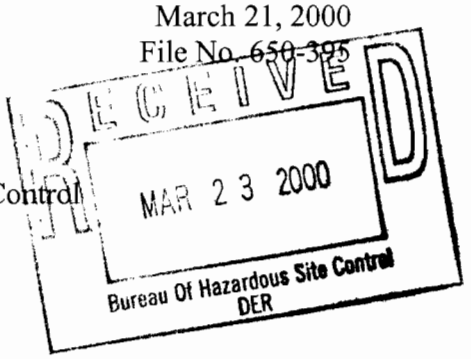
Lawler, Matusky & Skelly Engineers LLP

Environmental Science & Engineering Consultants

March 21, 2000
File No. 650-395



Mr. Carl Hoffman
New York State Department of Environmental Conservation
Operation and Maintenance Section - Bureau of Hazardous Site Control
Division of Environmental Remediation
50 Wolf Road
Albany, New York 12233-7010

Re: **Servall Laundry Site**
Bay Shore, Suffolk County
Site No. 1-52-077, Work Assignment No. D002676-39.2
Monthly Report – FEBRUARY 2000

Dear Mr. Hoffman:

Attached please find the Monthly Report for February 2000, the fourth monthly report submitted under Work Assignment No. D002676-39.2.

The plant operated at an average flow rate of 160 gpm for the month and a total volume of 5,390,400 gallons of water was processed. The influent VOC concentration was 100.3 ppb; the plant removed approximately 98.0% of the influent VOCs. Effluent concentrations of total VOCs, manganese and iron were within discharge limitations. Influent compliance data has revealed that MTBE is present at concentrations between 7.6 ppb and 9.4 ppb. The presence of MTBE, a gasoline additive, is indicative of a gasoline spill and not typically found at a site impacted by dry cleaner operations. This may indicate that groundwater contained within the extraction system's radius of influence is impacted by a nearby gasoline spill. Effluent MTBE concentration in February 2000 was 0.4 ppb. Currently, there is no guidance value for MTBE concentrations in groundwater. Historically, a guidance concentration of 50 ppb was used but this is under re-evaluation.

LMS will continue to provide task management of the plant operations until September 30, 2000 unless otherwise directed by the NYSDEC. If you have any questions or comments please feel free to contact me at x 249.

Very Truly Yours,

Robert DeGiorgio, P.E.
Project Manager

Enclosures

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Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation
Operation and Maintenance

Monthly Operations Report

February-00

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, New York 10965

650-395

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation
Operation and Maintenance

Monthly Operations Report

Summary Report
Compliance Sampling
Graphical Data Trends
Summary Notes and Action Items
H2M Reports

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
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One Blue Hill Plaza
Pearl River, New York 10965

650-395

Servall Laundry
Site No. 1-52-077
Groundwater Remediation -2000 Operation and Maintenance

Summary Report

Plant Operating Data	unit	Monthly Average (to date)	January-00	February-00	Total 2000
Flow Rate	gpm	101	160.44	160.39	-
Gallons processed	gallons	3,712,876	4,154,420	5,390,400	9,544,820
Percent of Time Operating	%	57%	62%	86%	-
Influent VOC concentration	ug/L	113	67.4	100.3	-
Effluent VOC concentration	ug/L	1.48	1.5	2	-
VOC removal efficiency	%	97.7%	97.8%	98.0%	
Pounds of VOCs Treated	lb	4.3	2.28	4.42	7
Influent Total Iron	ug/L	516	1270	308	-
Influent Total Manganese	ug/L	573	593	542	-
Effluent Total Iron	ug/L	80	100	32	-
Effluent Total Manganese	ug/L	572	583	533	-
Total Iron removal efficiency	%	75.7%	92.1%	89.6%	-
Total Manganese removal efficiency	%	1.0%	1.7%	1.7%	-
Sodium hypochlorite (12%)	lb	701	500	500	1,000
Polymer	lb	38	0	0	0
Hydrogen peroxide (50%)	lb	3298	4538	4538	9,076
Caustic (50%)	lb	922	5534	5534	11,067
Hydrochloric Acid	lb	98	0	0	0
Cartridge Filters	ea	1	3	0	3
Spare Parts or other	at cost	$665	$196	$0	$196
Consumables cost	*$*	*$3,070*	*$4,162*	*$3,516*	*$7,678*
Sludge generated (20% dewatered)	gal	25	25	25	50
Sludge disposed of	gal	28	0	$0.00	0
Sludge disposal cost	*$*	*$75.63*	*$0.00*	*$0.00*	*$0.00*
Gas (estimated)	therms	881	800	800	1,600
Electricity (estimated)	kw hr	41351	37,800	37,800	75,600
Utilities cost	*$*	*$4,030*	*$3,682*	*$3,682*	*$7,364*
Compliance Sampling	at cost	$1,014.68	$655.50	$650.00	$1,306
Redevelopment	at cost	$3,071	$0.00	$0.00	$0
Operator	Month	$10,398	$5,790	$6,500.00	$12,290
Management & Engineering	at cost	$3,561	$931	$1,239.99	$2,171
Services cost	*$*	*$18,045*	*$7,376*	*$8,390*	*$15,766*
Operating Cost (Estimated)	***$***	***$25,221***	***$15,221***	***$15,588***	***$30,809***

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation - Operation and Maintenance

