PCB STORM WATER RUNOFF SAMPLING RESULTS

Carrier Cor

CARRIER CORPORATION
THOMPSON ROAD
SYRACUSE, NEW YORK

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1.0 FACILITY DESCRIPTION AND HISTORY

The Carrier Corporation, Thompson Road Facility (Carrier) is located in the northeast portion of Syracuse, New York, approximately one mile south of the New York State Thruway (**Figure 1-1 — Site Location Map**). The facility is bordered by Sanders Creek to the north, Thompson Road with developed and undeveloped commercial land to the west, Kinne Street with residential areas to the east, and residential and commercial areas to the south. The property slopes slightly north toward Sanders Creek. The facility property covers approximately 175 acres and a large majority of the site is either paved or covered by manufacturing and office buildings.

The facility was purchased in the 1950s by Carrier. The Carrier Syracuse facility produces or has produced a variety of products associated with the HVAC (heating, ventilation, air conditioning) industry for home and commercial applications over the years. Operations include or have included the manufacture and assembly of various components associated with HVAC units, including Carlyle compressors.

Carrier is currently working with New York State Department of Environment and Conservation (NYSDEC) to evaluate polychlorinated biphenyls (PCBs) in storm water effluent. PCBs are a group of compounds used in plastics, insulation, and flame retardants that vary in physical form from oily liquids to crystals and resins.

Carrier used electrical transformers which contained oils with PCBs. These transformers were located in the transformer yard (south of Building 1) and in the buildings elsewhere. Historical releases of PCBs occurred in the transformer yard; however, these were mitigated. Aroclor 1260 has been the predominant PCB found onsite, with periodic occurrences of Aroclor 1254.

2.0 Site Wide Storm Water Collection

All storm water from the Carrier facility, with the exception of the property edges, is collected in nine storm sewers (Lines 001 through 009). The storm sewer system collects water through a series of surface inlets, roof drains, and infiltrating groundwater, while water at the property edges flows offsite as sheet flow. To comply with the facility's storm water State Pollutant Discharge Elimination System (SPDES) permit, the flow from Lines 001 through 008 was combined as part of an outfall consolidation project in approximately 1990. Line 009, which is on the eastern side of the property, was not included in the system, because there were no compliance issues with this discharge. The outfall consolidation project diverted flow from the eight lines to two collection wet wells (WW) labeled WW-1 and WW-2. WW-1 consolidates Lines 005 through 008 and is commonly referred to as Pump Station 1 or Outfall 010. WW-2 consolidates Lines 001 through 004 and is commonly referred to as Pump Station 2 or Outfall 011. The purpose of the outfall consolidation project was to prevent direct discharge of dry weather flow (containing volatile organic compounds) from the storm sewer, which comprises small process flows and infiltrating groundwater. From these wet wells (or pump stations), the water is pumped to a treatment system (two air strippers in parallel) in the northeast part of Building TR-3, treated, and discharged via Outfall 01A to Sanders Creek. During storm events that produce flows exceeding the capacity of the treatment system, excess flows are diverted to two Outfalls that discharge directly to Sanders Creek. Each Outfall is associated with one of the wet wells and is located near former Outfalls 002 and 007.

3.0 INFLUENT AND EFFLUENT DISCHARGE SAMPLING

Based on NYSDEC sampling results in Sanders Creek[1,2], the NYSDEC directed Carrier to include monitoring of PCB's in the influent and effluent of the air stripper towers, and monitoring for PCBs in Outfalls 010 and 011 during overflow conditions.[3] Carrier has sampled the influent and effluent of the VOC treatment system on a weekly basis since July 2003. Sampling was conducted beyond the stated one-year period. Sample data are summarized in Table A-1 of Appendix A.

The effluent discharges from both air stripping towers combine prior to discharge into Sanders Creek. Therefore, in order to evaluate the combined flows from Pump Station 1 and Pump Station 2, the influent and effluent data have been averaged using flow-weighted values. A majority of the flow-weighted effluent samples had detectable PCB concentrations (64 percent). Over these 64 weeks of sampling events, the average flow-weighted PCB concentration was 0.264 µg/L.[4]

[1] Biological Stream Assessment Contaminant Trackdown, Sanders Creek, Onondaga County, New York, Survey date: June 17, 2002, Report date: June 27, 2003.

[2] Corrective Measures Study Report (Appendix B), Carrier Corporation, May 2003.

[3] NYSDEC Correspondence to UTC dated July 24, 2003.

