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**VILLAGE OF SCOTIA  
WASTEWATER TREATMENT PLANT FEASIBILITY STUDY**

**APPENDIX A  
FLOW & EDU TABLE BY SERVICE AREA**



7 South Church Street • Schenectady, New York 12305 • Ph: 518 382 1774 Fax: 518 382 1776 • [www.mcdonaldengineers.com](http://www.mcdonaldengineers.com)

Village of Scotia  
WWTP Feasibility Report

<u>Service Area</u>	<u>Users (EDUs)</u>	<u>Estimated Flow (Existing)</u>
1 Village of Scotia		
Residential	2,634	
Industrial	<u>18</u>	
subtotal:	2,652	0.767 MGD
Sewer District No.2 (Pleasant View)	503	0.201
Sewer District No.3 (Broad, Lark, Alexander & Industrial Park)	77	0.290
Sewer District No.5 (Horstman, Bancker)	51	0.020
Sewer District No.7 (Oakridge, Ballston)	112	0.045
Sewer District No.8 (Heritage, Yorkshire)	<u>15</u>	<u>0.006</u>
subtotal:	<u>758</u>	<u>0.563 MGD</u>
subtotal:	3,410	1.330 MGD
2 Determine WWTP Capacity		
Village Total Flow	3,410	1.330
Factor for maximum month (1.1)		<u>0.133</u>
WWTP Design Average Flow		1.463 MGD
	Say	1.5 MGD

Notes:

1. Total Village flow obtained from flow meter totalizer at main pump station.
2. Residential & Industrial users from 2010 JME Water & Sewer Rate Study.
3. Town Industrial user flow from 2013 JME Sewer Industrial Surcharge Study.

Village of Scotia  
WWTP Feasibility Report

<u>Service Area</u>	<u>Users (EDUs)</u>	<u>Estimated Flow</u> <u>(20 Year)</u>
1 Village of Scotia		
Residential	2,634	
Industrial	<u>18</u>	
	subtotal:	
	2,652	0.767 MGD
Sewer District No.2 (Pleasant View)	503	0.201
Sewer District No.3 (Broad, Lark, Alexander & Industrial Park)	77	0.290
Sewer District No.5 (Horstman, Bancker)	51	0.020
Sewer District No.7 (Oakridge, Ballston)	112	0.045
Sewer District No.8 (Heritage, Yorkshire)	15	0.006
Proposed Residential (Amedore)	8	0.003
	subtotal:	
	<u>766</u>	<u>0.566 MGD</u>
subtotal:	3,418	1.333 MGD
2 Determine WWTP Capacity		
Total Village	3,418	1.333
10% for future expansion		0.133
Factor for maximum month (1.1)		<u>0.147</u>
WWTP Design Average Flow		1.613 MGD
	Say	1.6 MGD

Notes:

1. Total Village flow obtained from flow meter totalizer at main pump station.
2. Residential & Industrial users from 2010 JME Water & Sewer Rate Study.
3. Town Industrial user flow from 2013 JME Sewer Industrial Surcharge Study.

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**APPENDIX B  
DETAILED COST ESTIMATES**



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**Village of Scotia  
Wastewater Treatment Plant Feasibility Study**

<b>Wastewater Treatment Plant</b>		
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
1	Pump Station & Conveyance Costs	\$700,000
2	1.6 MGD <b>SBR</b> WWTP Costs	\$11,200,000
	Subtotal - Capital Costs	\$11,900,000
3	Engineering (12%)	\$1,428,000
4	Legal, bonding, administrative, int. during constr.	\$952,000
	Subtotal - Soft Costs	\$2,380,000
<b>TOTAL PROJECT COST</b>		<b>\$14,280,000</b>
<b>SAY</b>		<b>\$14,300,000</b>

**Village of Scotia  
Wastewater Treatment Plant Feasibility Study**

<b>Existing System Upgrades</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>QTY.</b>	<b>UNIT</b>	<b>UNIT PRICE</b>	<b>TOTAL</b>
	Village Pump Station				
1	Replace Pumps	1	LS	\$225,000	\$225,000
2	Replace Comminutors	1	LS	\$80,000	\$80,000
3	Replace, Add VFD's	1	LS	\$60,000	\$60,000
4	Replace Roof	1	LS	\$30,000	\$30,000
5	Add bypass pumping connection	1	LS	\$10,000	\$10,000
6	Misc. Repairs (doors, frames, etc.)	1	LS	\$15,000	\$15,000
7	New 16" Forcemain	1200	LF	\$150	\$180,000
<b>SUBTOTAL</b>					<b>\$600,000</b>
<b>CONTINGENCIES (15%)</b>					<b>\$90,000</b>
<b>CONSTRUCTION COST</b>					<b>\$690,000</b>
<b>SAY</b>					<b>\$700,000</b>