2000 Compliance Sampling

Influent															
Constituents	Discharge Criteria	units	January		February		March		April		May		June	
Chlorobenzene	5	ug/L	0.5	U										
Vinyl Chloride	2	ug/L	0.5	U										
1,1-Dichloroethene	5	ug/L	0.1	J										
Trichloroethene	5	ug/L	1		1									
Tetrachloroethene	5	ug/L	54	E	87									
1,1-Dichloroethane	5	ug/L	0.2	J										
Toluene	5	ug/L	0.5	U	0.5									
cis-1,2-Dichloroethene	5	ug/L	0.3	J	0.6									
trans-1,2-Dichloroethene	5	ug/L	0.5	U										
Methylene Chloride	N/A	ug/L	0.5	U	1.6	JD								
1,1,1-Trichloroethane	N/A	ug/L	0.5											
Chloroform	N/A	ug/L	0.2	J	0.2									
Bromodichloromethane	N/A	ug/L	0.5	U										
Trichlorofluoromethane	N/A	ug/L	0.5	U										
Methyl tert-Butly Ether	N/A	ug/L	7.6		9.4									
Total VOCs	**N/A**	**ug/L**	**67.4**		**100.3**									
Iron (total)	600[4]	ug/L	1270		308									
Manganese (total)	600[4]	ug/L	593		542									
Alkalinity	N/A	mg/L	27		29									
Total Suspended Solids	N/A	mg/L	10	U	10	U								
Total Solids	N/A	mg/L	159		162									

Effluent															
Constituents	Discharge Criteria	units	January		February		March		April		May		June	
Chlorobenzene	5	ug/L		U										
Vinyl Chloride	2	ug/L		U										
1,1-Dichloroethene	5	ug/L		U										
Trichloroethene	5	ug/L		U										
Tetrachloroethene	5	ug/L	0.7		1.4									
1,1-Dichloroethane	5	ug/L		U										
Toluene	5	ug/L		U	0.2	JB								
cis-1,2-Dichloroethene	5	ug/L		U										
trans-1,2-Dichloroethene	5	ug/L		U										
Methylene Chloride	N/A	ug/L		U										
1,1,1-Trichloroethane	N/A	ug/L	0.3	J										
Chloroform	N/A	ug/L	0.3	J										
Bromodichloromethane	N/A	ug/L	0.2	J										
Methyl tert-Butly Ether	N/A	ug/L		U	0.4									
Total VOCs	**N/A**	**ug/L**	**1.5**		**2**									
Iron (total)	600[4]	ug/L	100		32									
Manganese (total)	600[4]	ug/L	583		533									
Alkalinity	N/A	mg/L	2	U	38									
Total Suspended Solids	N/A	mg/L	10	U	10	U								
Total Solids	N/A	mg/L	170		171									

Notes:

1. Analytical data analyzed by STL Laboratories.
2. (U) Undetected.
3. (J) Estimate value. Result is below sample practical quantitation limit, but above the instrument detection limit.
4. The combined effluent concentration of Iron and Manganese will not exceed 1,000 ug/L.
5. N/A - No limit established for this site.
6. (E) Estimate value.
7. N-A - Not Analyzed
8. "-" indicates not performed.
9. Bold values exceed discharge limits.
10. (P) pestiside/aroclor target analyte. Greater than 25% difference between the two GC columns.

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation - Operation and Maintenance

2000 Compliance Sampling

Influent														
Constituents	Discharge Criteria	units	July		August		September		October		November		December	
Chlorobenzene	5	ug/L												
Vinyl Chloride	2	ug/L												
1,1-Dichloroethene	5	ug/L												
Trichloroethene	5	ug/L												
Tetrachloroethene	5	ug/L												
1,1-Dichloroethane	5	ug/L												
Toluene	5	ug/L												
cis-1,2-Dichloroethene	5	ug/L												
trans-1,2-Dichloroethene	5	ug/L												
Methylene Chloride	N/A	ug/L												
1,1,1-Trichloroethane	N/A	ug/L												
Chloroform	N/A	ug/L												
Bromodichloromethane	N/A	ug/L												
Trichlorofluoromethane	N/A	ug/L												
Methyl tert-Butly Ether	N/A	ug/L												
Total VOCs	**N/A**	**ug/L**												
Iron (total)	600[4]	ug/L												
Manganese (total)	600[4]	ug/L												
Alkalinity	N/A	mg/L												
Total Suspended Solids	N/A	mg/L												
Total Solids	N/A	mg/L												

Effluent														
Constituents	Discharge Criteria	units	July		August		September		October		November		December	
Chlorobenzene	5	ug/L												
Vinyl Chloride	2	ug/L												
1,1-Dichloroethene	5	ug/L												
Trichloroethene	5	ug/L												
Tetrachloroethene	5	ug/L												
1,1-Dichloroethane	5	ug/L												
Toluene	5	ug/L												
cis-1,2-Dichloroethene	5	ug/L												
trans-1,2-Dichloroethene	5	ug/L												
Methylene Chloride	N/A	ug/L												
1,1,1-Trichloroethane	N/A	ug/L												
Chloroform	N/A	ug/L												
Bromodichloromethane	N/A	ug/L												
Methyl tert-Butly Ether	N/A	ug/L												
Total VOCs	**N/A**	**ug/L**												
Iron (total)	600[4]	ug/L												
Manganese (total)	600[4]	ug/L												
Alkalinity	N/A	mg/L												
Total Suspended Solids	N/A	mg/L												
Total Solids	N/A	mg/L												

Notes:
1. Analytical data analyzed by STL Laboratories.
2. (U) Undetected.
3. (J) Estimate value. Result is below sample practical quan
instrument detection limit.
4. The combined effluent concentration of Iron and Mangan
5. N/A - No limit established for this site.
6. (E) Estimate value.
7. N-A - Not Analyzed
8. "-" indicates not performed.
9. Bold values exceed discharge limits.
10. (P) pestiside/aroclor target analyte. Greater than 25% di

