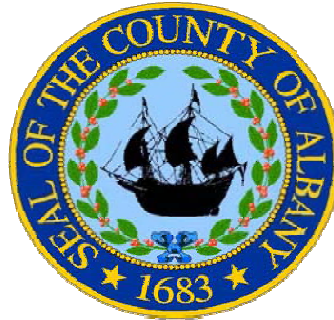


ALBANY COUNTY SEWER DISTRICT
Annual Report of the Board of Commissioners
2008



John R. Adair, Jr., Chairman
Dennis Rigosu
Michael J. Aidala
Hon. Richard H. Rapp
John W. Bishop, Jr.

Richard J. Lyons
Executive Director

**NORTH
WASTEWATER
TREATMENT
PLANT**

**ALBANY
COUNTY
SEWER
DISTRICT**

Board of Commissioners



left to right , Hon. Richard H. Rapp, Chairman John R. Adair, Jr., Dennis Rigosu, John W. Bishop, Jr., Michael J. Aidala

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HIGHLIGHTS

1. **BOARD OF COMMISSIONERS**

The District and its Board of Commissioners would like to acknowledge the service of Vincenzo Popolizio who served as a commissioner for two terms from 2001 to 2007. Mr. Popolizio served with distinction and was a valuable asset to the Board and the County of Albany. Mr. Michael J. Aidala, from the Village of Colonie, was appointed to the Board effective January 1, 2008.

2. **CAPITAL PROJECTS**

Incinerator Waste Heat to Electricity – North Plant

As noted in the 2007 annual report, the District submitted an application to the New York State Energy Research and Development Authority (NYSERDA) via PON 1178 Combined Heat and Power for grant money. The District received notice in April that it received a maximum award of **\$2M** in grant monies in support of the project. The District has retained Camp Dresser and McKee in association with Clough Harbour and Associates for final design, contract administration and construction management for a total fee of \$443,000. CDM performed the original feasibility study and submitted the NYSERDA application on behalf of the District that resulted in the grant money award. This project will go out to bid at the end of March 2009 with substantial completion and commissioning of generation equipment expected by the fall of 2010. This exciting project will have a tremendous environmental and economic impact on the County of Albany.

Belt Filter Press Replacement Project – North and South Plants

This project was completed in late summer and replaced one belt filter press at each plant with conveyer improvements at the South Plant. The purpose of the project was to replace twenty seven year old equipment nearing the end of its life cycle with more effective and efficient dewatering devices. The dryer sludge cake will reduce the amount of natural gas to maintain combustion in the multiple hearth incinerators. The final construction costs including engineering were \$1,032,091 which was \$27,909 under budget. Funding was from the District reserves resulting in zero increase of debt service to the communities. The presses were provided by BDP Industries, Inc. from Greenwich, NY with construction by C.O. Falter Construction of Syracuse, NY and engineering from the Albany office of Camp Dresser and McKee. The results of three months of steady state operation show a reduction in natural gas consumption of over 67,000 therms with a value of \$72,000 as compared to five year historical data.



2 Meter Belt Filter Press – North Plant



1.5 Meter Belt Filter Press – South Plant

Phase 2 Roof Replacement Project – North and South Plants

This project was substantially completed by the end of the year and included 25,000 square feet of roof replacement with a built up roof system (BUR), roof top unit replacement and caulking of architectural panels. The roofs replaced were the administration buildings and the preliminary treatment buildings at the North and South Plants. The design, contract administration and construction management was provided by James Daley Tobin Architects with construction by Mid – State Industries, Ltd. from Schenectady, NY. Total project cost is estimated at \$837,725 and is on budget. Funding was from the District reserves resulting in zero increase of debt service to the communities. The construction contract was extended until May 1, 2009 to allow for final inspection and completion of punch list items.

3. ALBANY POOL COMBINED SEWER OVERFLOW LONG TERM CONTROL PLAN DEVELOPMENT

Of the District's eight member communities, four have combined sewer overflows which include the cities of Albany, Watervliet, Cohoes and the Village of Green Island. The Capital District Regional Planning Commission is the entity facilitating the development of the Long Term Control Plan with the consultant team known as the "Albany Pool Joint Venture Team" (APJVT). The District has been at the table with its communities since 2003 as a part of the "Technical Advisory Committee". The Long Term Control Plan (LTCP) is scheduled for submission to the NYSDEC in September 2009. This plan will include long term abatement recommendations of the CSO issue. 2008 was a very busy year on this project with the District providing over 1,000 hours of in-kind labor to support the communities. The following tasks were completed in 2008, which will be the foundation of the Long Term Control Plan:

- Wet and dry weather sampling of the Hudson River / water quality assessment
- Hudson River modeling
- Combined sewer overflow sampling
- Collection systems flow measurement and modeling
- North and South Plants capacity study and stress testing

INTRODUCTION

The Albany County Sewer District owns and operates two wastewater treatment facilities, designated North and South, which provide secondary treatment to the wastewater of eight communities in Albany County. The North Plant is located in Menands and designed to treat an average daily flow of 35 MGD. The South Plant is located in the Port of Albany and was designed for 19 MGD and is permitted for 29 MGD. The South Plant treats waste only from the City of Albany, whereas the North Plant treats waste from the Cities of Cohoes, Watervliet and parts of Albany, the Villages of Menands, Green Island and Colonie and parts of the Towns of Guilderland and Colonie. Many industries in these communities discharge into the District's interceptor and trunk sewers, some industries are required to pretreat their wastewater prior to discharge.