**Village of Scotia  
Wastewater Treatment Plant Feasibility Study**

1.6 MGD Wastewater Treatment Plant				SBR	
ITEM	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
1	Land Acquisition	1	LS	\$100,000	\$100,000
2	Environmental Mitigation	1	LS	\$50,000	\$50,000
3	General Requirements	1	LS	\$450,000	\$450,000
4	Site Work	1	LS	\$2,200,000	\$2,200,000
5	Administrative Building	1	LS	\$200,000	\$200,000
6	Blower Building	1	LS	\$150,000	\$150,000
7	Preliminary Treatment				
	Mechanical Bar Screen	1	LS	\$187,500	\$187,500
	Grit Removal Building	1	LS	\$175,000	\$175,000
		1	LS	\$150,000	\$150,000
8	Primary Clarifiers	1	LS	\$0	\$0
9	Biological Treatment				
	Structural (aeration & EQ tanks)	1	LS	\$1,500,000	\$1,500,000
	Equipment (blowers, aeration, etc.)	1	LS	\$1,125,000	\$1,125,000
10	Final Clarifiers	1	LS	\$0	\$0
11	Sludge Processing				
	500,000 gallon storage tank w/ aeration & blowers	1	LS	\$590,000	\$590,000
	Two - 1.0 meter belt filter presses	1	LS	\$687,500	\$687,500
	Building	1	LS	\$200,000	\$200,000
12	Disinfection	1	LS	\$280,000	\$280,000
13	Yard Piping	1	LS	\$250,000	\$250,000
14	Outfall Piping (800 ft to Mohawk River)	1	LS	\$160,000	\$160,000
15	Truck wash stall	1	LS	\$100,000	\$100,000
16	Stormwater Controls	1	LS	\$100,000	\$100,000
17	Electrical, including Generator	1	LS	\$650,000	\$650,000
18	SCADA / Instrumentation	1	LS	\$250,000	\$250,000
19	Restoration & Miscellaneous	1	LS	\$200,000	\$200,000
<b>SUBTOTAL</b>					<b>\$9,755,000</b>
<b>CONTINGENCIES (15%)</b>					<b>\$1,463,250</b>
<b>CONSTRUCTION COST</b>					<b>\$11,218,250</b>
<b>SAY</b>					<b>\$11,200,000</b>

**Village of Scotia  
Wastewater Treatment Plant Feasibility Study**

1.6 MGD Wastewater Treatment Plant						SBR O&M Estimate	
ITEM	DESCRIPTION	QTY. Operating	HP Conn.	Daily		Daily Cost (\$0.12/kW)	Yearly Cost
				Run Time	kW		
<b>ELECTRICAL</b>							
1	Mechanical Bar Screen	1	0.5	24	8.95	\$1.07	\$392
2	Conveyor	1	1	24	17.90	\$2.15	\$784
3	Grit Pump	1	2	12	17.90	\$2.15	\$784
4	Grit Drive	1	1	24	17.90	\$2.15	\$784
5	Grit Washer	1	1	12	8.95	\$1.07	\$392
6	Primary Sludge Pump	1	5	24	89.48	\$10.74	\$3,919
7	Septage Receiving Blowers	1	5	12	44.74	\$5.37	\$1,960
8	Aeration Blowers - Fine Bubble Diffusers	1	60	16	715.87	\$85.90	\$31,355
9	Digester/Sludge Holding Tank Aeration	1	10	20	149.14	\$17.90	\$6,532
10	Non-potable Water pump	1	5	6	22.37	\$2.68	\$980
11	Gravity Belt Thickener	1	3	6	13.42	\$1.61	\$588
12	Polymer Feed System	1	1	6	4.47	\$0.54	\$196
13	Thickened Sludge Pumps	2	5	6	44.74	\$5.37	\$1,960
14	U. V. Disinfection	12000	Watts	24	288.00	\$34.56	\$12,614
15	Lighting (1Watt/sf)	6000	SF	10	60.00	\$7.20	\$2,628
16	Misc/Recpt. (3Watt/sf)	6000	SF	14	84.00	\$10.08	\$3,679
17	Outside	1250	Watts	12	15.00	\$1.80	\$657
18	Instrumentation	1	1	24	17.90	\$2.15	\$784
19	HVAC (2Watt/sf)	6000	SF	14	84.00	\$10.08	\$3,679
						Subtotal:	\$74,667
						Demand Charge:	\$11,200
						<b>SUBTOTAL</b>	<b>\$85,867</b>
<b>MAINTENANCE (1st 5 years)</b>							
	General Maintenance	1	\$15,000				\$15,000
	Maintenance Contract(s)	1	\$5,000				\$5,000
						<b>SUBTOTAL</b>	<b>\$20,000</b>
<b>SLUDGE DISPOSAL</b>							
	Sludge Disposal	797	wet tons	per year	per ton \$80		\$63,765
						<b>SUBTOTAL</b>	<b>\$63,765</b>
<b>LABOR</b>							
	Chief Operator						Base + Fringe \$75,000
	Backup Operator						\$60,000
	Maintenance Personnel						\$50,000
						<b>SUBTOTAL</b>	<b>\$185,000</b>
						<b>Total O&amp;M at 1.3 MGD</b>	<b>\$354,632</b>
						<b>O&amp;M Cost per Gallon</b>	<b>\$0.27</b>



**Village of Scotia  
WWTP Feasibility Study**

Potential revenue sources for new Village WWTP

1. Industrial User Surcharges

2011-2013 Scotia/Glenville Industrial Park SIU amounts from City billing records

	Concentr. BOD	Loading BOD	Concentr. TSS	Loading TSS	
		4,669		4,382	
limit	300		350		
overage, lb		1,040,000		372,000	per year
overage,ton		520		186	per year
Village rate/lb		\$0.13		\$0.12	
Annual Charge		\$135,200.00		\$44,640.00	
Total BOD & TSS surcharge:		<b>\$179,840.00</b>			
Say:		<b>\$180,000.00</b>			

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