.200	0.772	07/10/97	EPA 200.7
Chromium by ICP	0.011	< 0.011	07/10/97	EPA 200.7
Antimony by GFAA	0.009	< 0.009	07/10/97	EPA 200.9

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.

Metals Method Blank Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: NA
Date Received: NA

Group Number: 9701-567
Report Units: PPM

Lab ID Number	MB070997-W1
Client ID	NA
Date Digested	07/09/97

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Sb Method Blank	0.009	< 0.009	07/10/97	EPA 200.9
B Method Blank	0.200	< 0.200	07/10/97	EPA 200.7
Cr Method Blank	0.011	< 0.011	07/10/97	EPA 200.7

MB denotes Method Blank
NA denotes Not Applicable

Waste Stream Technology, Inc.
Total Suspended Solids
EPA 160.2

Site: FRONTIER CHEMICAL
Date Sampled: 07/03/97
Date Received: 07/03/97

Group Number: 9701-567
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS34834	G.A.C. II	07/07/97	4.0	< 4.0

WASTE STREAM TECHNOLOGY

WASTE STREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

9701-567

CHAIN OF CUSTODY RECORD

PROJECT NO: SITE NAME: Frontier Chem. (Pendelton)

SAMPLERS (SIGNATURE): Jim Reed

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CONTAINERS	Br, Cr, Sb	Cyanide	Phenols	T.S.S.				PRESERVATIVES	REMARKS
7603 548	7/3/97	1013 AM	✓		H_2O	G.A.C. II	1-L	✓							HNO_3	WS348347
7603 549	"	"	✓		"	"	1-500ml		✓						NaOH	
7603 550	"	"	✓		"	"	1-L			✓					H_2SO_4	
7603 551	"	"	✓		"	"	1-500ml				✓				Ø	

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
	7/3/97 13:15	Debra Reed			
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)

SPECIAL INSTRUCTIONS:

TURNAROUND TIME _____

LAB USE: REFRIGERATOR # _____ SHELF # _____ GROUP # _____ DUE DATE _____

September 8, 1997

Mr. Frank Nerone
Chief Operator
Niagara County Sewer District #1
7346 Liberty Drive
Niagara Falls, NY 14304

Subject: Analytical Sampling Results (8/7/97 Sample)
Groundwater Discharge Through Pre-Treatment System
Pendleton (Frontier Chemical) Site

Dear Mr. Nerone:

Enclosed for your review are analytical results from the August 7, 1997, monthly sampling event for discharge of collected groundwater from the pre-treatment system. Analytical results for this sampling event are compared against the Permit (#96-11) requirements on the attached Analytical Summary and Daily Flow sheets.

A review of the analytical and flow data shows that all permit parameters are significantly below the stated permit requirements.

This data is being provided for your review and concurrence that all permit parameters are well within their limits. If, following review of the enclosed information, you are not in agreement with the above stated conclusion, please contact me at 423-336-4057 as soon as possible so we may discuss any future monitoring requirements.

Sincerely,

John M. Burns

for the Frontier Chemical - Pendleton Site PRP Group

enclosures: as stated
cc: D. Kummer
Pendleton Site Technical Committee

Frontier Chemical - Pendleton Site
Analytical Summary for WS 001
Permit # 96-11
Groundwater Discharge Point: D 002