This annual report presents the performance of the Sewer District for the year 2008 pertaining to Operation, Maintenance, Sewer Use and related topics. Data is presented in tabular form, charts and figures wherever possible. The data clearly shows that from an overall standpoint, the District's performance was effective and efficient during the year.

STAFFING

The staffing of the District allows most of the workload to be handled in house. The primary reason for this self-sufficiency is due to the separation of departments into Administration, Process Operation, Maintenance, and Laboratory. These individual departments promote professional expertise in many areas. The responsibilities of each department within the District are as follows:

Administration - This department is responsible for overall administration of the District including fiscal aspects, personnel, operation and maintenance.

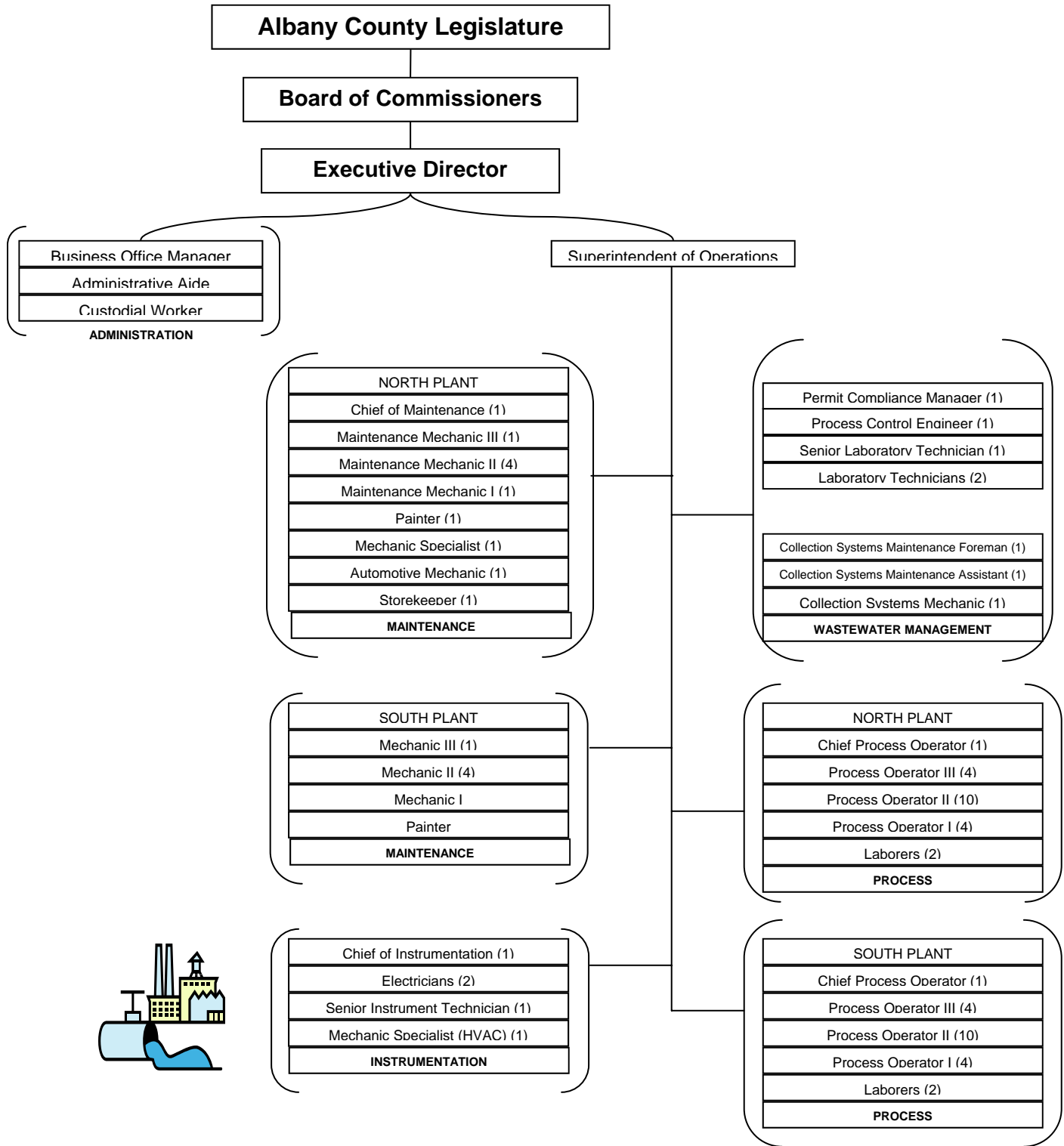
Process Operation - The operation of all processes and unit operations within each plant are carried out by the process operating staff. Process equipment must perform as efficiently as possible, especially in the solids handling sector, to minimize plant-operating costs while maximizing pollutant removals. Process Operation is also responsible for most routine maintenance and cleanup activities, including grounds keeping.

Training of process operators and our plant safety program is also included under this department. The importance of training and safety cannot be overstated. Training operators to fill vacant process positions and the safety of all our employees benefit the overall operation and cut loss time accidents while eliminating potential safety hazards.

Maintenance - Both major and preventative maintenance of all mechanical, instrument and electrical equipment is the responsibility of the maintenance department. All maintenance functions for both plants fall under the responsibility of the Chiefs of Maintenance and Instrumentation. The responsibilities of this department are as follows: Maintenance of all mechanical equipment, snow removal, vehicle maintenance, instrumentation, metering pits, incinerator control systems, and electrical maintenance with the exception of high voltage systems.