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation - Operation and Maintenance

Graphical Data Trends

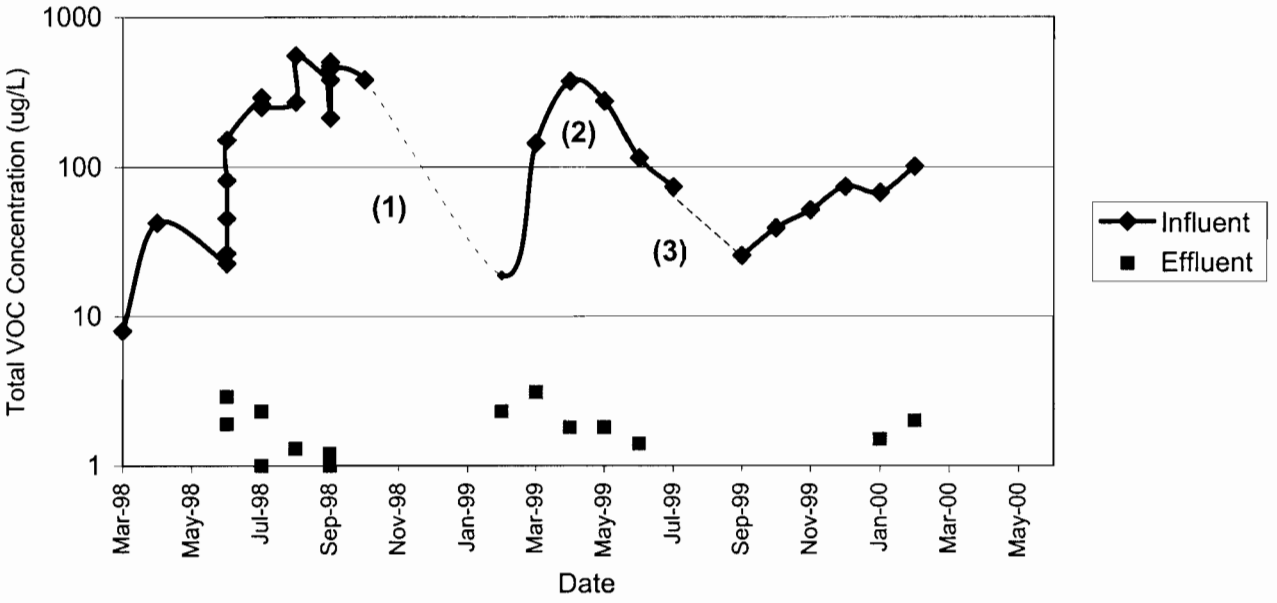

Figure 1 - Total Volatile Organic Compound (VOC) Influent and Effluent Trends

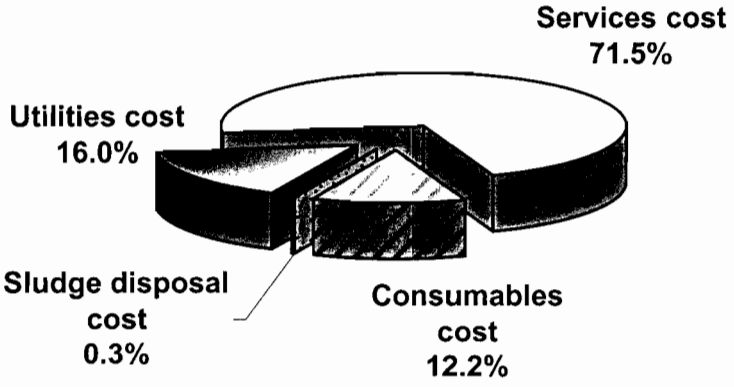

Figure 2 - Monthly Average Operating Cost Breakdown - to date is $25,221
Avg. Monthly operating costs in the Year 2000 is $15,404

NOTES
1. Plant down due to reinjection well fouling (November 19, 1998 to January 23, 1999)
2. Brief Shut down in May: May 8- May 10,1999
3. Low influent flow due to reinjection well fouling.

Servall Laundry
Site No. 1-52-077
Groundwater Remediation - Operations and Maintenance Costs to Date

