

# **TABLES**

ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
 FORECASTED POPULATION GROWTH FOR AGC COMMUNITIES  
 TABLE 1

Municipality	Population			
	2012	2040 (est.)	Change	% Increase
City of Glens Falls	14,696	14,963	267	2%
Town of Queensbury	27,830	35,757	7,927	28%
Village of South Glens Falls	3,536	3,775	239	7%
Town of Moreau*	11,249	13,633	2,384	21%
Village of Fort Edward	3,351	3,561	210	6%
Town of Fort Edward*	2,955	3,429	474	16%
Village of Hudson Falls	7,252	7,509	257	4%
Town of Kingsbury*	5,367	8,015	2,648	49%
<b>TOTALS:</b>	76,236	90,642	14,406	19%

**NOTES:**

*Source: US Census Bureau*

*Projection Model: Composite of 1990-2012 and 2000-2012 Log-Linear Trendlines*

*\* - Village populations excluded from Town populations*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CITY OF GLENS FALLS FLOW AND LOADING PROJECTION  
TABLE 2**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	13,308	2.95	9.57	3,395	4,491	512
WCSD#2 WWTP	-	0	0	-	-	-	-
<b>Subtotal</b>	<b>0</b>	<b>13,308</b>	<b>2.95</b>	<b>9.57</b>	<b>3,395</b>	<b>4,491</b>	<b>512</b>
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	58	24	4,730	9,460	15	19	3
Existing Private - Industrial	-	100	20,041	40,082	110	54	8
Scheduled Development - Residential/ Commercial	-	-	-	-	-	-	-
Scheduled Development - Industrial	-	-	-	-	-	-	-
Vacant and Sewered - Residential/ Commercial	2,167	884	176,891	353,782	563	715	104
Vacant and Sewered - Industrial	-	213	42,617	85,234	235	116	18
<b>Subtotal</b>	<b>2,225</b>	<b>1,221</b>	<b>244,279</b>	<b>488,558</b>	<b>923</b>	<b>904</b>	<b>133</b>
<b>TOTAL Existing + Case 1</b>	<b>2,225</b>	<b>14,529</b>	<b>3,189,279</b>	<b>10,059,808</b>	<b>4,319</b>	<b>5,395</b>	<b>645</b>
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	267	109	21,796	43,592	69	88	13
<b>TOTAL Existing + Case 2</b>	<b>267</b>	<b>13,417</b>	<b>2,966,796</b>	<b>9,614,842</b>	<b>3,465</b>	<b>4,579</b>	<b>525</b>
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>3.19</b>	<b>10.06</b>	<b>4,319</b>	<b>5,395</b>	<b>645</b>

**Notes:**

**Existing EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
WCSD#2 WWTP	219	gpd/EDU

**Projection Criteria**

	Rate	Units	Source
GF WWTP Hydraulic Peaking Factor (6-hour)	3.25		
WCSD#2 WWTP Hydraulic Peaking Factor (6-hour)	2.5		
New Development Hydraulic Peaking Factor	2	-	-
BOD Rate - Residential	0.26	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TSS - Residential	0.33	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TKN as N	0.048	lb/capita*day	<i>Metcalf &amp; Eddy</i>
BOD Rate - Industrial	660	mg/L	<i>Hammer &amp; Hammer</i>
TSS - Industrial	325	mg/L	<i>Hammer &amp; Hammer</i>
TKN as N	50	mg/L	<i>Hammer &amp; Hammer</i>

**Population per SFR/EDU:**

Saratoga County	2.45	People/ house	<i>2008-12 US Census Data</i>
Washington County	2.52	People/ house	<i>2008-12 US Census Data</i>
Warren County	2.45	People/ house	<i>2008-12 US Census Data</i>

**Assumptions for Capacity Projections:**

Single Family Residential = 1 EDU = 200 gpd

EDU's = projected average daily flow/ (200 gpd /1 EDU)

o Residential Lots:

SFR = 1 EDU, Two-Family Residence = 2 EDU's, etc.

Proposed development: If the number of units were identified: Number of units (as a proportion of the total parcel area if the development encompasses multiple parcels) = EDU's/ parcel (in whole numbers)

Proposed development: If the number of units were not identified: Parcel area (acres)/ minimum lot size (per zoning code) = Number of EDU's (in whole numbers)

o Commercial Lots (existing and proposed/vacant):

Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

Light industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 1500 gal/acre\*day (*Metcalf & Eddy*)

Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
VILLAGE OF SOUTH GLENS FALLS FLOW AND LOADING PROJECTION  
TABLE 3**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	1,469	0.33	1.06	375	496	57
WCSD#2 WWTP	-	0	0	-	-	-	-
<b>Subtotal</b>	<b>0</b>	<b>1,469</b>	<b>0.33</b>	<b>1.06</b>	<b>375</b>	<b>496</b>	<b>57</b>
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	5	2	392	784	1	2	0.2
Existing Private - Industrial	-	-	-	-	-	-	-
Scheduled Development - Residential/ Commercial	394	161	32,160	64,320	103	130	19
Scheduled Development - Industrial	-	-	-	-	-	-	-
Vacant and Sewered - Residential/ Commercial	128	52	10,420	20,840	33	42	6
Vacant and Sewered - Industrial	-	46	9,278	-	-	-	-
<b>Subtotal</b>	<b>527</b>	<b>261</b>	<b>52,250</b>	<b>85,944</b>	<b>137</b>	<b>174</b>	<b>25</b>
<b>TOTAL Existing + Case 1</b>	<b>527</b>	<b>1,730</b>	<b>377,250</b>	<b>1,142,194</b>	<b>512</b>	<b>669</b>	<b>82</b>
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	239	98	19,510	39,020	62	79	11
<b>TOTAL Existing + Case 2</b>	<b>239</b>	<b>98</b>	<b>344,510</b>	<b>1,095,270</b>	<b>437</b>	<b>574</b>	<b>68</b>
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>0.377</b>	<b>1.14</b>	<b>512</b>	<b>669</b>	<b>82</b>

**Notes:**

**Current EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
WCSD#2 WWTP	219	gpd/EDU

**Projection Criteria**

	Rate	Units	Source
GF WWTP Hydraulic Peaking Factor (6-hour)	3.25		
WCSD#2 WWTP Hydraulic Peaking Factor (6-hour)	2.5		
New Development Hydraulic Peaking Factor	2	-	-
BOD Rate - Residential	0.26	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TSS - Residential	0.33	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TKN as N	0.048	lb/capita*day	<i>Metcalf &amp; Eddy</i>
BOD Rate - Industrial	660	mg/L	<i>Hammer &amp; Hammer</i>
TSS - Industrial	325	mg/L	<i>Hammer &amp; Hammer</i>
TKN as N	50	mg/L	<i>Hammer &amp; Hammer</i>

**Population per SFR/EDU:**

Saratoga County	2.45	People/ house	<i>2008-12 US Census Data</i>
Washington County	2.52	People/ house	<i>2008-12 US Census Data</i>
Warren County	2.45	People/ house	<i>2008-12 US Census Data</i>

**Assumptions for Capacity Projections:**

Single Family Residential = 1 EDU = 200 gpd

EDU's = projected average daily flow/ (200 gpd /1 EDU)

o Residential Lots:

SFR = 1 EDU, Two-Family Residence = 2 EDU's, etc.

Proposed development: If the number of units were identified: Number of units (as a proportion of the total parcel area if the development encompasses multiple parcels) = EDU's/ parcel (in whole numbers)

Proposed development: If the number of units were not identified: Parcel area (acres)/ minimum lot size (per zoning code) = Number of EDU's (in whole numbers)

o Commercial Lots (existing and proposed/vacant):

Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

Light industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 1500 gal/acre\*day (*Metcalf & Eddy*)

Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF QUEENSBURY FLOW AND LOADING PROJECTION  
TABLE 4**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	3,222	0.71	2.32	822	1,087	124
WCSD#2 WWTP	-	0	0.00	0.00	0	0	0
<b>Subtotal</b>	<b>0</b>	<b>3,222</b>	<b>0.71</b>	<b>2.32</b>	<b>822</b>	<b>1,087</b>	<b>124</b>
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	475	194	38,782	77,564	124	157	23
Existing Private - Industrial	-	-	-	-	-	-	-
Scheduled Development - Residential/ Commercial	1,241	507	101,349	202,698	323	410	60
Scheduled Development - Industrial	-	3,993	798,609	1,597,218	4,396	2,165	333
Vacant and Sewered - Residential/ Commercial	3,994	1,630	326,016	652,032	1,038	1,318	192
Vacant and Sewered - Industrial	-	53	10,657	21,314	59	29	4
<b>Subtotal</b>	<b>5,710</b>	<b>6,377</b>	<b>1,275,413</b>	<b>2,550,826</b>	<b>5,939</b>	<b>4,078</b>	<b>612</b>
<b>TOTAL Existing + Case 1</b>	<b>5,710</b>	<b>9,599</b>	<b>1,988,413</b>	<b>4,868,076</b>	<b>6,761</b>	<b>5,165</b>	<b>736</b>
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	7,927	3,236	647,102	1,294,204	2,061	2,616	380
<b>TOTAL Existing + Case 2</b>	<b>7,927</b>	<b>6,457</b>	<b>1,360,102</b>	<b>3,611,454</b>	<b>2,883</b>	<b>3,703</b>	<b>505</b>
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>1.99</b>	<b>4.87</b>	<b>6,761</b>	<b>5,165</b>	<b>736</b>

**Notes:**

**Current EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
WCSD#2 WWTP	219	gpd/EDU

**Projection Criteria**

	Rate	Units	Source
GF WWTP Hydraulic Peaking Factor (6-hour)	3.25		
WCSD#2 WWTP Hydraulic Peaking Factor (6-hour)	2.5		
New Development Hydraulic Peaking Factor	2	-	-
BOD Rate - Residential	0.26	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TSS - Residential	0.33	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TKN as N	0.048	lb/capita*day	<i>Metcalf &amp; Eddy</i>
BOD Rate - Industrial	660	mg/L	<i>Hammer &amp; Hammer</i>
TSS - Industrial	325	mg/L	<i>Hammer &amp; Hammer</i>
TKN as N	50	mg/L	<i>Hammer &amp; Hammer</i>

**Population per SFR/EDU:**

Saratoga County	2.45	People/ house	<i>2008-12 US Census Data</i>
Washington County	2.52	People/ house	<i>2008-12 US Census Data</i>
Warren County	2.45	People/ house	<i>2008-12 US Census Data</i>

**Assumptions for Capacity Projections:**

Single Family Residential = 1 EDU = 200 gpd

EDU's = projected average daily flow/ (200 gpd /1 EDU)

o Residential Lots:

SFR = 1 EDU, Two-Family Residence = 2 EDU's, etc.