Wastewater Management - This department provides wastewater management including input on SPDES and air permit issues and administers the industrial waste control and pre-treatment programs and the laboratory, which is state certified, and runs all of the analytical tests necessary for process control within the plant and reporting to the regulatory agencies. A sewer maintenance crew within this department insures that all dry weather wastewater flow reaches the plants for treatment and carries out the maintenance of all regulators under District control.

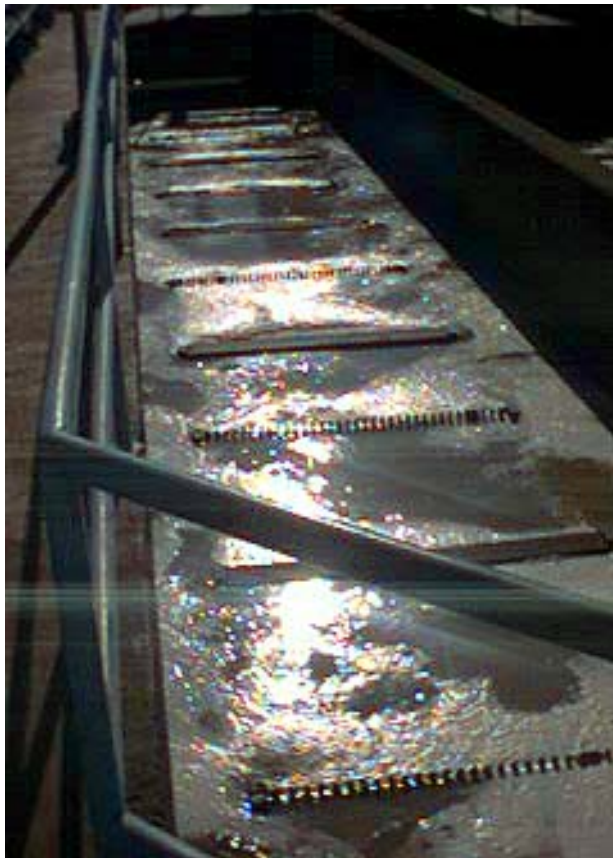
ALBANY COUNTY SEWER DISTRICT



PROCESS OPERATION

Both plants are virtually identical, from a process standpoint. Figure 1 on page 10 shows the general process units and flow pattern for the facilities. The purpose of each type of treatment is as follows:

A. **Preliminary Treatment** - Removes large material, debris and grit from the raw wastewater, which could clog pipelines and damage mechanical equipment in downstream processes.



Grit Chamber

B. **Primary Treatment** - This is a physical process of gravity settling which removes settleable solids in the form of primary sludge. Grease and scum are also removed, since they would interfere with subsequent processes and sludge dewatering. Primary treatment removes approximately 25-35% of the biochemical oxygen demand (BOD) in wastewater and 40-60% of the suspended solids in the wastewater.



Primary Tanks

C. **Secondary Treatment** - This is a biological process which uses microorganisms to remove 85-95% of the remaining suspended solids and BOD prior to discharge to the Hudson River. Waste activated sludge is generated in this process and is mixed with primary sludge to form a combined sludge that is dewatered and incinerated.



Aeration Tanks



Final Clarifier

D. **Chlorination** - Chlorination is practiced seasonally (May 15 to September 15) for public health protection of the Hudson River during its recreation season, if required by the Department of Environmental Conservation. Chlorination is not presently required.