[4] If the anomalous 7 µg/L value is eliminated from the calculations, the average value drops to 0.164 µg/L.

Figure 1-1

Site Location Map

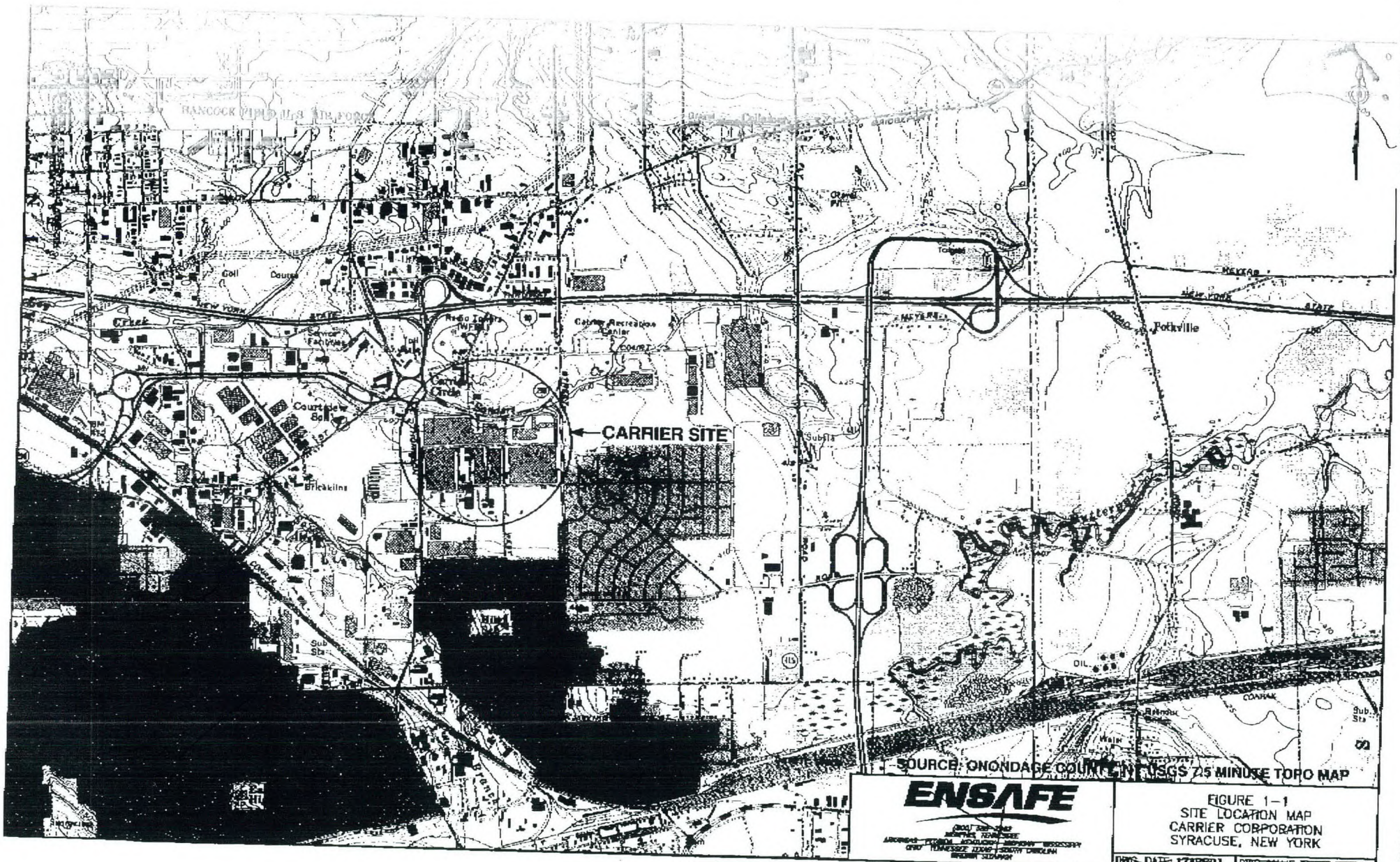

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FIGURE 1-1
SITE LOCATION MAP
CARRIER CORPORATION
SYRACUSE, NEW YORK

DWG DATE: 17APR03 | DWG NAME: 3TJ33049RD06

Appendix A

Storm Water PCB Study Data

Pump Stations 1 and 2
July 2003 to October 2004

TABLE A-1

Storm Water PCB Study Data
July 2003 - October 2004

Date	Time	Pump Station 1 (Influent)	ST 1 (Effluent)	Flow ST1 (gpm)	Pump Station 2 (Influent)	ST2 (Effluent)	Flow ST2 (gpm)	010 (002) (Overflow) (TR2)	011 (001) (Overflow) (TR3)	Flow weighted 01A Influent**	Flow weighted 01A effluent**	Notes
12/29/2003	AM	<0.05	<0.05	1	<0.05	0.15	29	n/a	n/a	<0.05	0.10	Mild, some rain, no overflow.
12/30/2003	AM	<2.5*	<0.05	1	<0.05	<0.05	29	n/a	n/a	<2.5*	<0.05	Mild, some rain, no overflow. *Matrix interference precludes lower detection limits.
1/8/2004	AM	<0.05	<0.05	254	0.09	0.09	63	n/a	n/a	0.07	0.07	Very cold, some snow, no melt, no overflow.
1/15/2004	AM	<0.05	<0.05	1	<0.05	0.05*	155	n/a	n/a	<0.05	0.05	Very cold, some snow, no melt, no overflow. *Aroclor 1254.
1/22/2004	AM	<0.05	<0.05	206	<0.05	0.18	190	n/a	n/a	<0.05	0.12	Cold, some snow, no melt, no overflow.
1/28/2004	AM	<0.05	<0.05	1	<0.05	0.08	27	n/a	n/a	<0.05	0.07	Cold, cold, cold, snow, wind, no overflow.
2/5/2004	AM	<0.05	<0.05	0	0.06	0.18	0	n/a	n/a	0.06	0.12	Cold, 25F. No precipitation.