Proposed development: If the number of units were identified: Number of units (as a proportion of the total parcel area if the development encompasses multiple parcels) = EDU's/ parcel (in whole numbers)

Proposed development: If the number of units were not identified: Parcel area (acres)/ minimum lot size (per zoning code) = Number of EDU's (in whole numbers)

o Commercial Lots (existing and proposed/vacant):

Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

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Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF KINGSBURY FLOW AND LOADING PROJECTION  
TABLE 5**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	113	0.03	0.08	29	38	4
WCSD#2 WWTP	-	411	0.09	0.23	112	140	23
<b>Subtotal</b>	<b>0</b>	<b>524</b>	<b>0.12</b>	<b>0.31</b>	<b>140</b>	<b>178</b>	<b>27</b>
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	3,658	1,452	290,310	580,620	951	1,207	176
Existing Private - Industrial	-	-	-	-	-	-	-
Scheduled Development - Residential/ Commercial	4,978	1,976	395,099	790,198	1,294	1,643	239
Scheduled Development - Industrial	-	-	-	-	-	-	-
Vacant and Sewered - Residential/ Commercial	-	-	-	-	-	-	-
Vacant and Sewered - Industrial	-	2,104	420,706	841,412	2,316	1,140	175
<b>Subtotal</b>	<b>8,636</b>	<b>5,531</b>	<b>1,106,115</b>	<b>2,212,230</b>	<b>4,561</b>	<b>3,990</b>	<b>590</b>
<b>TOTAL Existing + Case 1</b>	<b>8,636</b>	<b>6,054</b>	<b>1,221,115</b>	<b>2,518,480</b>	<b>4,701</b>	<b>4,168</b>	<b>617</b>
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	2,648	1,081	216,163	432,327	688	874	127
<b>TOTAL Existing + Case 2</b>	<b>2,648</b>	<b>1,604</b>	<b>331,163</b>	<b>738,577</b>	<b>829</b>	<b>1,052</b>	<b>154</b>
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>1.22</b>	<b>2.52</b>	<b>4,701</b>	<b>4,168</b>	<b>617</b>

**Notes:**

**Current EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
WCSD#2 WWTP	219	gpd/EDU

**Projection Criteria**

	Rate	Units	Source
GF WWTP Hydraulic Peaking Factor (6-hour)	3.25		
WCSD#2 WWTP Hydraulic Peaking Factor (6-hour)	2.5		
New Development Hydraulic Peaking Factor	2	-	-
BOD Rate - Residential	0.26	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TSS - Residential	0.33	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TKN as N	0.048	lb/capita*day	<i>Metcalf &amp; Eddy</i>
BOD Rate - Industrial	660	mg/L	<i>Hammer &amp; Hammer</i>
TSS - Industrial	325	mg/L	<i>Hammer &amp; Hammer</i>
TKN as N	50	mg/L	<i>Hammer &amp; Hammer</i>

**Population per SFR/EDU:**

Saratoga County	2.45	People/ house	<i>2008-12 US Census Data</i>
Washington County	2.52	People/ house	<i>2008-12 US Census Data</i>
Warren County	2.45	People/ house	<i>2008-12 US Census Data</i>

**Assumptions for Capacity Projections:**

Single Family Residential = 1 EDU = 200 gpd

EDU's = projected average daily flow/ (200 gpd /1 EDU)

o Residential Lots:

SFR = 1 EDU, Two-Family Residence = 2 EDU's, etc.

Proposed development: If the number of units were identified: Number of units (as a proportion of the total parcel area if the development encompasses multiple parcels) = EDU's/ parcel (in whole numbers)

Proposed development: If the number of units were not identified: Parcel area (acres)/ minimum lot size (per zoning code) = Number of EDU's (in whole numbers)

o Commercial Lots (existing and proposed/vacant):

Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

Light industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 1500 gal/acre\*day (*Metcalf & Eddy*)

Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
VILLAGE OF HUDSON FALLS FLOW AND LOADING PROJECTION  
TABLE 6**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	0	0	-	-	-	-
WCSD#2 WWTP	-	2,008	0.44	1.10	545	685	111
<b>Subtotal</b>	0	2,008	0.44	1.10	545	685	111
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	-	-	-	-	-	-	-
Existing Private - Industrial	-	-	-	-	-	-	-
Scheduled Development - Residential/ Commercial	-	-	-	-	-	-	-
Scheduled Development - Industrial	-	-	-	-	-	-	-
Vacant and Sewered - Residential/ Commercial	387	154	36,932	73,864	101	128	19
Vacant and Sewered - Industrial	-	-	-	-	-	-	-
<b>Subtotal</b>	387	154	36,932	73,864	101	128	19
<b>TOTAL Existing + Case 1</b>	387	2,161	476,932	1,173,864	646	812	130
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	257	105	20,980	41,959	67	85	12
<b>TOTAL Existing + Case 2</b>	-	-	460,980	1,141,959	612	770	124
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>0.48</b>	<b>1.17</b>	<b>646</b>	<b>812</b>	<b>130</b>

**Notes:**

**Current EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
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**Projection Criteria**

	Rate	Units	Source
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Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

Light industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 1500 gal/acre\*day (*Metcalf & Eddy*)

Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
VILLAGE OF FORT EDWARD FLOW AND LOADING PROJECTION  
TABLE 7**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	0	0	-	-	-	-
WCSD#2 WWTP	-	639	0.14	0.35	173	218	35
<b>Subtotal</b>	<b>0</b>	<b>639</b>	<b>0.14</b>	<b>0.35</b>	<b>173</b>	<b>218</b>	<b>35</b>
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	-	-	-	-	-	-	-
Existing Private - Industrial	-	-	-	-	-	-	-
Scheduled Development - Residential/ Commercial	517	205	41,092	82,184	134	170	25
Scheduled Development - Industrial	133	53	10,525	21,050	58	29	4
Vacant and Sewered - Residential/ Commercial	1,077	427	85,460	170,920	280	355	52
Vacant and Sewered - Industrial	-	24	4,780	9,560	26	13	2
<b>Subtotal</b>	<b>1,726</b>	<b>709</b>	<b>141,857</b>	<b>283,714</b>	<b>499</b>	<b>567</b>	<b>83</b>
<b>TOTAL Existing + Case 1</b>	<b>1,726</b>	<b>1,348</b>	<b>281,857</b>	<b>633,714</b>	<b>672</b>	<b>785</b>	<b>118</b>
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	210	86	17,143	34,286	55	69	10
<b>TOTAL Existing + Case 2</b>	<b>210</b>	<b>724</b>	<b>157,143</b>	<b>384,286</b>	<b>228</b>	<b>287</b>	<b>45</b>
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>0.28</b>	<b>0.63</b>	<b>672</b>	<b>785</b>	<b>118</b>

**Notes:**

**Current EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
WCSD#2 WWTP	219	gpd/EDU

**Projection Criteria**

	Rate	Units	Source
GF WWTP Hydraulic Peaking Factor (6-hour)	3.25		
WCSD#2 WWTP Hydraulic Peaking Factor (6-hour)	2.5		
New Development Hydraulic Peaking Factor	2	-	-
BOD Rate - Residential	0.26	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TSS - Residential	0.33	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TKN as N	0.048	lb/capita*day	<i>Metcalf &amp; Eddy</i>
BOD Rate - Industrial	660	mg/L	<i>Hammer &amp; Hammer</i>
TSS - Industrial	325	mg/L	<i>Hammer &amp; Hammer</i>
TKN as N	50	mg/L	<i>Hammer &amp; Hammer</i>

**Population per SFR/EDU:**

Saratoga County	2.45	People/ house	<i>2008-12 US Census Data</i>
Washington County	2.52	People/ house	<i>2008-12 US Census Data</i>
Warren County	2.45	People/ house	<i>2008-12 US Census Data</i>

**Assumptions for Capacity Projections:**

Single Family Residential = 1 EDU = 200 gpd

EDU's = projected average daily flow/ (200 gpd /1 EDU)

o Residential Lots:

SFR = 1 EDU, Two-Family Residence = 2 EDU's, etc.

Proposed development: If the number of units were identified: Number of units (as a proportion of the total parcel area if the development encompasses multiple parcels) = EDU's/ parcel (in whole numbers)

Proposed development: If the number of units were not identified: Parcel area (acres)/ minimum lot size (per zoning code) = Number of EDU's (in whole numbers)

o Commercial Lots (existing and proposed/vacant):

Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

Light industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 1500 gal/acre\*day (*Metcalf & Eddy*)

Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)



**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF FORT EDWARD FLOW AND LOADING PROJECTION  
TABLE 8**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	0	0	-	-	-	-
WCSD#2 WWTP	-	274	0.06	0.15	74	93	15
<b>Subtotal</b>	<b>0</b>	<b>274</b>	<b>0.06</b>	<b>0.15</b>	<b>74</b>	<b>93</b>	<b>15</b>
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	1,784	708	141,600	283,200	464	589	86
Existing Private - Industrial	-	-	-	-	-	-	-
Scheduled Development - Residential/ Commercial	885	351	70,200	140,400	230	292	42
Scheduled Development - Industrial	-	406	81,195	162,390	447	220	34
Vacant and Sewered - Residential/ Commercial	44	18	3,517	7,034	12	15	2
Vacant and Sewered - Industrial	-	-	-	-	-	-	-
<b>Subtotal</b>	<b>2,713</b>	<b>1,483</b>	<b>296,512</b>	<b>593,024</b>	<b>1,152</b>	<b>1,115</b>	<b>164</b>
<b>TOTAL Existing + Case 1</b>	<b>2,713</b>	<b>1,756</b>	<b>356,512</b>	<b>743,024</b>	<b>1,227</b>	<b>1,209</b>	<b>179</b>
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	474	193	38,694	77,388	123	156	23
<b>TOTAL Existing + Case 2</b>	<b>474</b>	<b>467</b>	<b>98,694</b>	<b>227,388</b>	<b>198</b>	<b>250</b>	<b>38</b>
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>0.36</b>	<b>0.74</b>	<b>1,227</b>	<b>1,209</b>	<b>179</b>

**Notes:**

**Current EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
WCSD#2 WWTP	219	gpd/EDU

**Projection Criteria**

	Rate	Units	Source
GF WWTP Hydraulic Peaking Factor (6-hour)	3.25		
WCSD#2 WWTP Hydraulic Peaking Factor (6-hour)	2.5		
New Development Hydraulic Peaking Factor	2	-	-
BOD Rate - Residential	0.26	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TSS - Residential	0.33	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TKN as N	0.048	lb/capita*day	<i>Metcalf &amp; Eddy</i>
BOD Rate - Industrial	660	mg/L	<i>Hammer &amp; Hammer</i>
TSS - Industrial	325	mg/L	<i>Hammer &amp; Hammer</i>
TKN as N	50	mg/L	<i>Hammer &amp; Hammer</i>

**Population per SFR/EDU:**

Saratoga County	2.45	People/ house	<i>2008-12 US Census Data</i>
Washington County	2.52	People/ house	<i>2008-12 US Census Data</i>
Warren County	2.45	People/ house	<i>2008-12 US Census Data</i>

**Assumptions for Capacity Projections:**

Single Family Residential = 1 EDU = 200 gpd

EDU's = projected average daily flow/ (200 gpd /1 EDU)

o Residential Lots:

SFR = 1 EDU, Two-Family Residence = 2 EDU's, etc.