Outfall

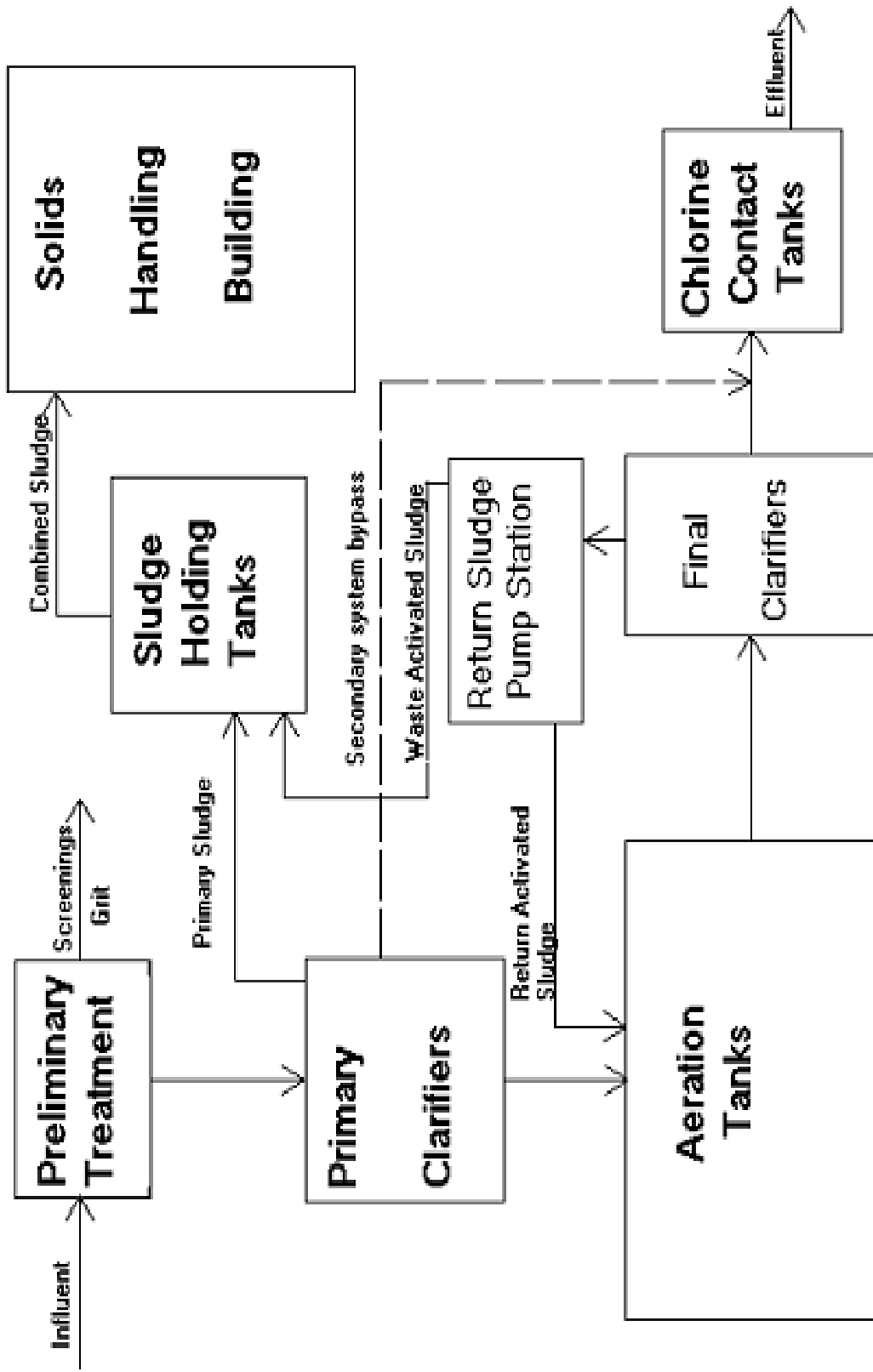


Figure 1 Wastewater Flow Scheme

PROCESS PERFORMANCE

The performance of the process operation at the District's facilities is gauged on the removal efficiencies of the plant units, which treat the incoming raw wastewater, and the effectiveness of the solids handling operations, which treat and dispose of the sludge produced. In addition, the overall process performance is gauged from a cost standpoint.

Table 1 shows the removal efficiencies for standard pollutants removed from the wastewater treatment units. A review of the Table shows that effluents from both District plants were well within permit requirements for BOD, suspended solids and TKN. This data reflects the type of effluent, which can be obtained from larger plants, which practice both good process control and good sludge-handling techniques.

A brief definition of the parameters contained in Tables 1 and 1A are listed below:

A. **BOD (Biochemical Oxygen Demand)** - The amount of oxygen (mg/l) required in five days to oxidize the biodegradable organic matter in a sample at 20 degrees C.

B. **S.S. (Suspended Solids)** - The non-settleable residue in a sample which is retained on a fine fiber filter (1 micron in size) measured in mg/l.

C. **NH3 (Ammonia Nitrogen)** - The ammonia in a sample measured in mg/l.

D. **TKN (Total Kjeldahl Nitrogen)** - The total of the ammonia plus the organic nitrogen in a sample measured in mg/l.

TABLE 1
PROCESS PERFORMANCE DATA - 2008

NORTH PLANT

Parameter	Influent (mg/l)	Effluent (mg/l)	Discharge Permit Limit (mg/l)	Efficiency %	Tons Removed Per Day	Tons Discharged Per Day
BOD	142	2.9	25.0	98.0	14.33	0.30
S.S.	220	7.3	30.0	96.7	21.91	0.75
NH ₃	10.3	4.5		57.5	0.60	0.46
TKN	22.9	6.9	15.2*	69.9	1.65	0.71

Average Flow – 24.7 MGD

*Seasonal June 1 to October 31

TABLE 1A
PROCESS PERFORMANCE DATA - 2008

SOUTH PLANT

Parameter	Influent (mg/l)	Effluent (mg/l)	Discharge Permit Limit (mg/l)	Efficiency %	Tons Removed Per Day	Tons Discharged Per Day
BOD	70	2.8	25.0	96.0	6.87	0.29
S.S.	100	7.4	30.0	92.6	9.46	0.76
NH ₃	8.4	1.2		85.7	0.74	0.12
TKN	16.5	2.1	15.4*	87.3	1.47	0.21

Average Flow – 24.5 MGD

***Seasonal June 1 to October 31**

SOLIDS HANDLING

Sludge thickening and dewatering processes are identical at both plants and are contained in a Solids Handling Building at each facility. Figure 2 on page 16 shows the units, which make up the solids handling processes and operations at the District. The solids handling flow schematic and operations are described as follows:

A. Flotation Thickeners - Waste activated sludge (0.3 - 1.0% solids) is thickened by the use of dissolved air flotation units to 4.0 - 7.0% solids.

B. Sludge Holding Tanks - Primary and thickened waste activated sludge are mixed and stored in holding tanks prior to dewatering.

C. Belt Filter Presses - The combined sludge (primary and thickened waste activated) is pumped from the holding tanks and chemically conditioned with Siemens Water Technologies VX-456 for odor control and polymer for coagulation and flocculation prior to being dewatered on a belt press. The belt press dewateres the sludge to a fairly dry cake (15 - 30% solids).



Two-Meter Belt Press

D. Incineration - The cake formed by the dewatered sludge on the belt filter press is next incinerated in a multiple hearth incinerator. The resulting ash from the incineration process is then stored in lagoons prior to ultimate disposal at a landfill site. The volume of ash remaining is relatively small.