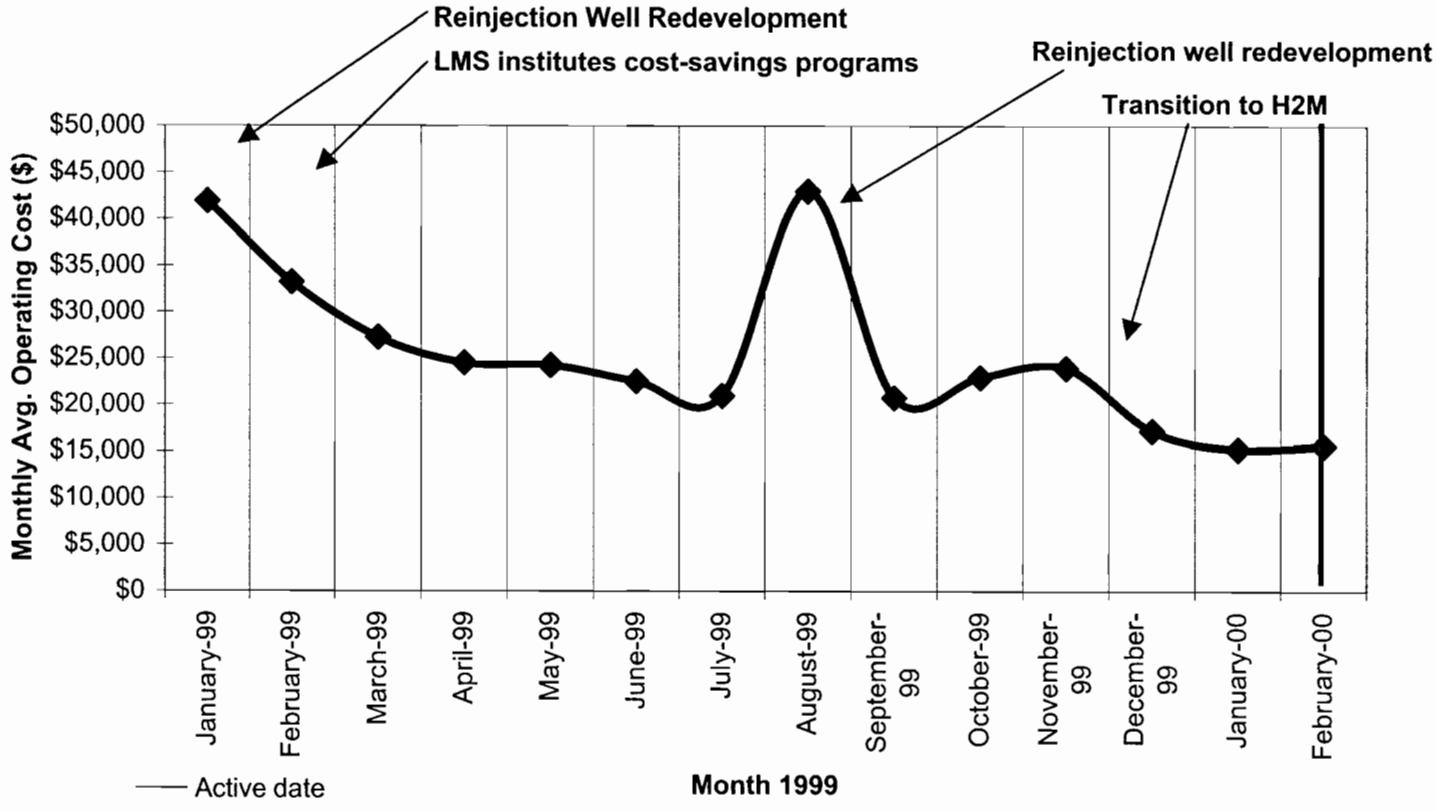

Figure 3 - Average Operating Cost Trends (Estimated)

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation

Summary Notes and Action Items

Month	Notes	Action	Resolutions
January	None		
February	MTBE detected, indicative of a gasoline spill unrelated to Servall site		
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

H2M GROUP
Holzmacher, McLendon & Murrell, P.C. • H2M Associates, Inc.
H2M Construction Management, Inc. • H2M Labs, Inc.
575 Broad Hollow Road, Melville, NY 11747-5076
(516) 756-8000 • Fax: (516) 694-4122

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March 3, 2000

Robert J. DiGiorgio
Lawler, Matusky, & Skelly Engineers, LLP
One Blue Hill Plaza
Pearl River, NY 10965

Re: Servall Laundry QWETP
Bay Shore, New York
February 2000 Operations Report

Dear Mr. DeGiorgio:

As you are aware, Holzmacher, McLendon, & Murrell, P.C. (H2M) is currently conducting the daily operation and maintenance duties for the above referenced site. A summary of activity with respect to the groundwater extraction and treatment plant for the month of February 2000 is provided below.

Overview
Routine equipment maintenance was performed and daily process equipment readings were collected during the month.

Event Schedule
The following timeline represents specific tasks completed during the month of February.

- 2/3/00 System went off-line. The air compressor circuit breaker was found tripped. Reset the breaker to put the system on-line. Set Caustic pump to 50/15 to help raise the pH of the effluent water.
- 2/4/00 Raised Caustic pump to 55/25 to increase effluent pH. Current pH measurement is 6.35 units.
- 2/8/00 Raised Caustic pump to 55/30 to increase effluent pH. Current pH measurement is 6.12 units.
- 2/9/00 Raised Caustic pump to 60/30 to increase effluent pH. Current pH measurement is 6.12 units.

- 2/10/00 Raised Caustic pump to 60/35 to increase effluent pH. Current pH measurement is 6.13 units.

- 2/11/00 System went off-line. The Master Control Panel indicated a "pH Tank Level High" message. Pump 6B was switched to the "on" position so that the tank's level would lower. The system restarted within a few minutes. The switch for pump 6B was returned to the "auto" position. Lowered the Caustic pump to 50/25. Current pH measurement remains at 6.13 units.

- 2/14/00 System went off-line. The air compressor's circuit breaker tripped. The circuit breaker was reset. A "pH Tank Level Hi" message was indicated on the Master Control Panel. The switch for pump 6B was turned to the "on" position to put the system back on-line, just as on 2/11/00.

  Prepared effluent filters for replacement by taking them out of the HCl wash solution.

- 2/15/00 Rinsed effluent filters from the previous day. Removed filters from the effluent filter tanks and installed the clean ones. The dirty filters were rinsed and placed in the HCl wash solution.

  The air compressor's circuit breaker tripped after a power fluctuation. Reset breaker to put system back on-line.

  The malfunctions associated with the level indicators and probes for the caustic, acid and peroxide tanks were investigated. After troubleshooting the equipment with available tools, no apparent cause was found. The probes or receiving units may need to be replaced. H2M will investigate this issue further.