Proposed development: If the number of units were identified: Number of units (as a proportion of the total parcel area if the development encompasses multiple parcels) = EDU's/ parcel (in whole numbers)

Proposed development: If the number of units were not identified: Parcel area (acres)/ minimum lot size (per zoning code) = Number of EDU's (in whole numbers)

o Commercial Lots (existing and proposed/vacant):

Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

Light industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 1500 gal/acre\*day (*Metcalf & Eddy*)

Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF MOREAU FLOW AND LOADING PROJECTION  
TABLE 9**

	Approximate Population	EDU's	Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Existing Conditions</b>							
City of Glens Falls WWTP	-	99	0.02	0.07	25	34	4
WCSD#2 WWTP	-	0	0	-	-	-	-
<b>Subtotal</b>	<b>0</b>	<b>99</b>	<b>0.02</b>	<b>0.07</b>	<b>25</b>	<b>34</b>	<b>4</b>
	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>Case 1 - Proposed Development Conditions</b>							
Existing Private - Residential/ Commercial	-	-	-	-	-	-	-
Existing Private - Industrial	-	-	-	-	-	-	-
Scheduled Development - Residential/ Commercial	1,556	635	127,000	254,000	404	513	75
Scheduled Development - Industrial	-	1,095	219,100	438,200	1,206	594	91
Vacant and Sewered - Residential/ Commercial	9	4	750	1,500	2	3	0.4
Vacant and Sewered - Industrial	-	-	-	-	-	-	-
Rte. 9 Expansion*	2,820	1,151	230,200	460,400	733	931	135
<b>Subtotal</b>	<b>4,385</b>	<b>2,885</b>	<b>577,050</b>	<b>1,154,100</b>	<b>2,346</b>	<b>2,041</b>	<b>302</b>
<b>TOTAL Existing + Case 1</b>	<b>4,385</b>	<b>2,984</b>	<b>599,050</b>	<b>1,225,600</b>	<b>2,371</b>	<b>2,074</b>	<b>306</b>
<b>Case 2 - 25-Year Population Growth Projections</b>							
25-year growth	2,384	973	194,612	389,224	620	787	114
<b>TOTAL Existing + Case 2</b>	<b>2,384</b>	<b>1,072</b>	<b>216,612</b>	<b>460,724</b>	<b>645</b>	<b>820</b>	<b>118</b>
<b>SELECTED FLOW AND LOADING CASE</b>			Average Daily Flow (MGD)	Peak Hourly Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
<b>SELECTED FLOW AND LOADING</b>			<b>0.60</b>	<b>1.23</b>	<b>2,371</b>	<b>2,074</b>	<b>306</b>

**Notes:**

**Current EDU Average Daily Flow**

City of Glens Falls WWTP	221	gpd/EDU
WCSD#2 WWTP	219	gpd/EDU

\* Rte 9 Expansion projected values taken from Map, Plan and Report for Sewer District #1 Ext. #4 for Town of Moreau, December 2013, C2AE

**Projection Criteria:**

	Rate	Units	Source
GF WWTP Hydraulic Peaking Factor (6-hour)	3.25		
WCSD#2 WWTP Hydraulic Peaking Factor (6-hour)	2.5		
New Development Hydraulic Peaking Factor	2	-	-
BOD Rate - Residential	0.26	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TSS - Residential	0.33	lbs/ capita*day	<i>Metcalf &amp; Eddy</i>
TKN as N	0.048	lb/capita*day	<i>Metcalf &amp; Eddy</i>
BOD Rate - Industrial	660	mg/L	<i>Hammer &amp; Hammer</i>
TSS - Industrial	325	mg/L	<i>Hammer &amp; Hammer</i>
TKN as N	50	mg/L	<i>Hammer &amp; Hammer</i>

**Population per SFR/EDU:**

Saratoga County	2.45	People/ house	<i>2008-12 US Census Data</i>
Washington County	2.52	People/ house	<i>2008-12 US Census Data</i>
Warren County	2.45	People/ house	<i>2008-12 US Census Data</i>

**Assumptions for Capacity Projections:**

Single Family Residential = 1 EDU = 200 gpd

EDU's = projected average daily flow/ (200 gpd /1 EDU)

o Residential Lots:

SFR = 1 EDU, Two-Family Residence = 2 EDU's, etc.

Proposed development: If the number of units were identified: Number of units (as a proportion of the total parcel area if the development encompasses multiple parcels) = EDU's/ parcel (in whole numbers)

Proposed development: If the number of units were not identified: Parcel area (acres)/ minimum lot size (per zoning code) = Number of EDU's (in whole numbers)

o Commercial Lots (existing and proposed/vacant):

Lot area (acres) x Maximum building area (%) per zoning code x ½ (to account for parking areas, roads and sidewalks) x 1500 gal/acre\*day (*Metcalf & Eddy*)

o Industrial Lots:

Light industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 1500 gal/acre\*day (*Metcalf & Eddy*)

Medium industrial (based off zoning for the subject parcel): Parcel area (acres) x maximum building area (% per zoning code) x 3000 gal/acre\*day (*Metcalf & Eddy*)

o Schools: Identified the current number of students x 10 gpd/ student (*New York State Design Standards for Intermediate Sized Wastewater Treatment Systems – March 5, 2014*)

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CONVEYANCE OPTIONS - FLOW AND LOADING PROJECTION  
TABLE 10**

Community	Sewer Area	Flow Class	Approximate Population	EDU's	Average Daily Flow (GPD)	Peak Hourly Flow (GPD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)	
Moreau	Area M1	R/C	613	250	50,000	100,000	159	202	29	
		I	2,683	1,095	219,100	438,200	1,206	594	91	
	Area M2	R/C	943	385	77,000	154,000	245	311	45	
		I	0	0	0	0	0	0	0	
	Area M3	R/C	2,820	1,151	230,200	460,400	733	931	135	
		I	0	0	0	0	0	0	0	
	<b>TOTAL</b>					<b>576,300</b>	<b>1,152,600</b>	<b>2,344</b>	<b>2,038</b>	<b>301</b>
Kingsbury	Area K1	R/C	2,649	1,051	210,200	420,400	689	874	127	
		I	0	0		0	0	0	0	
	Area K2	R/C	5,383	2,136	427,220	854,440	1,400	1,776	258	
		I	0	0		0	0	0	0	
	<b>TOTAL</b>					<b>637,420</b>	<b>1,274,840</b>	<b>2,088</b>	<b>2,650</b>	<b>386</b>
	No Alt - WCSD#2	R/C	530	210	42,090	84,180	138	175	25	
		I	0	0		0	0	0	0	
	No Alt - GFWWTP	R/C	74	29	5,899	11,798	19	25	4	
I		5301	2104	420,706	841,412	2,316	1,140	175		
<b>TOTAL</b>					<b>468,695</b>	<b>937,390</b>	<b>2,473</b>	<b>1,340</b>	<b>204</b>	

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CONVEYANCE SCENARIO 1 - FLOW AND LOADING PROJECTION  
TABLE 11**

<b>Community</b>	<b>Destination</b>	<b>Average Daily Flow (MGD)</b>	<b>Peak 6-Hour Flow (MGD)</b>	<b>BOD (lb/day)</b>	<b>TSS (lb/day)</b>	<b>TKN (lb/day)</b>
(T) Fort Edward	WCSD #2 WWTP	0.36	0.74	1,227	1,209	179
(V) Fort Edward	WCSD #2 WWTP	0.28	0.63	672	785	118
(V) Hudson Falls	WCSD #2 WWTP	0.48	1.17	646	812	130
(T) Moreau	WCSD #2 WWTP	0.35	0.69	1,611	1,107	166
(T) Kingsbury (No Alt)	WCSD #2 WWTP	0.13	0.31	249	315	48
(T) Queensbury	WCSD #2 WWTP	0.00	0.00	0	0	0
(T) Kingsbury	WCSD #2 WWTP	0.43	0.85	1,400	1,776	258
Total Existing and New Flow and Loads		2.02	4.41	5,804	6,005	900
(C) Glens Falls	Glens Falls WWTP	3.19	10.06	4,319	5,395	645
(V) South Glens Falls	Glens Falls WWTP	0.38	1.14	512	669	82
(T) Queensbury	Glens Falls WWTP	1.99	4.87	6,761	5,165	736
(T) Moreau	Glens Falls WWTP	0.25	0.53	759	964	139
(T) Kingsbury (No Alt)	Glens Falls WWTP	0.45	0.93	2364	1203	183
(T) Kingsbury	Glens Falls WWTP	0.21	0.42	689	874	127
Total Existing and New Flow and Loads		6.47	17.96	15,402	14,270	1,912

**Routing Scenario**

Scenario 1: Areas M1, M2 and K2 flow to the WCSD #2 WWTP; Areas M3 and K1 flow to the GFWWTP

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CONVEYANCE SCENARIO 2 - FLOW AND LOADING PROJECTION  
TABLE 12**

<b>Community</b>	<b>Destination</b>	<b>Average Daily Flow (MGD)</b>	<b>Peak 6-Hour Flow (MGD)</b>	<b>BOD (lb/day)</b>	<b>TSS (lb/day)</b>	<b>TKN (lb/day)</b>
(T) Fort Edward	WCSD #2 WWTP	0.36	0.74	1,227	1,209	179
(V) Fort Edward	WCSD #2 WWTP	0.28	0.63	672	785	118
(V) Hudson Falls	WCSD #2 WWTP	0.48	1.17	646	812	130
(T) Moreau	WCSD #2 WWTP	0.08	0.15	245	311	45
(T) Kingsbury (No Alt)	WCSD #2 WWTP	0.13	0.31	249	315	48
(T) Queensbury	WCSD #2 WWTP	0.00	0.00	0	0	0
(T) Kingsbury	WCSD #2 WWTP	0.43	0.85	1,400	1,776	258
Total Existing and New Flow and Loads		1.75	3.87	4,439	5,209	779
(C) Glens Falls	Glens Falls WWTP	3.19	10.06	4,319	5,395	645
(V) South Glens Falls	Glens Falls WWTP	0.38	1.14	512	669	82
(T) Queensbury	Glens Falls WWTP	1.99	4.87	6,761	5,165	736
(T) Moreau	Glens Falls WWTP	0.52	1.07	2,124	1,760	260
(T) Kingsbury (No Alt)	Glens Falls WWTP	0.45	0.93	2,364	1,203	183
(T) Kingsbury	Glens Falls WWTP	0.21	0.42	689	874	127
Total Existing and New Flow and Loads		6.74	18.50	16,768	15,066	2,033

**Routing Scenario:**

Scenario 2: Areas M2 and K2 flow to the WCSD #2 WWTP; Areas M1, M3 and K1 flow to the GFWWTP