208,502 Gallons Discharged Prior To 7/3/97

5,317 Gallons Since Last Report

156 Average Daily Flow Based on 34 days Between Samples

Parameters Treatment System Discharge	Permit Limit GPD	Detection Limits		8/7/97 Sample Results GPD
Discharge Rate(1)	662			
624 Analytes	ug/L	ug/L		ug/L
Toluene	10.0	1.0		
1,2-Dichloroethane	10.0	1.0		
4-Methyl-2-Pentanone	10.0	5.0		
Vinyl Chloride	10.0	2.0		
Methylene Chloride	10.0	2.8		
trans-1,2-Dichloroethene	10.0	1.0		
1,1,1-Trichloroethane	10.0	1.0		
Trichloroethene	10.0	1.0		
Benzene	10.0	1.0		
Chloromethane		2.0		
Bromomethane		2.0		
Chloroethane		2.0		
Chloroform		1.0		
Carbon Tetrachloride		1.0		
1,1-Dichloroethene		1.0		
Trichlorofluoromethane		2.0		
1,1-Dichloroethane		1.0		
1,2-Dichloropropane		1.0		
Bromodichloromethane		1.0		
2-Chloroethylvinyl ether		2.0		
cis-1,3-Dichloropropene		1.0		
trans-1,3-Dichloropropene		1.0		
1,1,2-Trichloroethane		1.0		
Tetrachloroethene		1.2		
Dibromochloromethane		1.0		
Chlorobenzene		1.0		
Ethylbenezene		1.0		
Bromoform		1.0		
1,1,2,2-Tetrachloroethane		1.0		
1,3-Dichlorobenzene		1.0		
1,4-Dichlorobezene		1.0		
1,2-Dichlorobenzene		1.0		
Sum of 624 Analytes		100.0		
608 Pesticides	ug/L	ug/L		ug/L
alpha BHC	10.0	0.003		
beta BHC	20.0	0.006		
delta BHC	10.0	0.009		
gamma BHC	10.0	0.003		
Heptachlor	8.0	0.020		
Aldrin	8.0	0.017		
Heptachlor Epoxide	9.0	0.008		
4,4-DDE	20.0	0.005		
Methoxychlor	18.0	0.003		
Metals	mg/L	mg/L		mg/L
Antimony	0.1	0.009	<	0.009
Boron	4.00	0.200		0.200
Chromium	5.33	0.011	<	0.011
Cyanide(T)	2.0	0.005		0.011
Other	mg/L	mg/L		mg/L
Total Phenolics	NA	0.005		0.006
TSS	300	4.000	<	4.000

Legend

(1) Permit limit @ 662 GPD with maximum daily discharged @ 2500 GPD

(a) Detected in blank

NA Not applicable

DAILY FLOW DATA - PENDLETON SITE
AUGUST, 1997

DATE	TOTALIZER READING	DAILY FLOW	
8/1/97	212991	152	
8/2/97	213143	127	avg
8/3/97		127	avg
8/4/97	213396	153	
8/5/97	213549	135	avg
8/6/97		135	avg
8/7/97	213819	102	
8/8/97	213921	150	
8/9/97	214071	153	
8/10/97	214224	101	
8/11/97	214325	153	
8/12/97	214478	152	
8/13/97	214630	155	
8/14/97	214785	154	
8/15/97	214939	449	
8/16/97	215388	102	
8/17/97	215490	203	
8/18/97	215693	104	
8/19/97	215797	102	
8/20/97	215899	197	
8/21/97	216096	214	
8/22/97	216310	267	avg
8/23/97		267	avg
8/24/97		267	avg
8/25/97	217110	154	
8/26/97	217264	102	
8/27/97	217366	153	
8/28/97	217519	101	
8/29/97	217620	305	avg
8/30/97		305	avg
8/31/97	218230		
AVERAGE DAILY FLOW IN GALLONS		175	

	= DRY VAULT GROUNDWATER RELIEF		
	8/15/97	297	gallons
	8/22/97	324	gallons
	8/29/97	223	gallons
	TOTAL GALLONS	844	

avg =flow between data points divided by days of missing data
avg =(213396-213143)/2 or 127 gallons per day for data between 8/2/97 and 8/4/97

WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report

Report Date : 08/15/97
Group Number : 9701-709

Prepared For :
Mr. John Burns
Olin Corporation
P.O. Box 248
1186 Lower River Road NW
Charleston, TN 37310

Site : Frontier Chemical

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
2nd GAC	WS35599	Aqueous	8/7/97	8/8/97	0830
Sample Status Upon Receipt : No irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
Total Metals	1	Standard
Cyanide	1	Standard
Phenol	1	Standard
Total Suspended Solids	1	Standard

Report Released By : Daniel W. Vollmer

Daniel Vollmer, Laboratory QA/QC Officer

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977 CDHS ELAP #2189

WASTE STREAM TECHNOLOGY

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following analytical method references:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised September 1994, United States EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.