  Actual tank levels (liquid volumes) as of the end of February, 2000 are approximated as follows:

Tank	*Level*	*Volume*
Acid	54 in.	2644 gal
Caustic	16 in.	783 gal
Peroxide	60 in.	2937.8 gal

  Met with Carl Hoffman of New York State Department of Environmental Conservation (NYSDEC). He was given a tour of the facility.

- 2/18/00 Tank 12B was decanted.

H2M GROUP

- 2/22/00 The Caustic pump was raised to 50/45. Current pH measurement is 6.13 units.

- 2/23/00 The monthly water compliance samples were collected, packed in ice, and shipped to Severn-Trent Laboratories via Federal Express, overnight delivery.

- 2/25/00 Performed filter press operation. Less than one-half of one 55 gallon drum was filled with sludge from the settling tank. A new sodium hypochlorite drum was put on-line.

Plant Performance

Between January 31, 2000 and February 29, 2000, the treatment plant discharged 5,390,400 gallons of treated water. The average flowrate of the UV/Oxidation system was 160.39 gallons per minute during operating conditions. Operational data and daily chemistry records for the respective monitoring period have been included as an attachment to this report.

Waste Disposal

No waste was shipped off-site during the reporting period.

If you should have any questions or require additional information, please contact Philip Schade at (516) 756-8000, extension 1623.

Very truly yours,

HOLZMACHER, McLENDON, & MURRELL, P.C.

Philip J. Schade, P.E.
Project Manager

David Nadler
Environmental Scientist

DWN/

enclosures
cc: Gary J. Miller, P.E./H2M
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H2MGROUP

Daily Operation Check List

Servall Laundry Site

Day	MONDAY	Tuesday	Wednesday	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday	Friday
Date	1/24/00	1/25/00	1/26/00	1/27/00	1/28/00	1/31/00	2/1/00	2/2/00	2/3/00	2/4/00
Time	15:00	12:05	10:05	12:50	8:15	7:50	9:00	9:00	9:40	9:00
Extraction Well Level (feet)	58.0	63.1	55.4	52.3	53.4	54.0	53.7	53.6	54.1	53.6
Influent Flow Rate (gpm)	160.06	160.08	165.79	160.26	160.05	162.03	160.14	160.02	160.52	159.97
Influent Filter in Service (yes/no)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Inlet Pressure (psi)	20	20	20	20	20	20	20	20	20	20
Outlet Pressure (psi)	17	17	17	18	17	26	18	20	18	18
Cartridge Filter Flow Rate (gpm)	140.92	141.02	139.68	140.68	140.78	142.25	140.52	140.84	140.71	140.71
Equalization Tank										
Level (inches)	51.95	51.96	52.09	52.00	52.10	58.11	52.01	51.98	52.01	52.05
pH	3.64	3.17	2.63	6.53	6.71	6.81	6.90	7.00	7.22	7.20
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	20/35	20/35	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UV/Oxidation Pump in Service (4A/4B)	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A
UV/Oxidation Flow Rate (gpm)	153.76	149.73	147.27	155.05	153.51	183.70	155.45	150.93	153.48	149.44
UV/Oxidation Unit										
Lamp # 1 (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
KV	252	252	252	252	252	252	252	252	252	252
Amps	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Time	9403.17	9422.03	9427.83	9454.20	9473.61	9513.47	9539.07	9562.97	9564.61	
Lamp # 2 (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
KV	0	0	0	0	0	0	0	0	0	0
Amps	0	0	0	0	0	0	0	0	0	0
Time	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86
Lamp # 3 (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
KV	258	258	258	258	258	258	258	258	258	258
Amps	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Time	7830.52	7849.39	7855.17	7881.54	7900.94	7940.80	7966.40	7990.24	7991.94	8019.62
Peroxide Pump Settings: Speed / Stroke	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50
Peroxide Residual Concentration (mg/l)	16	15	15	18	14	13	11	15	13	14
Totalizer Reading (gpm)	74286790	74457880	74503490	74741780	74916740	75274610	75506720	75722460	75738560	75963110

H2MGROUP

Daily Operation Check List
Servall Laundry Site

Date	1/24/00	1/25/00	1/26/00	1/27/00	1/28/00	1/31/00	2/1/00	2/2/00	2/3/00	2/4/00
pH Adjust Tank										
Level (inches)	49.87	50.19	49.70	49.84	50.03	51.58	49.92	50.02	49.73	50.09
pH	6.31	6.21	6.49	6.00	6.00	5.97	5.99	6.00	5.98	6.90
Mixer (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Caustic Pump Settings: Speed / Stroke	40/45	50/45	50/10	50/10	50/10	50/10	50/10	50/10	50/15	50/25
Polmer Feed Settings	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Solution Pump: Speed / Stroke										
Dilution Water Rate										
Polymeer Bucket Weight (lbs.)										
Sand Filter Feed Pump in Service (6A/6B)	6B	6B	6B	6B	6B	6B	6B	6B	6B	6B
Sand Filters										
Filter # 1 inlet pressure (psi)	20	20	20	20	20	25	20	20	20	20
Filter #1 outlet pressure (psi)	16	20	20	20	20	25	20	22	22	22
Filter # 2 inlet pressure (psi)	20	22	20	20	20	25	20	22	20	20
Filter #2 outlet pressure (psi)	20	20	18	18	20	27	20	22	22	20
Filter # 3 inlet pressure (psi)	20	20	18	20	18	26	20	22	20	22
Filter #3 outlet pressure (psi)	20	22	18	20	19	27	20	22	20	20
Filter # 4 inlet pressure (psi)	22	22	20	22	18	25	20	22	20	20
Filter #4 outlet pressure (psi)	20	20	18	18	22	29	25	25	22	22
Effluent Flow Rate (gpm)	141.84	143.07	139.07	142.59	139.57	164.16	140.3	141.25	141.14	138.15
Effluent Filter in Service (yes/no)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inlet Pressure (psi)	17	17	17	16	17	20	20	20	18	18
Outlet Pressure (psi)	10	10	10	9	10	15	12	9	8	9
Reinjection Well Level (feet)	62.46	62.25	61.60	62.30	62.50	63.81	62.29	62.44	61.44	62.17
Chemical Storage Levels										
Caustic Level (NaOH)	0.0	0.0	9.9	9.9	0.0	0.0	0.00	0.00	0.00	0.00
Peroxide Level (H_2O_2)	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3
Acid Level (H_2SO_4)	55.4	55.4	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9
Air Compressor (psi)	130	130	160	150	140	150	150	160	140	150
Compressed Air Dryer (on/off)	on	On	on	ON	ON	ON	ON	On	on	on
Chlorine Pump: Speed / Stroke	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85
Chlorine Residual Concentration (mg/l)	1.6	1.6	0.8	0.7	0.2	0.1	0.2	0.1	0.1	0.1