SOLIDS HANDLING PERFORMANCE

Tables 2 and 3 show the solids handling performance data for the North and South Plant sludge thickening and dewatering equipment respectively. The data is in two parts. To the left of the slash is 2008 data and to the right of the slash is a five-year average of solids handling performance. Using a five-year average of chemical dosages and sludge cake percent solids gives a better insight into actual solids handling performance since variations from year to year and plant to plant are dependent on many variables affecting treatment and costs.

Chemical dosage at the North Plant for polymer increased 0.7% compared to the five-year average and the cost for oxidant increased 2.1%, compared to the five-year average.

Chemical dosage at the South Plant for polymer increased 3.3% compared to the five-year average and the cost for oxidant increased 11.1%, compared to the five-year average. The North Plant and South Plant experienced an increase in cake percent solids of 3.6% and 2.5% respectively compared to the five-year average. The new belt filter presses were the reason for the increase in cake solids.

Increase or decrease in the amount of oxidant is dictated by the amount of sulfides released by the combined sludge during processing. Siemens Water Technologies VX-456 oxidizes the hydrogen sulfide which is a very corrosive gas attacking ferrous metals and concrete. The New York State Department of Labor has set a limit of ten parts per million to protect worker health and safety.

The data in Tables 2 and 3 indicates that the solids handling units operate at high efficiencies. High efficiencies are important since the wastewater produced by these units is returned to the head of the plant for treatment. If a high concentration of solids and/or B.O.D. were returned, the result would be higher costs.

Figure 2 Solids Handling Scheme

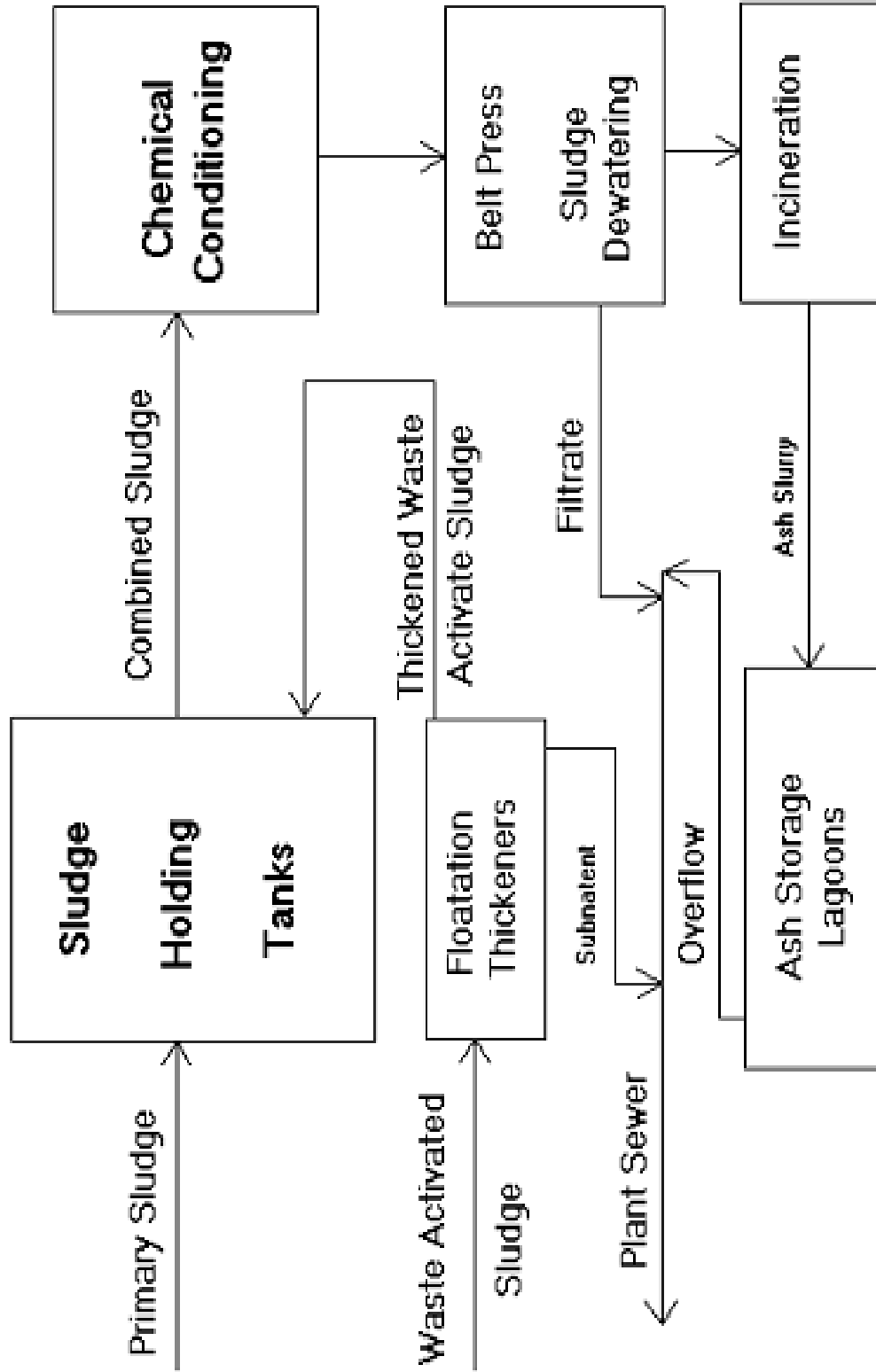


Table 2

Solids Handling Performance Data

SOUTH PLANT

Flotation Thickeners

Parameter	Feed (Influent) (mg/l)	Overflow (to plant sewer) (mg/l)	% Efficiency	Thickened Sludge Solids %	Chemical Dosage (Polymer) %
Suspended Solids	5,773/5,858	17/34	99.7/99.5	5.2/5.2	2.3/2.3