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CONVEYANCE SCENARIO 3 - FLOW AND LOADING PROJECTION  
TABLE 13**

<b>Community</b>	<b>Destination</b>	<b>Average Daily Flow (MGD)</b>	<b>Peak 6-Hour Flow (MGD)</b>	<b>BOD (lb/day)</b>	<b>TSS (lb/day)</b>	<b>TKN (lb/day)</b>
(T) Fort Edward	WCSD #2 WWTP	0.36	0.74	1,227	1,209	179
(V) Fort Edward	WCSD #2 WWTP	0.28	0.63	672	785	118
(V) Hudson Falls	WCSD #2 WWTP	0.48	1.17	646	812	130
(T) Moreau	WCSD #2 WWTP	0.35	0.69	1,611	1,107	166
(T) Kingsbury (No Alt)	WCSD #2 WWTP	0.13	0.31	249	315	48
(T) Queensbury	WCSD #2 WWTP	0.00	0.00	0	0	0
(T) Kingsbury	WCSD #2 WWTP	0.00	0.00	0	0	0
Total Existing and New Flow and Loads		1.59	3.55	4,404	4,229	642
(C) Glens Falls	Glens Falls WWTP	3.19	10.06	4,319	5,395	645
(V) South Glens Falls	Glens Falls WWTP	0.38	1.14	512	669	82
(T) Queensbury	Glens Falls WWTP	1.99	4.87	6,761	5,165	736
(T) Moreau	Glens Falls WWTP	0.25	0.53	759	964	139
(T) Kingsbury (No Alt)	Glens Falls WWTP	0.45	0.93	2,364	1,203	183
(T) Kingsbury	Glens Falls WWTP	0.64	1.27	2,088	2,650	386
Total Existing and New Flow and Loads		6.90	18.81	16,802	16,047	2,171
<b>Routing Scenarios</b>						
Scenario 3: Areas M1 and M2 flow to the WCSD #2 WWTP; Areas M3, K1 and K2 flow to the GFWWTP						

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CONVEYANCE SCENARIO 4 - FLOW AND LOADING PROJECTION  
TABLE 14**

<b>Community</b>	<b>Destination</b>	<b>Average Daily Flow (MGD)</b>	<b>Peak 6-Hour Flow (MGD)</b>	<b>BOD (lb/day)</b>	<b>TSS (lb/day)</b>	<b>TKN (lb/day)</b>
(T) Fort Edward	WCSD #2 WWTP	0.36	0.74	1,227	1,209	179
(V) Fort Edward	WCSD #2 WWTP	0.28	0.63	672	785	118
(V) Hudson Falls	WCSD #2 WWTP	0.48	1.17	646	812	130
(T) Moreau	WCSD #2 WWTP	0.08	0.15	245	311	45
(T) Kingsbury (No Alt)	WCSD #2 WWTP	0.13	0.31	249	315	48
(T) Queensbury	WCSD #2 WWTP	0.00	0.00	0	0	0
(T) Kingsbury	WCSD #2 WWTP	0.64	1.27	2,088	2,650	386
Total Existing and New Flow and Loads		1.96	4.29	5,127	6,083	906
(C) Glens Falls	Glens Falls WWTP	3.19	10.06	4,319	5,395	645
(V) South Glens Falls	Glens Falls WWTP	0.38	1.14	512	669	82
(T) Queensbury	Glens Falls WWTP	1.99	4.87	6,761	5,165	736
(T) Moreau	Glens Falls WWTP	0.52	1.07	2,124	1,760	260
(T) Kingsbury (No Alt)	Glens Falls WWTP	0.45	0.93	2,364	1,203	183
(T) Kingsbury	Glens Falls WWTP	0.00	0.00	0	0	0
Total Existing and New Flow and Loads		6.53	18.07	16,079	14,192	1,906
<b>Routing Scenarios</b>						
Scenario 4: Areas M2, K1 and K2 flow to the WCSD #2 WWTP; Areas M1 and M3 flow to the GFWWTP						

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CONVEYANCE SCENARIO 5 - FLOW AND LOADING PROJECTION  
TABLE 15**

<b>Community</b>	<b>Destination</b>	<b>Average Daily Flow (MGD)</b>	<b>Peak 6-Hour Flow (MGD)</b>	<b>BOD (lb/day)</b>	<b>TSS (lb/day)</b>	<b>TKN (lb/day)</b>
(T) Fort Edward	WCSD #2 WWTP	0.36	0.74	1,227	1,209	179
(V) Fort Edward	WCSD #2 WWTP	0.28	0.63	672	785	118
(V) Hudson Falls	WCSD #2 WWTP	0.48	1.17	646	812	130
(T) Moreau	WCSD #2 WWTP	0.58	1.15	2,344	2,038	301
(T) Kingsbury (No Alt)	WCSD #2 WWTP	0.13	0.31	249	315	48
(T) Queensbury	WCSD #2 WWTP	0.00	0.00	0	0	0
(T) Kingsbury	WCSD #2 WWTP	0.00	0.00	0	0	0
<b>Total Existing and New Flow and Loads</b>		<b>1.82</b>	<b>4.01</b>	<b>5,138</b>	<b>5,159</b>	<b>777</b>
(C) Glens Falls	Glens Falls WWTP	3.19	10.06	4,319	5,395	645
(V) South Glens Falls	Glens Falls WWTP	0.38	1.14	512	669	82
(T) Queensbury	Glens Falls WWTP	1.99	4.87	6,761	5,165	736
(T) Moreau	Glens Falls WWTP	0.02	0.07	25	34	4
(T) Kingsbury (No Alt)	Glens Falls WWTP	0.45	0.93	2,364	1,203	183
(T) Kingsbury	Glens Falls WWTP	0.64	1.27	2,088	2,650	386
<b>Total Existing and New Flow and Loads</b>		<b>6.67</b>	<b>18.35</b>	<b>16,069</b>	<b>15,116</b>	<b>2,035</b>

**Routing Scenarios**

Scenario 5: Areas M1, M2 and M3 flow to the WCSD #2 WWTP; Areas K1 and K2 flow to the GFWWTP



**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CONVEYANCE SCENARIO 6 - FLOW AND LOADING PROJECTION  
TABLE 16**

<b>Community</b>	<b>Destination</b>	<b>Average Daily Flow (MGD)</b>	<b>Peak 6-Hour Flow (MGD)</b>	<b>BOD (lb/day)</b>	<b>TSS (lb/day)</b>	<b>TKN (lb/day)</b>
(T) Fort Edward	WCSD #2 WWTP	0.36	0.74	1,227	1,209	179
(V) Fort Edward	WCSD #2 WWTP	0.28	0.63	672	785	118
(V) Hudson Falls	WCSD #2 WWTP	0.48	1.17	646	812	130
(T) Moreau	WCSD #2 WWTP	0.00	0.00	0	0	0
(T) Kingsbury (No Alt)	WCSD #2 WWTP	0.13	0.31	249	315	48
(T) Queensbury	WCSD #2 WWTP	0.00	0.00	0	0	0
(T) Kingsbury	WCSD #2 WWTP	0.64	1.27	2,088	2,650	386
Total Existing and New Flow and Loads		1.88	4.13	4,882	5,772	861
(C) Glens Falls	Glens Falls WWTP	3.19	10.06	4,319	5,395	645
(V) South Glens Falls	Glens Falls WWTP	0.38	1.14	512	669	82
(T) Queensbury	Glens Falls WWTP	1.99	4.87	6,761	5,165	736
(T) Moreau	Glens Falls WWTP	0.60	1.22	2,369	2,071	305
(T) Kingsbury (No Alt)	Glens Falls WWTP	0.45	0.93	2,364	1,203	183
(T) Kingsbury	Glens Falls WWTP	0.00	0.00	0	0	0
Total Existing and New Flow and Loads		6.60	18.23	16,324	14,504	1,951
<b>Routing Scenarios</b>						
Scenario 6: Areas K1 and K2 flow to the WCSD#2 WWTP; Areas M1, M2 and M3 flow to the GFWWTP						

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
SUMMARY FLOW AND LOADING PROJECTIONS  
TABLE 17**

Scenario	Destination	Average Daily Flow (MGD)	Peak 6-Hour Flow (MGD)	BOD (lb/day)	TSS (lb/day)	TKN (lb/day)
1	Glens Falls WWTP	6.47	17.96	15,402	14,270	1,912
	WCSD #2 WWTP	2.02	4.41	5,804	6,005	900
	Total	8.49	22.36	21,206	20,275	2,812
2	Glens Falls WWTP	6.74	18.50	16,768	15,066	2,033
	WCSD #2 WWTP	1.75	3.87	4,439	5,209	779
	Total	8.49	22.36	21,206	20,275	2,812
3	Glens Falls WWTP	6.90	18.81	16,802	16,047	2,171
	WCSD #2 WWTP	1.59	3.55	4,404	4,229	642
	Total	8.49	22.36	21,206	20,275	2,812
4	Glens Falls WWTP	6.53	18.07	16,079	14,192	1,906
	WCSD #2 WWTP	1.96	4.29	5,127	6,083	906
	Total	8.49	22.36	21,206	20,275	2,812
5	Glens Falls WWTP	6.67	18.35	16,069	15,116	2,035
	WCSD #2 WWTP	1.82	4.01	5,138	5,159	777
	Total	8.49	22.36	21,206	20,275	2,812
6	Glens Falls WWTP	6.60	18.23	16,324	14,504	1,951
	WCSD #2 WWTP	1.88	4.13	4,882	5,772	861
	Total	8.49	22.36	21,206	20,275	2,812

**Routing Scenarios**

Scenario 1: Areas M1, M2 and K2 flow to the WCSD #2 WWTP; Areas M3 and K1 flow to the GFWWTP  
Scenario 2: Areas M2 and K2 flow to the WCSD #2 WWTP; Areas M1, M3 and K1 flow to the GFWWTP  
Scenario 3: Areas M1 and M2 flow to the WCSD #2 WWTP; Areas M3, K1 and K2 flow to the GFWWTP  
Scenario 4: Areas M2, K1 and K2 flow to the WCSD #2 WWTP; Areas M1 and M3 flow to the GFWWTP  
Scenario 5: Areas M1, M2 and M3 flow to the WCSD #2 WWTP; Areas K1 and K2 flow to the GFWWTP  
Scenario 6: Areas K1 and K2 flow to the WCSD#2 WWTP; Areas M1, M2 and M3 flow to the GFWWTP