2/12/2004	AM	<0.05	<0.05	1	<0.05	0.18	19	n/a	n/a	<0.05	0.12	Cold and dry.
2/19/2004	AM	<0.05	<0.05	258	<0.05	<0.05	8	n/a	n/a	<0.05	<0.05	25F, dry.
2/26/2004	AM	<0.05	<0.05	2	<0.05	<0.05	5	n/a	n/a	<0.05	<0.05	25F sunny and dry.
3/4/2004	AM	<0.05	<0.05	390	0.12	<0.05	388	n/a	n/a	0.09	<0.05	40F lots of snow melt, light drizzle, not in overflow today or recently.
3/11/2004	AM	<0.05	<0.05	62	<0.05	0.06	25	n/a	n/a	<0.05	0.08	Warm and dry
3/18/2004	AM	<0.05	<0.05	205	<0.05	<0.05	221	n/a	n/a	<0.05	<0.05	Cold and dry.
3/25/2004	AM	<0.05	<0.05	200	<0.05	0.08	25	n/a	n/a	<0.05	0.07	Cool and cloudy, no precipitation.
4/1/2004	AM	<0.05	<0.05	5	<0.05	0.27	240	n/a	n/a	<0.05	0.16	Cool and cloudy, light drizzle
4/5/2004	AM	<0.05	<0.05	200	<0.05	0.12	25	n/a	n/a	<0.05	<0.05	Cold, 2 inches of snow and windy
4/8/2004	AM	<0.05	<0.05	197	<0.05	<0.05	21	n/a	n/a	<0.05	<0.05	Cool, No precipitation
4/22/2004	AM	<0.05	<0.05	183	<0.05	<0.05	20	n/a	n/a	<0.05	<0.05	Cloudy and warm.
4/29/2004	AM	<0.05	<0.05	58	<0.05	0.09	7	n/a	n/a	<0.05	0.07	trace of rain, windy 63F
5/6/2004	AM	<0.05	<0.05	99	<0.05	<0.05	31	n/a	n/a	<0.05	<0.05	.2 inches
5/13/2004	AM	<0.05	<0.05	82	0.18	<0.05	236	n/a	n/a	0.12	<0.05	.36 inches
5/20/2004		<0.05	<0.05	81	<0.05	<0.05	47	n/a	n/a	<0.05	<0.05	Trace
5/27/2004	AM	<0.05	<0.05	193	<0.05	<0.05	26	n/a	n/a	<0.05	<0.05	0.27 inches
6/3/2004	AM	1.5	<.05	4	2.3	0.89	188	n/a	n/a	2.3	0.26	Dry
6/10/2004	AM	0.54	<.05	3	21	0.64	23	n/a	n/a	3.8	0.57	Trace precipitation