H2MGROUP

Daily Operation Check List
Servall Laundry Site

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday	Friday
Date	2/7/00	2/8/00	2/9/00	2/10/00	2/11/00	2/14/00	2/15/00	2/16/00	2/17/00	2/18/00
Time	12:15	7:30	8:30	8:50	11:00	9:05	11:20	8:30	8:40	9:00
Extraction Well Level (feet)	53.6	53.7	53.6	53.6	55.3	57.0	55.6	55.8	56.1	56.5
Influent Flow Rate (gpm)	160.14	160.17	160.06	160.21	159.20	160.11	159.99	160.12	161.22	160.72
Influent Filter in Service (yes/no)	no	no	no	no	no	no	no	no	no	no
Inlet Pressure (psi)	20	20	20	20	20	20	20	20	20	20
Outlet Pressure (psi)	16	18	18	18	18	16	20	18	18	18
Cartridge Filter Flow Rate (gpm)	140.3	140.86	141.11	140.92	141.11	140.39	145.11	140.85	142.26	141.91
Equalization Tank										
Level (inches)	52.02	51.93	51.99	52.07	52.11	52.61	51.98	51.94	52.01	51.88
pH	7.29	7.29	7.25	7.28	7.29	7.25	6.96	7.28	7.26	7.28
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UV/Oxidation Pump in Service (4A/4B)	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A
UV/Oxidation Flow Rate (gpm)	153.46	150.32	151.41	152.61	151.68	151.91	153.34	153.43	152.36	152.88
UV/Oxidation Unit										
Lamp # 1 (on/off)	on	on	on	on	on	on	on	on	on	on
KV	252	252	252	252	252	252	252	252	252	252
Amps	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Time	9663.50	9682.77	9708.70	9732.56	9747.12	9774.96	9776.55	9797.98	9822.71	9846.70
Lamp # 2 (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
KV	0	0	0	0	0	0	0	0	0	0
Amps	0	0	0	0	0	0	0	0	0	0
Time	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86
Lamp # 3 (on/off)	on	on	on	on	on	on	on	on	on	on
KV	258	258	258	258	258	258	258	258	258	258
Amps	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Time	8090.83	8110.10	8136.02	8159.89	8174.44	8202.28	8203.87	8225.30	8250.11	8274.01
Peroxide Pump Settings: Speed / Stroke	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50
Peroxide Residual Concentration (mg/l)	14	14	14	13	14	15	9	10	11	12
Totalizer Reading (gpm)	76629480	76802030	77035850	77250340	77380980	77630850	77644780	77837930	78062410	78277430

H2MGROUP

Daily Operation Check List

Servall Laundry Site

Date	2/7/00	2/8/00	2/9/00	2/10/00	2/11/00	2/14/00	2/15/00	2/16/00	2/17/00	2/18/00
pH Adjust Tank										
Level (inches)	50.07	50.00	49.97	50.06	51.21	50.51	50.03	50.10	51.61	51.09
pH	6.86	6.85	6.83	6.80	6.77	6.75	6.84	6.83	6.84	6.88
Mixer (on/off)	on	on	on	on	on	on	on	on	on	on
Caustic Pump Settings: Speed / Stroke	55/25	55/30	60/30	60/30	50/25	50/25	50/25	50/35	50/35	~~50/30~~ 50/35
Polmer Feed Settings	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Solution Pump: Speed / Stroke										
Dilution Water Rate										
Polymeer Bucket Weight (lbs.)										
Sand Filter Feed Pump in Service (6A/6B)	6B	6B	6B	6B	6B	6B	6B	6B	6B	6B
Sand Filters										
Filter # 1 inlet pressure (psi)	25	26	28	26	26	30	17	16	16	18
Filter #1 outlet pressure (psi)	27	28	28	28	28	32	19	18	16	16
Filter # 2 inlet pressure (psi)	25	26	26	28	26	30	18	16	18	18
Filter #2 outlet pressure (psi)	26	26	28	28	26	30	18	18	16	18
Filter # 3 inlet pressure (psi)	26	28	28	26	24	32	18	18	16	18
Filter #3 outlet pressure (psi)	25	26	26	26	26	30	16	16	18	16
Filter # 4 inlet pressure (psi)	26	27	26	26	26	30	18	18	18	18
Filter #4 outlet pressure (psi)	28	30	30	28	24	32	18	20	20	20
Effluent Flow Rate (gpm)	139.82	140.91	140.00	140.21	139.91	141.11	142.16	139.48	141.11	142.37
Effluent Filter in Service (yes/no)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Inlet Pressure (psi)	20	20	22	20	20	26	18	17	16	16
Outlet Pressure (psi)	10	10	10	10	12	15	9	10	9	10
Reinjection Well Level (feet)	62.70	62.88	62.87	62.79	62.51	62.48	62.85	63.10	64.11	62.31
Chemical Storage Levels										
Caustic Level (NaOH)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Peroxide Level (H_2O_2)	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3
Acid Level (H_2SO_4)	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9
Air Compressor (psi)	150	150	150	150	150	150	150	150	150	160
Compressed Air Dryer (on/off)	on	on	on	on	on	on	on	on	on	on
Chlorine Pump: Speed / Stroke	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85
Chlorine Residual Concentration (mg/l)	0.0	0.1	0.1	0.1	0.2	0.2	0.0	0.1	0.2	0.1