**CITY OF GLENS FALLS WASTEWATER TREATMENT PLANT  
UNIT PROCESS CAPACITY EVALUATION SUMMARY  
TABLE 18**

UNIT PROCESS	EXISTING CONDITION	CAPACITY RATING PARAMETER	CAPACITY RATING STANDARD	CAPACITY RATING <sup>1</sup>	CURRENT LOADING <sup>2</sup>	CURRENT PERCENT UTILIZATION	SCENARIO #1 PROJECTED LOADING	SCENARIO #1 PROJECTED PERCENT UTILIZATION
Sewer Flow Regulator	Weir Style Regulating Mechanism	Instantaneous Flow	-	13.35 MGD <sup>a</sup>	20.6 MGD <sup>c</sup>	154%	17.96 MGD <sup>b</sup>	135%
Climber Screen	(2) Mechanically cleaned 3/4 inch climber screens	Horizontal Velocity	1.25 ft/s to 3.0 ft/s <sup>o</sup>	16 MGD <sup>a</sup> , 18 MGD <sup>a</sup>	13.35 MGD <sup>a</sup>	83%, 74%	13.35 MGD <sup>c</sup>	83%, 74%
Vortex Grit Unit	270 Degree unit w/ associated grit pump and classifier	Hydraulic Capacity	Hydraulic Capacity @ PHF	18.5 MGD <sup>a</sup>	13.35 MGD <sup>a</sup>	72%	13.35 MGD <sup>a</sup>	72%
Parshall Flume	Existing 2 ft parshall flume	Hydraulic Capacity	Hydraulic Capacity @ PHF	21.4 MGD <sup>a</sup>	13.35 MGD <sup>a</sup>	62%	13.35 MGD <sup>a</sup>	62%
Primary Settling Tanks	4 Rectangular Tanks: 93.5 ft x 24 ft, water depth of 10.3 ft	Surface Overflow Rate	SOR @ ADF: Less than 1000 gpd/sf <sup>o</sup>	9 MGD <sup>a</sup>	3.98 MGD <sup>c</sup>	44%	6.47 MGD <sup>b</sup>	72%
			SOR @ PHF: Less than 1500 - 2000 gpd/sf <sup>o</sup>	13.35 MGD <sup>a</sup> , 18 MGD <sup>a</sup>	13.35 MGD <sup>a</sup>	100%, 74%	13.35 MGD <sup>a</sup>	100%, 74%
		Hydraulic Detention Time	1.5 to 2.5 hours @ ADF <sup>o</sup>	5.96 MGD <sup>3b</sup> , 8.96 MGD <sup>3b</sup>	3.98 MGD <sup>c</sup>	67%, 44%	6.47 MGD <sup>b</sup>	72%
		Horizontal Velocity	Less than scour velocity of 0.113 ft/s <sup>a</sup>	18 MGD <sup>b</sup>	3.98 MGD <sup>c</sup>	22%	6.47 MGD <sup>b</sup>	36%
Aeration Tanks	2 tanks (only AT 2 is operational) @ 216,496 CF, complete mixing	Organic Loading Rate	40 lb BOD per Day per 1000 CF @ Design Average BOD Loading <sup>o</sup>	8,690 lbs/day <sup>b</sup> , 17,320 lbs/day <sup>b</sup>	3,212 lbs/day <sup>a,c</sup>	37%, 19%	15,402 lbs/day <sup>b</sup>	177%, 89%
		Hydraulic Detention Time	3 to 5 Hours <sup>f</sup>	13 MGD @ 3 hrs, 25.9 MGD <sup>b</sup>	13.35 MGD <sup>a</sup>	103%, 52%	13.35 MGD <sup>a</sup>	103%, 52%
				7.8 MGD @ 5 hrs, 15.5 MGD <sup>b</sup>	13.35 MGD <sup>a</sup>	171%, 86%	13.35 MGD <sup>a</sup>	171%, 86%
Biological Loading	Biowin Modeling	9.5 MGD <sup>a,10</sup>	3.98 MGD <sup>c</sup>	42%	6.47 MGD <sup>b</sup>	68%		
Secondary Clarifiers	3 tanks @ 90 ft diameter for each tank, side water depth = 12 ft	Surface Overflow Rate <sup>*</sup>	Maximum 1200 gpd per SF @ PHF <sup>o</sup>	23 MGD <sup>a</sup>	13.35 MGD <sup>a</sup>	58%	13.35 MGD <sup>a</sup>	58%
		Solids Loading Rate	Max of 2.08 lbs/sf/hr <sup>o</sup>	54 MGD <sup>5a</sup>	13.35 MGD <sup>a</sup>	25%	13.35 MGD <sup>a</sup>	25%
		Settling Velocity and SVI	Solids Flux Analysis <sup>g</sup>	22 MGD <sup>a</sup>	13.35 MGD <sup>a</sup>	61%	13.35 MGD <sup>a</sup>	61%
		Weir Loading Rate	Max of 30,000 gpd/ft @ PHF <sup>o</sup>	25.4 MGD <sup>b</sup>	13.35 MGD <sup>a</sup>	53%	13.35 MGD <sup>a</sup>	53%
Disinfection	1 Channel with 2 banks of 3 UV modules	Hydraulic Capacity	Hydraulic Capacity @ PHF	20 MGD <sup>a</sup>	13.35 MGD <sup>a</sup>	67%	13.35 MGD <sup>a</sup>	67%
Blended Sludge Tanks	with hydraulic mixing system, 2 tanks, each 46 ft inside diameter, capacity is 240,000 gallons each	Days of Storage	1 day	480,000 GPD <sup>b</sup>	36,000 GPD <sup>d</sup>	8%	58,600 GPD <sup>j</sup>	12%
Dissolved Air Flootation Thickener	manufactured by TencoHydro	Hydraulic Capacity	Hydraulic Design Capacity, from TencoHydro 225 GPM <sup>o</sup> , run 8 hr day	108,000 GPD <sup>7</sup>	45,000 GPD <sup>d</sup>	42%	73,200 GPD <sup>j</sup>	68%
		Solids Loading Rate	2.25 lbs/hr/SF <sup>o</sup>	13,770 lbs/day	2,929 lbs/day <sup>d</sup>	21%	6,887 lbs/day <sup>j</sup>	50%
Belt Filter Press	with 2.0 m gravity belt thickener, manufactured by BDP Industries	Hydraulic Capacity	Hydraulic Design Capacity, from BDP Industries 400 GPM <sup>o</sup> , run 8 hr day	192,000 GPD <sup>7</sup>	36,000 GPD <sup>d</sup>	19%	58,600 GPD <sup>j</sup>	31%
Fluidized Bed Incinerator	Fluidized Bed Incinerator <sup>9</sup>	Feed rate	Feed rate must be limited to 2,000 lbs/hr <sup>a</sup>	48,000 lbs/day	7,931 lbs/day <sup>d</sup>	17%	18,533 lbs/day <sup>j</sup>	39%

<sup>1</sup> First number is capacity for existing conditions, the second number is capacity based on improvements made in the CDM LTCP. If there is only one number, it is the capacity based on existing conditions.

<sup>2</sup> The plant has a weir regulator which limits flow into the plant to 13.35 MGD. Presently, the weir regulator mechanism is broken and is enabling peak hour flows of 20.6 MGD to occur.

<sup>3</sup> Calculated at 2.0 hr.

<sup>4</sup> Assumed 30% BOD Removal from Primary Clarifier, taken from CDM CSO LTCP for Glens Falls, Rev. January 2013

<sup>5</sup> Likely not actually 54 MGD, as conditions for the 54 MGD are unlikely to occur (a SVI < 90 mL/g)

<sup>6</sup> See CDM Long Term Control Plan, January 2013 for Solids Flux Analysis

<sup>7</sup> Based on an 8 hour day

<sup>8</sup> Primary Settling Tanks limited to 13.35 MGD due to hydraulic conditions of effluent weirs, as noted in the CDM CSO LTCP.

<sup>9</sup> City to eliminate incinerator in spring 2016

<sup>10</sup> With one (1) aeration tank in operation, the WWTP can treat an average daily flow of 9.5 MGD, but is unable to treat a peak wet weather flow of 13.35 MGD when following the 9.5 MGD average daily flow.

Capacity Rating/Loading Source Material:

<sup>a</sup> CSO LTCP for Glens Falls, Rev. January 2013, CDM

<sup>b</sup> B&L calculations for Unit Process Capacity Analysis

<sup>c</sup> DMR Data 2012-2013

<sup>d</sup> DMR Data 2012 - 2013, adjusted proportionally based on CDM LTCP Biowin Process Model

<sup>e</sup> 10 States Standards

<sup>f</sup> Metcalf & Eddy, Wastewater Engineering: Treatment and Reuse, Fourth Edition

<sup>g</sup> Manufacturer Data

<sup>h</sup> B&L Flow Projections

<sup>i</sup> B&L Flow Projections, adjusted proportionally based on CDM LTCP Biowin Process Model