6/17/2004	AM	<0.05	<0.05	25	<0.05	<0.05	18	n/a	n/a	<0.05	<0.05	0.14 inches rain
6/24/2004	AM	0.26	0.057	7	0.054	0.67	6	n/a	n/a	0.14	0.34	Trace precipitation
7/1/2004	AM	<0.05	<0.05	193	<0.05	0.11	4	n/a	n/a	<0.05	0.11	Dry
7/8/2004	AM	2.6	0.12	4	0.64	0.58	48	n/a	n/a	1.68	0.55	0.5 inches rain
7/15/2004	AM	0.78	<.05	4		1	31	n/a	n/a	2.48	0.89	Dry until about 11:30am. rain after samples collected
7/23/2004	AM	<0.05	27	2	<0.05	78	6	n/a	n/a	<0.05	7	
7/27/2004	AM	<0.05	<0.05	3	0.4	<0.05	382	<0.05	<0.05	0	<0.05	80 F, sunny
8/5/2004	AM	<0.05	<0.05	7	<0.05	<0.05	4	n/a	n/a	<0.05	<0.05	cloudy, slight rain
8/12/2004	AM	<0.05	<0.05	6	<0.05	<0.05	11	n/a	n/a	<0.05	<0.05	Cloudy, 63 F, dry
8/19/2004	PM	<0.05	<0.05	12	<0.05	0.19	8	n/a	n/a	<0.05	0.11	71 F; cloudy
8/26/2004	AM	<0.05	<0.05	12	<0.05	2.4	23	n/a	n/a	<0.05	1.59	72 F, cloudy
9/3/2004	PM	<0.05	<0.05	6	0.39	1.1	7	n/a	n/a	<0.05	0.62	75 F, Sunny
9/9/2004	PM	<0.05	<0.05	367	0.06	2	328	<0.05	<0.05	0.055	0.97	Cloudy, with rain all night; more rain about 2 pm with overflow about 5 pm (Hurricane Francis)
9/16/2004	AM	<0.05	<0.05	7	<0.05	0.15	8	n/a	n/a	<0.05	0.103	77 F, sunny
9/23/2004	AM	<0.05	<0.05	29	<0.05	0.42	30	n/a	n/a	<0.05	0.238	78F, sunnyy
9/30/2004	AM	<0.05	<0.05	20	<0.05	<0.05	23	n/a	n/a	<0.05	<0.05	61F, cloudy, light rain (0.03")
10/7/2004	AM	<0.05	<0.05	22	<0.05	0.093	21	n/a	n/a	<0.05	0.071	73F, cloudy
10/14/2004	AM	<0.05	<0.05	81	<0.05	0.07	20	n/a	n/a	<0.05	0.054	63F, Cloudy