Belt Filter Press

Parameter	Combined Sludge Feed (mg/l)	Filtrate (to plant sewer) (mg/l)	% Efficiency	Dewatered Sludge Solids %	Polymer #/Dry Ton Oxidant #/Dry Ton
Suspended Solids	37,000/37,100	485/489	98.7/98.7	20.4/19.9	142.2/137.7 22.0/19.8

Numbers to the left of the slash mark are 2008 figures; numbers to the right indicate a five-year average 2003-2007

Table 3

NORTH PLANT

Flotation Thickeners

Parameter	Feed (Influent) (mg/l)	Overflow (to plant sewer) (mg/l)	% Efficiency	Thickened Sludge Solids %	Chemical Dosage (Polymer) %
Suspended Solids	5,518/5,918	267/111	95.2/98.4	5.8/6.0	6.0/6.1

Belt Filter Press

Parameter	Combined Sludge Feed (mg/l)	Filtrate (to plant sewer) (mg/l)	% Efficiency	Dewatered Sludge Solids %	Polymer #/Dry Ton Oxidant #/Dry Ton
Suspended Solids	40,000/38,890	591/668	98.5/98.3	23.1/22.3	120.2/119.3 19.3/18.9

Numbers to the left of the slash mark are 2008 figures; numbers to the right indicate a five-year average 2003-2007

SOLIDS HANDLING AND PLANT OPERATING COSTS

The overall usage, cost, and cost per dry ton of solids handling for chemicals, labor, power and fuel energy requirements for the dewatering and disposal of sludge at each plant are shown in Table 4. The contributing factors are varied and reflect the cost of the raw materials needed to process the sludge and the amount and quality of sludge produced at each plant. Generally speaking, the more sludge processed the higher the overall cost, but should reflect a lower overall cost per dry ton of solids handled.

The total costs for solids handling increased 6.9% North and remained the same South as compared to 2007. The District continued to expand the acceptance of sewage sludge and septage program and saw an increase in revenue of \$80,964 as compared to 2007. These revenues defray costs to the member communities by applying the monies to the O&M budget and paying for capital projects with cash in lieu of financing, so as not to increase debt service.

The total cost per dry ton processed increased 4.6% North and decreased 1.3% at the South Plant compared to 2007 figures. An increase in the amount of sludge processed of 2.2% North and 1.3% at the South Plant, contributed to these costs as mentioned above.

The plant operating costs, which are contained in Table 5, represent the overall operation and maintenance expenditures for each plant during 2008. This category includes all costs associated with sewage treatment except debt service and administration costs. Power, fuel energy, chemical and maintenance and miscellaneous costs rise and fall from year to year depending on the amount of sludge processed and the cost of raw materials associated with solids handling. Generally, the more sludge processed during a given year the higher the cost associated with these items.

The North Plant total operating costs increased 7.3% as compared to 2007 figures. The South Plant total operating costs increased 6.7% compared to 2007 figures. The combined plant operating costs increased \$580,776 or 7.0% as compared to 2007. This 7.0% increase is attributed mostly to labor and energy as compared to 2007, which included the following:

- Electric per kWh north plant +13.3% or \$126,413
- Electric per kWh south plant +10.0% or \$118,047
- Labor (including benefits) +7.2% or \$306,867

Table 4

2008 SOLIDS HANDLING COSTS

	North Plant	South Plant
Dry Solids Incinerated (tons)	7,800.9	3,710.8
Fuel Energy Requirement (thermal units)	311,936	270,962
Polymer Used (tons)	468.9	263.9
Siemens Tech. VX-456 Oxidant Used (tons)	75.3	40.8
Man-Hours	22,896	15,264
Fuel Energy Requirements	\$ 339,438	\$ 295,098
Chemical Costs	\$ 175,764	\$ 96,729
Manpower Costs	\$ 572,400	\$ 381,600
Power Costs	\$ 191,365	\$ 163,920
TOTAL COSTS	\$ 1,278,967	\$ 937,347

Cost Per Dry Ton Solids Handled	North Plant	South Plant
Fuel Energy	\$ 43.51	\$ 79.52
Chemical	\$ 22.53	\$ 26.07
Labor	\$ 73.38	\$ 102.83
Power	\$ 24.53	\$ 44.17
TOTAL	\$ 163.95	\$ 252.59