H2MGROUP

Daily Operation Check List

Servall Laundry Site

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Tuesday	Wednesday	Thursday	Friday	Monday
Date	2/21/00	2/22/00	2/23/00	2/24/00	2/25/00	2/29/00	3/1/00	3/2/00	3/3/00	3/6/00
Time	9:00	9:40	9:30	16:00	14:25	11:30	9:20	8:40	9:20	8:55
Extraction Well Level (feet)	63.2	61.9	63.0	54.8	54.7	55.4	55.5	55.8	56.1	55.7
Influent Flow Rate (gpm)	161.81	159.92	161.21	161.03	159.92	159.74	158.39	159.72	158.22	159.20
Influent Filter in Service (yes/no)	no	no	no	no	no	no	no	no	no	no
Inlet Pressure (psi)	20	20	20	20	20	20	20	20	20	20
Outlet Pressure (psi)	18	20	18	16	18	20	20	20	20	20
Cartridge Filter Flow Rate (gpm)	140.75	140.94	141.27	142.00	141.02	141.11	140.81	141.23	142.80	142.11
Equalization Tank										
Level (inches)	52.01	52.03	51.86	52.63	51.99	51.97	52.03	51.08	52.61	51.92
pH	7.29	7.37	7.41	7.40	7.38	7.41	7.40	7.39	7.40	7.38
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UV/Oxidation Pump in Service (4A/4B)	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A
UV/Oxidation Flow Rate (gpm)	153.10	151.37	152.77	151.23	149.98	151.62	152.11	151.90	150.36	151.66
UV/Oxidation Unit										
Lamp # 1 (on/off)	on	ON	on	on	on	on	on	on	on	on
KV	252	252	252	252	252	252	252	252	252	252
Amps	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Time	9919.13	9942.90	9967.08	9997.14	10019.52	10111.66	10133.98	10156.11	10182.34	10243.01
Lamp # 2 (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
KV	0	0	0	0	0	0	0	0	0	0
Amps	0	0	0	0	0	0	0	0	0	0
Time	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86
Lamp # 3 (on/off)	on	ON	on	on	on	on	on	on	on	on
KV	258	258	258	258	258	258	258	258	258	258
Amps	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Time	8346.45	8370.21	8394.40	8424.47	8446.84	8538.97	8561.29	8584.29	8609.55	8670.53
Peroxide Pump Settings: Speed / Stroke	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50
Peroxide Residual Concentration (mg/l)	11	10	11	12	14	12	11	12	11	11
Totalizer Reading (gpm)	78930190	79144350	79363340	79634100	79835930	80665010	80865300	81053100	81301190	81914200

H2MGROUP

Daily Operation Check List

Servall Laundry Site

Date	2/21/00	2/22/00	2/23/00	2/24/00	2/25/00	2/29/00	3/1/00	3/2/00	3/3/00	3/6/00
pH Adjust Tank										
Level (inches)	51.00	49.94	50.88	51.22	49.98	49.94	50.51	49.67	50.13	51.31
pH	6.86	6.84	6.88	6.81	6.81	6.80	6.79	6.68	6.73	6.72
Mixer (on/off)	on	ON	on	on	on	on	on	On	On	on
Caustic Pump Settings: Speed / Stroke	50/35	50/35	50/45	50/45	50/45	50/45	50/45	50/45	50/45	50/45
Polmer Feed Settings	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Solution Pump: Speed / Stroke									OFF	
Dilution Water Rate										
Polymeer Bucket Weight (lbs.)										
Sand Filter Feed Pump in Service (6A/6B)	6B	6B	6B	6B	6B	6B	6B	6B	6B	6B
Sand Filters										
Filter # 1 inlet pressure (psi)	20	18	20	20	20	20	20	20	20	20
Filter #1 outlet pressure (psi)	18	20	18	18	20	22	20	20	22	20
Filter # 2 inlet pressure (psi)	18	18	20	18	18	18	20	20	20	22
Filter #2 outlet pressure (psi)	16	18	18	18	20	20	22	20	20	22
Filter # 3 inlet pressure (psi)	18	20	18	20	20	20	20	22	20	22
Filter #3 outlet pressure (psi)	18	20	18	20	18	20	22	20	22	22
Filter # 4 inlet pressure (psi)	20	20	20	18	18	20	20	20	20	20
Filter #4 outlet pressure (psi)	16	22	20	20	20	22	20	20	22	18
Effluent Flow Rate (gpm)	141.19	135.76	140.22	140.88	141.76	138.61	140.07	141.08	141.38	140.55
Effluent Filter in Service (yes/no)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inlet Pressure (psi)	18	16	18	16	16	16	16	16	16	16
Outlet Pressure (psi)	10	9	10	10	10	10	10	10	10	10
Reinjection Well Level (feet)	61.08	63.32	62.91	61.81	63.97	63.82	62.73	61.61	60.88	61.24
Chemical Storage Levels										
Caustic Level (NaOH)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Peroxide Level (H_2O_2)	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3
Acid Level (H_2SO_4)	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9
Air Compressor (psi)	160	140	150	150	140	150	150	150	150	150
Compressed Air Dryer (on/off)	on	ON	on	on	on	on	on	on	On	on
Chlorine Pump: Speed / Stroke	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85	60/85
Chlorine Residual Concentration (mg/l)	0.2	0.1	0.2	0.2	0.2	0.4	0.3	0.2	0.2	0.2