**WASHINGTON COUNTY SEWER DISTRICT #2 WASTEWATER TREATMENT PLANT  
UNIT PROCESS CAPACITY EVALUATION  
TABLE 19**

UNIT PROCESS	EXISTING CONDITION	CAPACITY RATING PARAMETER	CAPACITY RATING STANDARD	CAPACITY RATING <sup>1</sup>	CURRENT LOADING	CURRENT PERCENT UTILIZATION <sup>1</sup>	SCENARIO #1 PROJECTED LOADING	SCENARIO #1 PROJECTED PERCENT UTILIZATION
Influent Pumps	Screw Pumps (3 pumps)	Hydraulic Capacity	Hydraulic Capacity @ PHF	8 MGD <sup>2,a</sup> , 8 MGD <sup>a</sup>	7.6 MGD <sup>d</sup>	95%, 95%	4.41 MGD <sup>j</sup>	55%
Mechanical Bar Screen	Mechanically cleaned 1-inch bar screen	Horizontal Velocity @ ADF	1.25 ft/s to 3.0 ft/s	3.3 MGD <sup>3,a</sup> , 8 MGD <sup>a</sup>	1.89 MGD <sup>d</sup>	57%, 24%	2.02 MGD <sup>j</sup>	61%, 25%
		Horizontal Velocity @ PHF	1.25 ft/s to 3.0 ft/s	6.0 MGD <sup>3,a</sup> , 8 MGD <sup>a</sup>	7.6 MGD <sup>d</sup>	127%, 95%	4.41 MGD <sup>j</sup>	74%, 55%
Grit Chambers	Square aerated Grit Chambers	Detention Time @ PHF	3 minutes	5.75 MGD <sup>3,a</sup> , 8 MGD <sup>a</sup>	7.6 MGD <sup>d</sup>	132%, 95%	4.41 MGD <sup>j</sup>	77%, 55%
			5 minutes	3.47 MGD <sup>3,b</sup> , 8 MGD <sup>a</sup>	7.6 MGD <sup>d</sup>	219%, 95%	4.41 MGD <sup>j</sup>	127%, 55%
Parshall Flume	18" Parshall Flume	Hydraulic Capacity	Hydraulic Capacity @ PHF	15.9 MGD <sup>4,a</sup> , 15.9 MGD <sup>a</sup>	7.6 MGD <sup>d</sup>	48%, 48%	4.41 MGD <sup>j</sup>	28%, 28%
Primary Clarifiers	2 Tanks, each 12 ft x 61 ft x 8.74 ft water depth	Surface Over Rate @ ADF	SOR @ ADF: Less than 1000 gpd/sf	3.46 MGD <sup>5</sup>	1.89 MGD <sup>d</sup>	55%	2.02 MGD <sup>j</sup>	58%
		Surface Overflow Rate @ PHF	SOR @ PHF: Less than 1500 - 2000 gpd/sf	7 MGD <sup>5</sup>	7.6 MGD <sup>d</sup>	109%	4.41 MGD <sup>j</sup>	63%
		Hydraulic Detention Time	1.5 to 2.5 hours @ ADF	1.95 MGD <sup>5,b</sup>	1.89 MGD <sup>d</sup>	97%	2.02 MGD <sup>j</sup>	104%
Aeration Basins	2 Tanks, 68 ft x 35.6 ft x 14.84 ft water depth	Organic Loading Rate	40 lb BOD per Day per 1000 CF @ Design Average BOD Loading <sup>6</sup>	2,874 lbs/day <sup>7</sup> , 8,800 lbs/day <sup>8</sup>	2,342 lb/day <sup>7</sup>	81%, 27%	5,804 lb/day <sup>7</sup>	202%, 66%
		Hydraulic Detention Time	3 to 5 Hours <sup>9</sup>	1.3 MGD @ 5 hours <sup>5</sup> 4.3 MGD @ 3 hours <sup>5</sup>	4.0 MGD <sup>10,e</sup>	308% 93%	4.0 MGD <sup>10,m</sup>	308% 93%
Blowers	3 blowers, blower 1 -multi-stage centrifugal existing to remain with SOTE of %/ft designed for 1600 scfm @ 6 psi, blowers 2 and 3 will be replaced in May with 2 turbo blowers designed for 1000 scfm	C.T. Male DRAFT Facility Plan for WCSD#2, July 2011, Section 3.3	Minimum of 30 cfm/1000 CF of tank volume with largest blower out of service <sup>1</sup>	2,544 scfm <sup>1</sup>	2,155 scfm <sup>h,i</sup>	88%	2,155 scfm <sup>h,i</sup>	88%
Secondary Clarifiers	2 Tanks, 55 ft diameter, 12.08 ft water depth, center feed	Solids Loading Rate	Max of 2.08 lbs/sf/hr <sup>1</sup>	3.5 MGD <sup>5,a</sup> , 4 MGD <sup>a</sup>	4.0 MGD <sup>10,e</sup>	114%, 100%	4.0 MGD <sup>10,m</sup>	114%, 100%
		Settling velocity and SVI	Solids Flux Analysis @ ADF <sup>7</sup>	3.5 MGD <sup>5</sup> , 4 MGD <sup>a</sup>	1.83 MGD <sup>5</sup>	52%, 46%	1.96 MGD <sup>10,m</sup>	56%, 49%
		Surface Overflow Rate	Max of 1200 gpd/sf @ PHF <sup>1</sup>	5.7 MGD <sup>5</sup>	4.0 MGD <sup>10,e</sup>	70%	4.0 MGD <sup>10,m</sup>	70%
		Weir Loading Rate	Max of 30,000 gpd/ft @ ADF <sup>1</sup>	5.08 MGD <sup>5</sup>	1.83 MGD <sup>5</sup>	36%	1.96 MGD <sup>10,m</sup>	39%
RAS Pumps	2 pumps	C.T. Male DRAFT Facility Plan for WCSD#2, July 2011, Section 3.3	2 pumps, each with a capacity of 700 gpm	900 gpm <sup>h</sup>	660 gpm <sup>h</sup>	73%	660 gpm <sup>h</sup>	73%
UV Disinfection	Low pressure, high output, 2 banks in series with a dose of 30 mJ/cm2	Hydraulic Capacity	Hydraulic Capacity @ PHF	7.5 MGD	7.3 MGD <sup>5</sup>	97%	4.2 MGD <sup>10,m</sup>	56%
Thickening	2 rotary sludge thickeners, fed by WAS pumps	Hydraulic Capacity	85 gpm <sup>a</sup>	40,800 gallons/day <sup>8</sup>	16,800 gallons/day <sup>8</sup>	41%	N/A - thickeners to be removed in future	N/A - thickeners to be removed in future
Blended Sludge Well	with hydraulic mixing, 8 ft x 28 ft x 6 ft	Days of Storage	1 day	10,053 gallons/day	15,000 gallons/day <sup>8</sup>	149% <sup>9</sup>	16,200 gallons/day <sup>m</sup>	161%
Primary Digester	Anaerobic, 1 Tank, 45 ft diameter, 23 feet water depth, completely mixed	Solids Retention Time	Minimum 15 to 20 days	18,000 gallons/day	25 days/14,000 gallons/day <sup>8</sup>	78%	23 days/15,300 gallons/day <sup>m</sup>	85%
Secondary Digester	Anaerobic, 1 Tank, 45 ft diameter, 23 feet water depth, completely mixed	Solids Retention Time	Minimum 15 to 20 days	18,000 gallons/day	25 days/14,000 gallons/day <sup>8</sup>	78%	23 days/15,300 gallons/day <sup>m</sup>	85%
Belt Press	Existing: 2 Belt Filter Presses, Proposed 3 Belt Filter Press that replaces existing belt presses and rotary sludge thickeners	Hydraulic Capacity	35-40 gpm per press <sup>a</sup>	38,400 gallons/day <sup>8</sup> , 216,000 gallons/day <sup>1</sup>	14,000 gallons/day <sup>8</sup>	36%, 6%	15,300 gallons/day <sup>m</sup>	40%, 7%

<sup>1</sup> First number is capacity for existing conditions, the second number is capacity based on proposed improvements in the CDM LTCP or based on proposed improvements in the Engineering Report for Wastewater Treatment Plant Improvements, April 2013, by Wendel and Barton & Loguidice. If only one number, it is the capacity for existing conditions.

<sup>2</sup> Capacity with biggest unit out of service

<sup>3</sup> Maximum hydraulic flow rate through the screen assumes all flow goes through the mechanical screen, a 50% blinding rate at the screen, and a maximum water surface elevation at the downstream side of the influent pumps, per the manufacturer, of 138.08 ft.

<sup>4</sup> District reports Parshall Flume not providing accurate measurements in CDM WCSD#2 CSO LTCP, Dec. 2010

<sup>5</sup> Calculated at 2.0 hr.

<sup>6</sup> This value is 4 MGD based on a maximum SLR of 1.8 lbs/sf/hr per the CDM CSO LTCP. The CDM CSO LTCP also notes that conditions for the 4 MGD are unlikely to occur (a SVI < 90 mL/g).

<sup>7</sup> See CDM Long Term Control Plan, December 2010 for Solids Flux Analysis

<sup>8</sup> Based on an 8 hour day

<sup>9</sup> Utilization greater than 100% indicates detention time less than maximum.

<sup>10</sup> Secondary Treatment is limited to a maximum of 4.0 MGD with a bypass.

Capacity Rating/Loading Source Material:

<sup>a</sup> CSO LTCP for WCSD#2, December 2010, CDM

<sup>b</sup> B&L calculations for Unit Process Capacity Analysis

<sup>c</sup> WCSD#2 Facility Plan and Plan for Future Growth, C.T. Male, July 2011

<sup>d</sup> DMR Data 2012-2013

<sup>e</sup> DMR Data 2012 - 2013, adjusted proportionally based on CDM LTCP Biowin Process Model

<sup>f</sup> Ten States Standards

<sup>g</sup> Metcalf & Eddy, Wastewater Engineering: Treatment and Reuse, Fourth Edition

<sup>h</sup> Information from Plant Operator

<sup>i</sup> Engineering Report for Wastewater Treatment Plant Improvements, April 2013, by Barton & Loguidice and Wendel

<sup>j</sup> Based on blowers to be installed, data from Project Manual for WCSD#2 Performance Contract

<sup>k</sup> Flow Certifications

<sup>l</sup> B&L Flow Projections

<sup>m</sup> B&L Flow Projections, adjusted proportionally based on CDM LTCP Biowin Process Model

**CITY OF GLENS FALLS WASTEWATER TREATMENT PLANT  
SUMMARY OF FUTURE CAPACITY REQUIREMENTS  
TABLE 20**

<b>UNIT PROCESS</b>	<b>CAPACITY RATING PARAMETER</b>	<b>FUTURE CAPACITY REQUIREMENT FOR SCENARIO #1</b>
Sewer Flow Regulator	Instantaneous/PHF	17.96 MGD
Climber Screen	Horizontal Velocity/PHF	17.96 MGD
Vortex Grit Unit	Hydraulic Capacity/PHF	17.96 MGD
Parshall Flume	Hydraulic Capacity/PHF	17.96 MGD
Primary Settling Tanks	Surface Overflow Rate, Hydraulic Detention Time, Horizontal Velocity/PHF	17.96 MGD
Aeration Tanks	Organic Loading Rate, Hydraulic Detention Time/ADF	6.47 MGD
Secondary Clarifiers	Surface Overflow Rate, Solids Loading Rate, Settling Velocity, SVI, Weir Loading Rate/ADF	6.47 MGD
Disinfection	Hydraulic Capacity	17.96 MGD

**WASHINGTON COUNTY SEWER DISTRICT #2 WASTEWATER TREATMENT PLANT  
SUMMARY OF FUTURE CAPACITY REQUIREMENTS  
TABLE 21**

<b>UNIT PROCESS</b>	<b>CAPACITY RATING PARAMETER</b>	<b>FUTURE CAPACITY REQUIREMENT</b>
Influent Pumps	Hydraulic Capacity /PHF	8 MGD
Mechanical Bar Screen	Horizontal Velocity/PHF	8 MGD
Grit Chambers	Detention Time/PHF	8 MGD
Parshall Flume	Hydraulic Capacity/PHF	8 MGD
Primary Clarifiers	Surface Over Rate, Hydraulic Detention Time/PHF/ADF	7 MGD
Aeration Basins	Organic Loading Rate, Hydraulic Detention Time/ADF	4 MGD
Blowers	Minimum of 30 cfm/1000 CF of tank volume with largest blower out of service/ADF	4 MGD
Secondary Clarifiers	Solids Loading Rate, Settling Velocity, SVI, Surface Overflow Rate, Weir Loading Rate/ADF	4 MGD
UV Disinfection	Hydraulic Capacity	7 MGD

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
CITY OF GLENS FALLS ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 22**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
CITY OF GLENS FALLS

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
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**SEWER COLLECTION SYSTEM**

- No additional infrastructure needs identified during study

<b>CONSTRUCTION SUBTOTAL</b>				<b>\$0.00</b>
CONTINGENCIES / GENERAL CONDITIONS	25%	\$		-
<b>CONSTRUCTION TOTAL</b>				<b>\$0.00</b>
ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION	20%	\$		-
<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>				<b>\$0.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
VILLAGE OF SOUTH GLENS FALLS ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 23**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
VILLAGE OF SOUTH GLENS FALLS

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
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**SEWER COLLECTION SYSTEM**

1.	Pump Stations	1	EA	\$ 350,000.00	\$ 350,000.00
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<b>CONSTRUCTION SUBTOTAL</b>				<b>\$ 350,000.00</b>
CONTINGENCIES / GENERAL CONDITIONS	25%			\$ 88,000.00