Table 5

Plant Operating Costs - January 1, 2008 through December 31, 2008

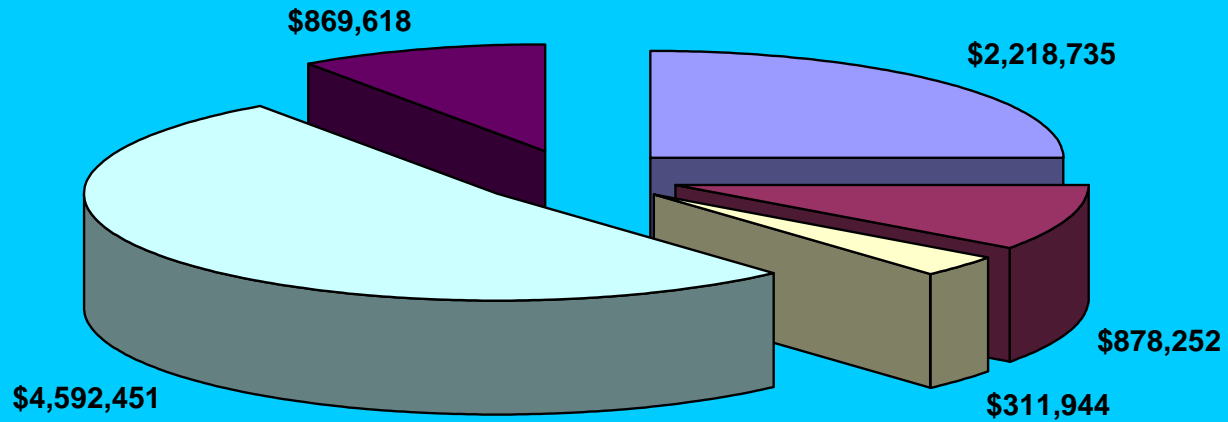
	North Plant	* % Change	South Plant	* % Change
Dry Solids Removed (tons)	7,800.9	+ 2.2	3,710.8	+ 1.3
Volume Treated (millions of gallons)	9,015.5	+ 3.8	8,942.5	+ 5.6
Lb. BOD Removed Per Day	28,660	- 7.3	13,740	- 6.6
Power Cost	\$ 1,192,372	+ 18.5	\$ 1,026,363	+ 13.0
Fuel Energy Requirement	\$ 452,646	+ 5.6	\$ 425,606	+ 1.0
Chemical Cost	\$ 208,819	+ 11.6	\$ 103,125	- 0.8
Operating Manpower	\$ 2,571,772	+ 7.2	\$ 2,020,679	+ 7.2
Maint. & Misc. Costs	\$ 486,986	- 2.2	\$ 382,632	- 2.2
TOTAL PLANT OPERATING COSTS	\$ 4,912,595	+ 7.3	\$ 3,958,405	+ 6.7
Cost Per 1,000 Gallons Treated	\$ 0.55	+ 3.8	\$ 0.44	+ 0.0
Overall Cost/Ton Dry Solids Removed	\$ 629.75	+ 5.0	\$ 1,066.73	+ 5.3
Cost Per lb. BOD Removed	\$ 0.47	+ 14.6	\$ 0.79	+ 14.5

*Compared to 2007

TOTAL PLANT OPERATING & MAINTENANCE COSTS

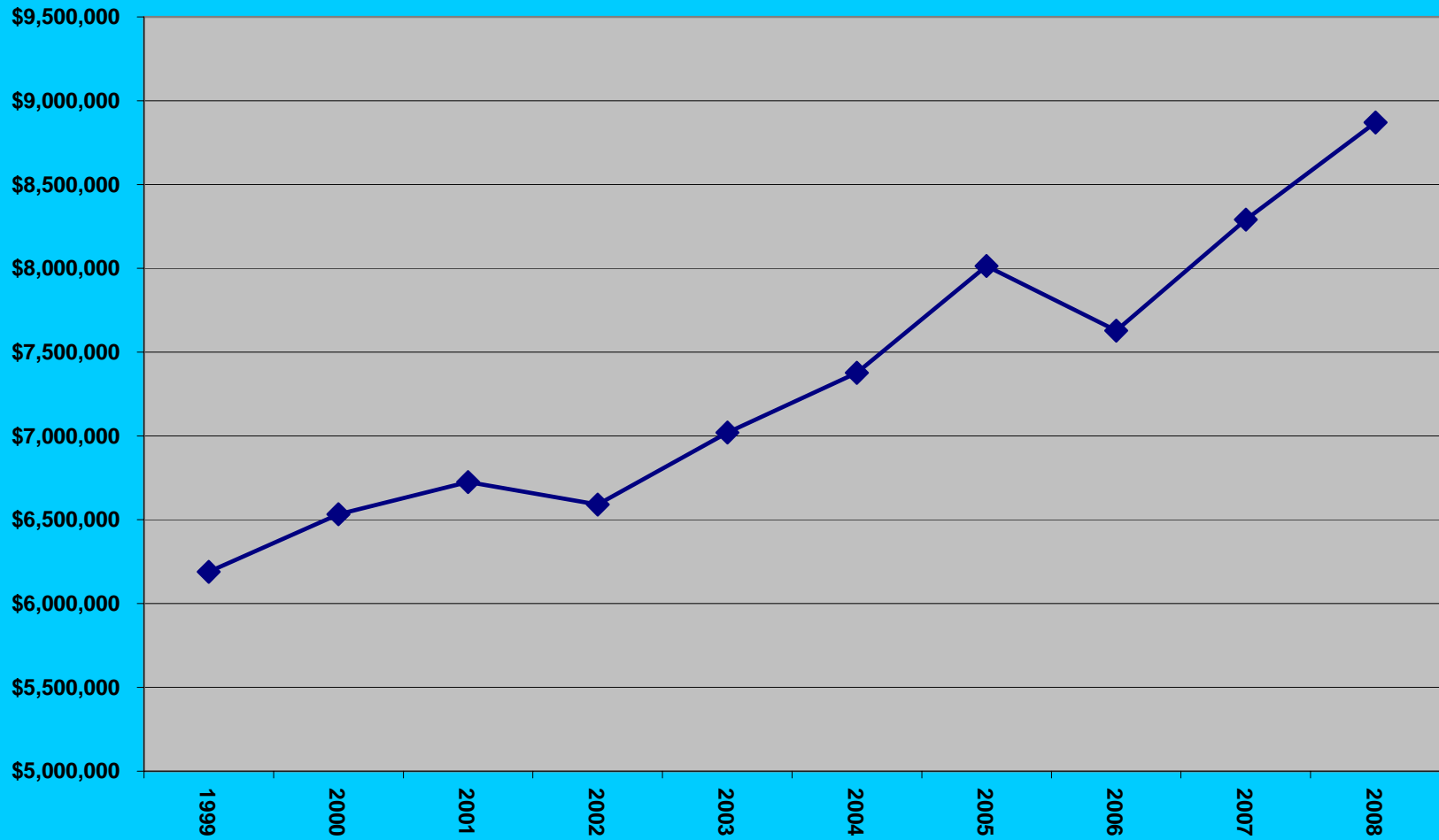
Year	Total Costs
2008	\$ 8,871,000
2007	\$ 8,290,224
2006	\$ 7,627,992
2005	\$ 8,014,092
2004	\$ 7,376,778
2003	\$ 7,020,741
2002	\$ 6,590,214
2001	\$ 6,725,564
2000	\$ 6,532,076
1999	\$ 6,188,588