Results in ug/l unless noted
Flow rate in gallons per minute
ST = Stripper Tower;
ST1 takes flow from East side; ST2 takes flow from west

TABLE A-1

Storm Water PCB Study Data
July 2003 - October 2004

Date	Time	Pump Station 1 (Influent)	ST 1 (Effluent)	Flow ST1 (gpm)	Pump Station 2 (Influent)	ST2 (Effluent)	Flow ST2 (gpm)	010 (002) (Overflow) (TR2)	011 (001) (Overflow) (TR3)	Flow weighted 01A influent**	Flow weighted 01A effluent**	Notes
7/28/2003	AM	<0.05	<0.05	10	0.05	0.08	23	n/a	n/a	0.05	0.07	Clear skies. Last previous rainfall overnight ending ~ 2:00 am. Samples clear, minor "rust".
8/4/2003	AM	<0.05	<0.05	10	<0.05	0.28	70	n/a	n/a	0.05	0.17	Clear, very humid. On and off thundershowers ending ~ 10 hours before sampling. More expected. Low sustained flow from wet wells.
8/7/2003	AM	<0.05	<0.05	94	0.08	0.07	184	n/a	n/a	0.07	0.06	
8/11/2003	AM	<0.05	<0.05	1	0.06	0.13	9	n/a	n/a	0.06	0.09	Dry, no rain for at least 6 hours. Samples clear.
8/12/2003	PM	0.06	<0.05	190	0.75	0.98	214	1.3	0.06	0.43	0.54	Overflow event. Heavy rainsfall. Overflow samples turbid?
8/14/2003	AM	<0.05	<0.05	2	0.05	0.87	18	n/a	n/a	0.05	0.48	Dry, no rain for at least 6 hours. Samples clear.
8/18/2003	AM	<0.05	<0.05	2	0.05	0.4	4	n/a	n/a	0.05	0.24	Dry, no rain for at least 6 hours. Samples clear.
8/21/2003	AM	<0.05	<0.05		0.1	0.41		n/a	n/a	0.08	0.24	Dry, no rain for at least 6 hours. ST 2 dissolved (filtered) result <0.05*
8/25/2003	AM	<0.05	<0.05	1	0.05	0.21	18	n/a	n/a	0.05	0.13	Dry, no rain for at least 6 hours. ST 2 dissolved (filtered) result 0.13
9/4/2003	AM	<0.05	<0.05	2	<0.05	0.52	198	n/a	n/a	0.05	0.30	Dry, no rain for at least 6 hours. Samples clear.
9/11/2003	AM	<0.05	0.23	1	0.08	0.07	3	n/a	n/a	0.07	0.15	Dry, no rain. Upstate Labs
9/11/2003	AM	<0.065	<0.065	0	<0.065	<0.065	86	n/a	n/a	<0.065	<0.065	Dry, no rain. CES Lab
											<0.05**	Outfall 01A at discharge pipe- <0.05 ug/l
9/19/2003	AM	<0.05	<0.05	18	<0.05	off line	n/a	n/a	n/a	<0.05	<0.05	Tower 2 off line starting 9/17. Replace packing and wash tower. Sediment concentration 4.5 mg/kg total pcb Tower 2 off line. All flow from PS 1 and PS 2 going to ST 1. Some spotty rain from Hurricane Isabel, but no overflow.
9/25/2003	AM	0.55	0.07	215	0.36	off line	n/a	n/a	n/a	0.45	0.07	Some significant rain, but not enough for overflow. PS 1 and PS 2 both directed to ST 1 until PS 2 cleaning on 9/26/03.
10/2/2003	AM	0.22	<0.05		<0.05	<0.05		n/a	n/a	0.13	<0.05	PS 2 cleaned on 9/26. PS 2 directed to ST 2 (ST 2 put back into service) at 4:00 pm on 9/26. Dry at time of sampling, light rain overnight, impending rain in pm. **PS 1 influent sample initial result <0.5, re-run result 0.22
10/9/2003	AM	<0.05	0.2	1	<0.05	0.08	4	n/a	n/a	<0.05	0.14	Dry.
10/15/2003	AM	<0.05	<0.05	365	<0.05	<0.05	18	<0.05	<0.05	<0.05	<0.05	Heavy rain, overflow sampling.
10/23/2003	AM	<0.05	<0.05	2	<0.05	0.10	3	n/a	n/a	<0.05	0.08	Very light rain/snow. No appreciable increase in flow. No overflow.
10/27/2003	PM	<0.05	<0.05	388	0.08	0.06	45	<0.05	0.07	0.07	0.06	Light, steady rain all day. Overflow sample.
11/6/2003	AM	0.08	0.06	219	0.26	0.12	197	n/a	n/a	0.18	0.09	Light rain, no overflow.
11/13/2003	AM	<0.05	<0.05	1	0.06	0.43	50	n/a	n/a	0.06	0.25	Very light rain, high wind, dropping temps., no overflow.
11/18/2003	AM	<0.05	<0.05	280	<0.05	<0.05	47	n/a	n/a	<0.05	<0.05	Cleaning of the storm piping in the TR-18 corridor started Monday 11/17/03. Sampled before cleaning of the storm system started for the day. No rain but the ground is saturated from previous rain/snow and snow melt.
11/24/2003	AM	<0.05	<0.05	268	<0.05	<0.05	172	n/a	n/a	<0.05	<0.05	Clear and warm. NO line cleaning activities since last Friday 11/21/03. None this week.
12/1/2003	AM	<0.05	n/a	310	<0.05	0.06	220	n/a	n/a	<0.05	0.06	37 F, snowing a little, some snow melt from the weekend, heavy rain on Friday 11/28. Sampling before storm cleanout began today. Flow from PS 1 diverted to ST 2 during line cleaning.
12/11/2003	AM	0.24	0.30	403	1.4	1.0	376	0.57	<0.05	0.85	0.67	Steady rain and snow melt. Overflow. Line cleaning project completed yesterday ~4:00 pm.
12/17/2003	AM	<0.05	0.07	385	0.15	0.18	314	n/a	n/a	0.10	0.13	Mild rain, mild temp., heavy snow melt, no overflow at 001 and 002.