<b>CONSTRUCTION TOTAL</b>				<b>\$ 438,000.00</b>
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ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION	20%			\$ 88,000.00
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<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>				<b>\$ 530,000.00</b>
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*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*



**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF QUEENSBURY ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 24**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF QUEENSBURY

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b><u>SEWER COLLECTION SYSTEM</u></b>					
1.	10-Inch Gravity Sewer	9,400	LF	\$ 185.00	\$ 1,739,000.00
2.	12-Inch Gravity Sewer	5,900	LF	\$ 210.00	\$ 1,239,000.00
3.	8-Inch Force Main	2,600	LF	\$ 125.00	\$ 325,000.00
4.	Pump Stations	2	EA	\$ 350,000.00	\$ 700,000.00
5.	Manhole	38	EA	\$ 10,500.00	\$ 399,000.00
6.	Air Relief Valve and Manhole	3	EA	\$ 8,000.00	\$ 24,000.00
<b>CONSTRUCTION SUBTOTAL</b>				<b>\$</b>	<b>4,426,000.00</b>
CONTINGENCIES / GENERAL CONDITIONS				25%	\$ 1,107,000.00
<b>CONSTRUCTION TOTAL</b>				<b>\$</b>	<b>5,533,000.00</b>
ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION				20%	\$ 1,107,000.00
<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>				<b>\$</b>	<b>6,640,000.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF KINGSBURY ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 25.1 - SCENARIOS 1 AND 2**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF KINGSBURY

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

Scenario 1 - M1, M2 and K2 flow to WCSD#2 WWTP; M3 and K1 flow to GFWWTP  
Scenario 2 - M2 and K2 to WCSD#2 WWTP; M1, M3 and K1 to GFWWTP

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b>SEWER COLLECTION SYSTEM</b>					
1.	8-Inch Gravity Sewer	26,200	LF	\$ 175.00	\$ 4,585,000.00
2.	10-Inch Gravity Sewer	10,000	LF	\$ 185.00	\$ 1,850,000.00
3.	12-Inch Gravity Sewer	24,300	LF	\$ 210.00	\$ 5,103,000.00
4.	15-Inch Gravity Sewer	30,600	LF	\$ 215.00	\$ 6,579,000.00
5.	18-Inch Gravity Sewer	6,800	LF	\$ 230.00	\$ 1,564,000.00
6.	8-Inch Forcemain	16,400	LF	\$ 125.00	\$ 2,050,000.00
7.	Pump Stations	7	EA	\$ 350,000.00	\$ 2,450,000.00
8.	Manhole	245	EA	\$ 10,500.00	\$ 2,572,500.00
9.	Air Relief Valve and Manhole	16	EA	\$ 8,000.00	\$ 128,000.00
<b>CONSTRUCTION SUBTOTAL</b>				<b>\$</b>	<b>26,882,000.00</b>
CONTINGENCIES / GENERAL CONDITIONS				25%	\$ 6,721,000.00
<b>CONSTRUCTION TOTAL</b>				<b>\$</b>	<b>33,603,000.00</b>
ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION				20%	\$ 6,721,000.00
<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>				<b>\$</b>	<b>40,320,000.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF KINGSBURY ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 25.2 - SCENARIOS 3 AND 5**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001

**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF KINGSBURY

**ESTIMATED BY:** KLK

**CHECKED BY:** JAB

Scenario 3 - M1 and M2 flow to WCSD#2 WWTP; M3, K1 and K2 flow to GFWWTP  
Scenario 5 - M1, M2 and M3 flow to WCSD#2 WWTP; K1 and K2 flow to GFWWTP

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b>SEWER COLLECTION SYSTEM</b>					
1.	8-Inch Gravity Sewer	26,200	LF	\$ 175.00	\$ 4,585,000.00
2.	10-Inch Gravity Sewer	10,000	LF	\$ 185.00	\$ 1,850,000.00
3.	12-Inch Gravity Sewer	24,300	LF	\$ 210.00	\$ 5,103,000.00
4.	15-Inch Gravity Sewer	30,600	LF	\$ 215.00	\$ 6,579,000.00
5.	18-Inch Gravity Sewer	6,800	LF	\$ 230.00	\$ 1,564,000.00
6.	8-Inch Forcemain	24,200	LF	\$ 125.00	\$ 3,025,000.00
7.	Pump Stations	8	EA	\$ 350,000.00	\$ 2,800,000.00
8.	Manhole	245	EA	\$ 10,500.00	\$ 2,572,500.00
9.	Air Relief Valve and Manhole	24	EA	\$ 8,000.00	\$ 192,000.00
<b>CONSTRUCTION SUBTOTAL</b>				<b>\$</b>	<b>28,271,000.00</b>
CONTINGENCIES / GENERAL CONDITIONS				25%	\$ 7,068,000.00
<b>CONSTRUCTION TOTAL</b>				<b>\$</b>	<b>35,339,000.00</b>
ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION				20%	\$ 7,068,000.00
<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>				<b>\$</b>	<b>42,410,000.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF KINGSBURY ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 25.3 - SCENARIOS 4 AND 6**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001

**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF KINGSBURY

**ESTIMATED BY:** KLK

**CHECKED BY:** JAB

**Scenario 4 - M2, K1 and K2 flow to WCD#2 WWTP; M1 and M3 flow to GFWWTP  
Scenario 6 - K1 and K2 flow to WCD#2 WWTP; M1, M2 and M3 flow to GFWWTP**

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b>SEWER COLLECTION SYSTEM</b>					
1.	8-Inch Gravity Sewer	26,200	LF	\$ 175.00	\$ 4,585,000.00
2.	10-Inch Gravity Sewer	10,000	LF	\$ 185.00	\$ 1,850,000.00
3.	12-Inch Gravity Sewer	18,800	LF	\$ 210.00	\$ 3,948,000.00
4.	15-Inch Gravity Sewer	36,500	LF	\$ 215.00	\$ 7,847,500.00
5.	18-Inch Gravity Sewer	6,800	LF	\$ 230.00	\$ 1,564,000.00
6.	8-Inch Forcemain	18,200	LF	\$ 125.00	\$ 2,275,000.00
7.	Pump Stations	9	EA	\$ 350,000.00	\$ 3,150,000.00
8.	Manhole	246	EA	\$ 10,500.00	\$ 2,583,000.00
9.	Air Relief Valve and Manhole	18	EA	\$ 8,000.00	\$ 144,000.00
<b>CONSTRUCTION SUBTOTAL</b>				<b>\$</b>	<b>27,947,000.00</b>
CONTINGENCIES / GENERAL CONDITIONS				25%	\$ 6,987,000.00
<b>CONSTRUCTION TOTAL</b>				<b>\$</b>	<b>34,934,000.00</b>
ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION				20%	\$ 6,987,000.00
<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>				<b>\$</b>	<b>41,920,000.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
VILLAGE OF HUDSON FALLS ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 26**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
VILLAGE OF HUDSON FALLS

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b><u>SEWER COLLECTION SYSTEM</u></b>					
1.	I&I Study	1	LS	\$30,000.00	\$ 30,000.00
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$</b>	<b>30,000.00</b>
	CONTINGENCIES / GENERAL CONDITIONS			25%	\$ 8,000.00
	<b>CONSTRUCTION TOTAL</b>			<b>\$</b>	<b>38,000.00</b>
	ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION			20%	\$ 8,000.00
	<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>			<b>\$</b>	<b>50,000.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF FORT EDWARD ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 27**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF FORT EDWARD

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
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**SEWER COLLECTION SYSTEM**

1.	8-Inch Gravity Sewer	14,100	LF	\$ 175.00	\$ 2,467,500.00
2.	10-Inch Gravity Sewer	5,500	LF	\$ 185.00	\$ 1,017,500.00
3.	12-Inch Gravity Sewer	6,300	LF	\$ 210.00	\$ 1,323,000.00
4.	8-Inch Forcemain	3,000	LF	\$ 125.00	\$ 375,000.00
5.	Pump Stations	1	EA	\$ 350,000.00	\$ 350,000.00
6.	Manholes	65	EA	\$ 10,500.00	\$ 682,500.00
7.	Air Relief Valve and Manhole	3	EA	\$ 8,000.00	\$ 24,000.00

<b>CONSTRUCTION SUBTOTAL</b>			<b>\$</b>	<b>6,240,000.00</b>
CONTINGENCIES / GENERAL CONDITIONS	25%		\$	1,560,000.00
<b>CONSTRUCTION TOTAL</b>			<b>\$</b>	<b>7,800,000.00</b>

ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION	20%		\$	1,560,000.00
<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>			<b>\$</b>	<b>9,360,000.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
VILLAGE OF FORT EDWARD ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 28**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
VILLAGE OF FORT EDWARD

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR		TOTAL
<b><u>SEWER COLLECTION SYSTEM</u></b>						
1.	12-Inch Gravity Sewer	1,100	LF	\$	210.00	\$ 231,000.00
2.	8-Inch Forcemain	2,900	LF	\$	125.00	\$ 362,500.00
3.	Pump Stations	1	EA	\$	350,000.00	\$ 350,000.00
4.	Manholes	3	EA	\$	10,500.00	\$ 31,500.00
5.	Air Relief Valve and Manhole	3	EA	\$	8,000.00	\$ 24,000.00
				<b>CONSTRUCTION SUBTOTAL</b>		<b>\$ 999,000.00</b>
				CONTINGENCIES / GENERAL CONDITIONS	25%	\$ 250,000.00
				<b>CONSTRUCTION TOTAL</b>		<b>\$ 1,249,000.00</b>
				ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION	20%	\$ 250,000.00
				<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>		<b>\$ 1,500,000.00</b>

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF MOREAU ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 29.1 - SCENARIOS 1 AND 3**

<b>PROJECT TITLE:</b> ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT	<b>B&amp;L JOB NO:</b>  <b>DATE PREPARED:</b>	1626.001  5/20/2014
<b>LOCATION:</b> TOWN OF MOREAU	<b>ESTIMATED BY:</b> <b>CHECKED BY:</b>	KLK JAB

Scenario 1 - M1, M2 and K2 flow to WCSD#2 WWTP; M3 and K1 flow to GFWWTP  
Scenario 3 - M1 and M2 flow to WCSD#2 WWTP; M3, K1 and K2 flow to GFWWTP