Total Plant O&M Costs 2008 \$8,871,000



■ Power Costs ■ Fuel Energy Requirement ■ Chemicals ■ Operating Manpower ■ Maint. & Misc. Costs

Total Plant O&M Costs 1999 - 2008



REGULATION OF SEWER USE

In accordance with the USEPA's Federal Pretreatment Requirements (40 CFR Part 403), during 2008 the Albany County Sewer District's approved Pretreatment Program's sampling and analysis program was continued. In addition, normal plant visitations and impromptu inspections by the District's Permit Compliance Manager were conducted.

Pursuant to federal requirements 40 CFR Part 403, the Albany County Sewer District is required to report instances of SNC (Significant Non-compliance) with the USEPA Pretreatment Standards and/or Requirements and/or the District's Sewer Use Ordinance during 2008. The District is pleased to report that for 2008 there were no instances of SNC to report. Minor permit violations were handled by issuing either a NOV (Notice of violation) or an Administrative Directive, in accordance with the District's approved enforcement response plan.

SAFETY

The goal of the Sewer District is to give its employees a safe work environment. To reach this goal the District has implemented many procedures, which protect the employee's health and safety. Lockout-tag out, confined space entry and respiratory protection procedures along with safety training and plant safety seminars have been implemented to reach this goal. Our safety officer works closely with the National Safety Counsel.

Our safety officers and District Safety Committee investigates each accident report filed by any employee and any unsafe condition is rectified to remove the safety hazard.

Additional safety training has been made available by Albany County Human Resources. This has included lockout-tag out, Right to Know Law, Hazardous Communication, CPR, Confined Space Entry and Safe Lifting Techniques. The District will continue to use all avenues of training to keep effected personnel educated.

The District continues to have representation on the countywide Safety Committee, which is evaluating all county safety, health and training issues.

Total lost time accounted for 475 man-days. The total lost time was an increase of 333 days as compared to 2007. The number of reported accidents increased from 25 to 40 as compared to 2007. The Sewer District continues to evaluate all equipment and procedures so that the safest work environment is provided to all employees. In cooperation with County Human Resources, the District continues to take a pro-active stance investigating all claims for legitimacy and validity. This has included independent medical examinations for injured employees and private investigations involving surveillance.

In 2008, the Albany County Code Enforcement inspected the District facilities. The District was shown to be in compliance with all mandated safety programs. These inspections each found some minor safety recommendations that were corrected immediately by the District.

Table 6 - Accident Report 2008

<u>Department</u>	<u>Type of Injury</u>	<u>Lost Man Days</u>	
North Plant Operating	Left Knee Injury	0	
	Right Elbow Soreness	0	
	Sprained Ankle	0	
	Twisted Left Knee	0	
	Hernia	33	
	Cut Right Shin	0	
	Left Elbow Injury	0	
	Chipped Front Tooth	0	
	Right Thumb Injury	0	
	Lower Back Pain	18	
	Scrapped Left Hand	0	
	South Plant Operating	Hyper extended Right Knee	165
		Right Knee Injury	154
Twisted Right Wrist		0	
Left Leg, Knee Injury		0	
Left Elbow Injury		0	
Hurt Fingers on Right Hand		0	
Left Shoulder Injury		5	
Left Knee Injury		12	
Lower Back Pain		0	
Left Foot Injury		0	
Right Shoulder Injury		12	
Left Ankle		0	
Eye Injury		0	
Left Elbow, Rt. Shoulder Injury	0		
Maintenance	Right Foot Injury	0	
	Left Hand Injury	0	
	Left Shoulder Injury	0	
	Right Forearm Injury	0	
	Welding Flash to Eyes	0	
	Jammed Right Thumb	1	
	Right Knee Injury	0	
	Left Knee Injury	0	
	Left Knee Injury	0	
Cuts & Bruises to Back & Legs	0		
Sewer Maintenance	Right Knee Injury	0	
	Right Side Injury	0	
	Right Shoulder Injury	0	
Instrumentation	Left Leg Pain	73	
	Lower Back Pain	2	
Total work days lost		475	