Standard Methods for the Examination of Water and Wastewater. (18th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

Waste Stream Technology, Inc.
Total Suspended Solids
EPA 160.2

Site: FRONTIER CHEMICAL
Date Sampled: 08/07/97
Date Received: 08/08/97

Group Number: 9701-709
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS35599	2nd GAC	08/12/97	4.0	< 4.0

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Total Recoverable Phenol
EPA 420.1

Site: FRONTIER CHEMICAL
Date Sampled: 08/07/97
Date Received: 08/08/97

Group Number: 9701-709
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS35599	2nd GAC	08/11/97	0.005	0.006

WASTE STREAM TECHNOLOGY

Waste Stream Technology, Inc.
Cyanide in Water
EPA 335.2

Site: FRONTIER CHEMICAL
Date Sampled: 08/07/97
Date Received: 08/08/97

Group Number: 9701-709
Report Units: mg/L
Matrix: Aqueous

WST Lab ID	Client ID	Analysis Date	Detection Limit	Result
WS35599	2nd GAC	08/12/97	0.005	0.011

Waste Stream Technology, Inc.
Metals Analysis Result Report

Site: FRONTIER CHEMICAL
Date Sampled: 08/07/97
Date Received: 08/08/97

Group Number: 9701-709
Report Units: mg/L
Matrix: Aqueous

Lab ID Number	WS35599	
Client ID	2nd GAC	
Date Digested	08/14/97	

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Antimony by GFAA	0.009	< 0.009	08/14/97	EPA 200.9
Boron by ICP	0.200	0.873	08/14/97	EPA 200.7
Chromium by ICP	0.011	< 0.011	08/14/97	EPA 200.7

WASTESTREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

9701-709

CHAIN OF CUSTODY RECORD

PROJECT NO: SITE NAME: Frontier-Pendelton

SAMPLERS (SIGNATURE): Jim Reed

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CONTAINERS	Phenolics	Metals	CN	TSS	PRESERVATIVES	REMARKS
7H07 552	8/7/97	11:00	✓		H_2O	2nd GAC	1-L	✓				H_2SO_4	
7H07 553	"	"	✓		"	"	1-L		✓			HNO_3	4575;99
7H07 554	"	"	✓		"	"	1-500ml			✓		NaOH	
7H07 555	"	"	✓		"	"	1-500ml				✓	∅	

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
[signature]	8/8 [illegible]	Tony Pantaleo	Tony Pantaleo 8/8/97 9:10		[signature]

SPECIAL INSTRUCTIONS:

TURNAROUND TIME _____

LAB USE: REFRIGERATOR # _____ SHELF # _____ GROUP # _____ DUE DATE _____

Operation, Maintenance, and Monitoring Activities
Frontier Chemical - Pendleton Site
September 1997

Date	Event	Response
April 3, 1997	NCSD Monthly Sampling	Completed
April 14, 1997	NCSD modified discharge permit permit including 624 scan to semi-annually; daily flow maximum to 2,500 gpd, and eliminated pesticides	April and October are semi-annual sampling events for 624 scan
April 16, 1997	Site walk over and inspection by NYSDEC	Repair erosion adjacent to landfill at Quarry Lake; wetland schedule, dampness in dry vault
May 1, 1997	NCSD Monthly Sampling	Completed
May 22, 1997	Vehicle struck main gate	Report filed with state police and gate repaired.
June 5, 1997	NCSD Monthly Sampling	Completed
June 9, 1997	O'Brien & Gere discovered two wells (88-12C & 88-12D) damaged during well development; installed flush mounted casings on well cluster 14 per request of church; pump #2 failed to operate	Repaired wells; installed flush mounted well casings on well cluster 14 S,I &D; Electrician repaired pump #2
June 10, 1997	Development water disposal in wet well caused pluggage of filter bags; pumps kicked off due to differential high pressure	Replace filter bags
June 13, 1997	Conducted site inspection	See inspection report
June 24, 1997	Started collection of first round of post-closure ground water samples; NYSDEC site visit	No comments
July 3, 1997	NCSD Monthly Sampling	Completed
July 10, 1997	Relief valve on pump #2 leaking; belts on pump #2 worn	Replaced relief valve and drive belt
July 11, 1997	High differential pressure at filters	Changed filter bags
July 18, 1997	Relief value on pump #1 leaking	Replaced relief valve
August 7, 1997	NCSD Monthly Sampling	Completed
August 15, 1997	Autodialer has erroneous messages	Circuit board being repaired
August 20, 1997	Maintenance Work Items	Started removing trees at power line
September 4, 1997	NCSD Monthly Sampling	Completed
September 9, 1997	Maintenance Work Items	Completed work items

Frontier Chemical - Pendleton Site
September 1997
Attachment C

1 Frontier Chemical - Pendleton Site
Semi-Annual Ground Water Monitoring Report
September 1997