Servall Laundry Process Control Samples

Date	1/14/00	1/17/00	1/18/00	1/19/00	1/20/00	1/21/00	1/24/00	1/25/00	1/26/00	1/27/00	1/28/00	1/31/00
Time	15:30	8:05	8:55	7:40	16:07	7:35	16:00	13:00	12:30	13:30	9:00	8:30
Influent												
Flow	159.90	160.04	159.95	160.18	160.12	160.02	160.06	160.08	165.79	160.26	160.05	162.03
pH	5.82	5.70	5.72	5.70	5.62	5.63	6.09	5.82	5.70	5.53	5.56	5.64
Iron	0.6	0.6	0.5	0.7	0.7	0.4	0.7	0.5	0.3	0.3	0.3	0.5
UVOX												
Peroxide Residual	22 mg/l	9 mg/l	11 mg/l	19 mg/l	14 mg/l	14 mg/l	16 mg/l	15 mg/l	15 mg/l	18 mg/l	14 mg/l	13 mg/l
pH	3.36	4.23	3.66	3.62	3.49	3.49	3.47	3.47	5.70	5.64	6.19	5.62
Effluent												
pH	5.02	4.36	4.74	4.49	4.34	3.95	4.90	5.39	3.76	6.00	5.98	5.98
Iron	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Chlorine	0.8	N/A	0.1	2.4	1.6	0.3	1.6	1.6	0.8	0.7	0.2	0.1

Date	2/1/00	2/2/00	2/3/00	2/4/00	2/7/00	2/8/00	2/9/00	2/10/00	2/11/00	2/14/00	2/15/00	2/16/00
Time	9:30	9:30	10:00	10:15	13:00	7:45	9:30	9:25	11:20	9:30	11:35	9:00
Influent												
Flow	160.14	160.02	160.52	159.97	160.14	160.17	160.06	160.21	159.20	160.11	159.99	160.12
pH	5.47	5.51	5.64	5.92	5.51	5.52	5.64	5.67	5.61	5.70	5.56	5.61
Iron	0.3	0.7	0.6	0.6	0.3	0.3	0.4	0.3	0.4	0.4	0.6	0.5
UVOX												
Peroxide Residual	11 mg/l	15 mg/l	13 mg/l	14 mg/l	14 mg/l	14 mg/l	14 mg/l	13 mg/l	14 mg/l	15 mg/l	9 mg/l	10 mg/l
pH	5.52	5.60	6.01	6.07	5.62	5.62	5.56	5.61	5.62	5.64	6.30	6.28
Effluent												
pH	5.90	6.55	6.40	6.35	6.12	6.12	6.14	6.13	6.13	6.14	6.10	6.11
Iron	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.3
Chlorine	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.0	0.1

Servall Laundry Process Control Samples

Date	2/17/00	2/18/00	2/21/00	2/22/00	2/23/00	2/24/00	2/25/00	2/29/00	3/1/00	3/2/00	3/3/00	3/6/00
Time	9:10	9:25	9:30	9:50	9:45	16:25	14:40	11:45	9:50	9:55	9:50	9:30
Influent												
Flow	161.22	160.72	161.81	159.92	161.21	161.03	159.92	159.74	158.39	159.72	158.22	159.20
pH	5.68	5.65	5.67	5.50	5.63	5.71	5.80	5.44	5.61	5.63	5.60	5.64
Iron	0.4	0.4	0.4	0.7	0.6	0.5	0.4	0.5	0.4	0.4	0.4	0.4
UVOX												
Peroxide Residual	11 mg/l	12 mg/l	11 mg/l	10 mg/l	11 mg/l	12 mg/l	14 mg/l	12 mg/l	11	12	11	11
pH	6.01	6.16	6.20	5.72	6.01	5.82	5.68	5.45	5.62	5.61	5.68	5.66
Effluent												
pH	6.23	6.27	6.28	6.13	6.17	6.18	6.80	6.26	6.31	6.42	6.29	6.31
Iron	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Chlorine	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.4	0.3	0.2	0.2	0.2

Date	3/7/00	3/8/00	3/9/00	3/10/00								
Time	9:35	9:15	9:20	9:15								
Influent												
Flow	156.72	156.12	155.87	157.2								
pH	5.62	5.67	5.71	5.68								
Iron	0.3	0.4	0.4	0.4								
UVOX												
Peroxide Residual	13	12	12	13								
pH	5.67	5.70	5.68	5.72								
Effluent												
pH	6.28	6.18	6.23	6.21								
Iron	0.1	0.2	0.1	0.1								
Chlorine	0.2	0.2	0.2	0.2								