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b>SEWER COLLECTION SYSTEM</b>					
1.	12-Inch Gravity Sewer	1,300	LF	\$ 210.00	\$ 273,000.00
2.	15-Inch Gravity Sewer	12,500	LF	\$ 215.00	\$ 2,687,500.00
3.	8-Inch Forcemain	8,600	LF	\$ 125.00	\$ 1,075,000.00
4.	Pump Stations	3	EA	\$ 350,000.00	\$ 1,050,000.00
5.	Manhole	35	EA	\$ 10,500.00	\$ 367,500.00
6.	Air Relief Valve and Manhole	9	EA	\$ 8,000.00	\$ 72,000.00
7.	RT. 9 Corridor Sewer and Associated Pump Stations <sup>1</sup>	1	LS	\$ 9,876,950.00	\$ 9,876,950.00
				<b>CONSTRUCTION SUBTOTAL</b>	<b>\$ 15,402,000.00</b>
				CONTINGENCIES / GENERAL CONDITIONS 25%	\$ 3,851,000.00
				<b>CONSTRUCTION TOTAL</b>	<b>\$ 19,253,000.00</b>
				ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION 20%	\$ 3,851,000.00
				<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>	<b>\$ 23,100,000.00</b>

<sup>1</sup>From the *Map, Plan and Report - Sewer District #1 Extension #4* prepared by C2AE December 2013

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*



**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF MOREAU ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 29.2 - SCENARIOS 2 AND 4**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF MOREAU

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

**Scenario 2 - M2 and K2 to WCSD#2 WWTP; M1, M3 and K1 to GFWWTP  
Scenario 4 - M2, K1 and K2 flow to WCSD#2 WWTP; M1 and M3 flow to GFWWTP**

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b>SEWER COLLECTION SYSTEM</b>					
1.	12-Inch Gravity Sewer	1,300	LF	\$ 210.00	\$ 273,000.00
2.	15-Inch Gravity Sewer	10,100	LF	\$ 215.00	\$ 2,171,500.00
3.	8-Inch Forcemain	11,900	LF	\$ 125.00	\$ 1,487,500.00
4.	Pump Stations	3	EA	\$ 350,000.00	\$ 1,050,000.00
5.	Manhole	29	EA	\$ 10,500.00	\$ 304,500.00
6.	Air Relief Valve and Manhole	12	EA	\$ 8,000.00	\$ 96,000.00
7.	RT. 9 Corridor Sewer and Associated Pump Stations <sup>1</sup>	1	LS	\$ 9,876,950.00	\$ 9,876,950.00
				<b>CONSTRUCTION SUBTOTAL</b>	<b>\$ 15,259,000.00</b>
				CONTINGENCIES / GENERAL CONDITIONS 25%	\$ 3,815,000.00
				<b>CONSTRUCTION TOTAL</b>	<b>\$ 19,074,000.00</b>
				ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION 20%	\$ 3,815,000.00
				<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>	<b>\$ 22,890,000.00</b>

<sup>1</sup>From the *Map, Plan and Report - Sewer District #1 Extension #4* prepared by C2AE December 2013

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF MOREAU ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 29.3 - SCENARIO 5**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001

**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF MOREAU

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

**Scenario 5 - M1, M2 and M3 flow to WCSD#2 WWTP; K1 and K2 flow to GFWWTP**

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b>SEWER COLLECTION SYSTEM</b>					
1.	12-Inch Gravity Sewer	1,300	LF	\$ 210.00	\$ 273,000.00
2.	15-Inch Gravity Sewer	12,500	LF	\$ 215.00	\$ 2,687,500.00
3.	8-Inch Forcemain	8,600	LF	\$ 125.00	\$ 1,075,000.00
4.	Pump Stations	3	EA	\$ 350,000.00	\$ 1,050,000.00
5.	Manhole	35	EA	\$ 10,500.00	\$ 367,500.00
6.	Air Relief Valve and Manhole	9	EA	\$ 8,000.00	\$ 72,000.00
7.	RT. 9 Corridor Sewer and Associated Pump Stations <sup>1</sup>	1	LS	\$ 9,876,950.00	\$ 9,876,950.00
				<b>CONSTRUCTION SUBTOTAL</b>	<b>\$ 15,402,000.00</b>
				CONTINGENCIES / GENERAL CONDITIONS 25%	\$ 3,851,000.00
				<b>CONSTRUCTION TOTAL</b>	<b>\$ 19,253,000.00</b>
				ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION 20%	\$ 3,851,000.00
				<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>	<b>\$ 23,100,000.00</b>

<sup>1</sup>From the *Map, Plan and Report - Sewer District #1 Extension #4* prepared by C2AE December 2013

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
TOWN OF MOREAU ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 29.4 - SCENARIO 6**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001

**DATE PREPARED:** 5/20/2014

**LOCATION:**  
TOWN OF MOREAU

**ESTIMATED BY:** KLK  
**CHECKED BY:** JAB

**Scenario 6 - K1 and K2 flow to WCSD#2 WWTP; M1, M2 and M3 flow to GFWWTP**

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL & LABOR	TOTAL
<b>SEWER COLLECTION SYSTEM</b>					
1.	12-Inch Gravity Sewer	1,100	LF	\$ 210.00	\$ 231,000.00
2.	15-Inch Gravity Sewer	10,100	LF	\$ 215.00	\$ 2,171,500.00
3.	8-Inch Forcemain	11,200	LF	\$ 125.00	\$ 1,400,000.00
4.	Pump Stations	3	EA	\$ 350,000.00	\$ 1,050,000.00
5.	Manhole	28	EA	\$ 10,500.00	\$ 294,000.00
6.	Air Relief Valve and Manhole	11	EA	\$ 8,000.00	\$ 88,000.00
7.	RT. 9 Corridor Sewer and Associated Pump Stations <sup>1</sup>	1	LS	\$ 9,876,950.00	\$ 9,876,950.00
				<b>CONSTRUCTION SUBTOTAL</b>	<b>\$ 15,111,000.00</b>
				CONTINGENCIES / GENERAL CONDITIONS 25%	\$ 3,778,000.00
				<b>CONSTRUCTION TOTAL</b>	<b>\$ 18,889,000.00</b>
				ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION 20%	\$ 3,778,000.00
				<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>	<b>\$ 22,670,000.00</b>

<sup>1</sup>From the *Map, Plan and Report - Sewer District #1 Extension #4* prepared by C2AE December 2013

*Note: Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.*

**ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 30**

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001

**DATE PREPARED:** 5/22/2014

**LOCATION:**  
GLENS FALLS WWTP

**ESTIMATED BY:** AFJ  
**CHECKED BY:** TAM

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE/MATERIAL AND LABOR	TOTAL
<b><u>WASTEWATER TREATMENT PLANT UPGRADES</u></b>					
1.	REPLACE MECHANICAL BAR SCREEN <sup>a</sup>	1	EA	\$ 850,000.00	\$850,000.00
2.	AERATION BASIN UPGRADES <sup>a</sup>	1	LS	\$ 2,850,000.00	\$2,850,000.00
3.	INSTALL PRIMARY SETTLING TANK AND EQUIPMENT <sup>a</sup>	2	EA	\$ 1,900,000.00	\$3,800,000.00
4.	INSTALL 300,000 GAL. STORAGE TANK <sup>a</sup>	1	LS	\$ 7,100,000.00	\$7,100,000.00

**ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)**

**\$14,600,000**

<sup>a</sup> Improvement identified in January 2013 LTCP by CDM Smith, mandated by NYSDEC for LTCP Compliance.

**Notes:**

1. Unit prices from GF CSO LTCP, January 2013. Prices originally published in 2011 dollars, and have been adjusted for 2014 dollars.

ADIRONDACK GATEWAY COUNCIL SEWER INFRASTRUCTURE ASSESSMENT  
ESTIMATED COSTS OF IMPROVEMENTS  
TABLE 31

**PROJECT TITLE:**  
ADIRONDACK GATEWAY COUNCIL  
SEWER INFRASTRUCTURE ASSESSMENT

**B&L JOB NO:** 1626.001  
**DATE PREPARED:** 5/21/2014

**LOCATION:**  
WASHINGTON COUNTY SEWER DISTRICT #2 WWTP

**ESTIMATED BY:** AFJ  
**CHECKED BY:** TAM

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	\$/UNIT MATERIAL	\$/UNIT LABOR	UNIT PRICE	TOTAL
<b>WASTEWATER TREATMENT PLANT UPGRADES</b>							
1.	REHABILITATE INFLUENT PUMPS AND PUMP TROUGHS <sup>b</sup>	3	EA	\$ 100,000.00	\$ 40,000.00	\$140,000.00	\$420,000.00
2.	MECHANICAL BAR SCREEN <sup>a</sup>	2	EA	\$ 310,000.00	\$ 124,000.00	\$434,000.00	\$868,000.00
3.	INSTALL VORTEX GRIT REMOVAL SYSTEM <sup>a</sup>	2	EA	\$ 150,000.00	\$ 60,000.00	\$210,000.00	\$420,000.00
4.	REPLACE PARSHALL FLUME <sup>a</sup>	1	EA	\$ 65,000.00	\$ 26,000.00	\$91,000.00	\$91,000.00
5.	INSTALL NEW PRIMARY CLARIFIER (INCLUDING SECONDARY TREATMENT BYPASS) <sup>b</sup>	1	EA	\$ 351,000.00	\$ 140,400.00	\$491,400.00	\$491,400.00
6.	REPLACE AERATION DIFFUSERS <sup>a</sup>	1	LS	\$ 40,000.00	\$ 16,000.00	\$56,000.00	\$56,000.00
7.	INSTALL APG NEUROS BLOWER <sup>a</sup>	1	EA	\$ 80,000.00	\$ 32,000.00	\$112,000.00	\$112,000.00
8.	INSTALL NEW SECONDARY CLARIFIER (INCLUDING SOLAR COVERS) <sup>a</sup>	1	EA	\$ 745,000.00	\$ 298,000.00	\$1,043,000.00	\$1,043,000.00
9.	REPLACE INTERNAL MECHANICALS IN EXISTING SECONDARY CLARIFIER <sup>b</sup>	2	EA	\$ 100,000.00	\$ 40,000.00	\$140,000.00	\$280,000.00
10.	INSTALL NEW SECONDARY RAS PUMP <sup>b</sup>	3	EA	\$ 40,000.00	\$ 16,000.00	\$56,000.00	\$168,000.00
<b>CONSTRUCTION SUBTOTAL</b>							<b>\$3,949,000</b>
CONTINGENCIES / GENERAL CONDITIONS/ OVERHEAD & PROFIT						25%	\$987,000
<b>CONSTRUCTION TOTAL</b>							<b>\$4,936,000</b>
ENGINEERING/ LEGAL/ CONSTRUCTION ADMINISTRATION & OBSERVATION						20%	\$987,000
<b>ESTIMATED TOTAL CONSTRUCTION COST (2014 DOLLARS)</b>							<b>\$5,920,000</b>

<sup>a</sup> Improvement identified in December 2010 LTCP by CDM Smith, mandated by NYSDEC for LTCP Compliance.

<sup>b</sup> Improvement identified by service expansion through Gateway Action Plan Task 4 - Sewer Infrastructure Report

**Notes:**

- Items 6 and 7 are improvements which are currently underway through the Washington County Sewer District II Energy Performance Contract. Facility staff have installed new baffles within the existing secondary clarifiers; these improvements along with items 6 and 7 may eliminate the need for an additional secondary clarifier at this time.
- Unit prices developed using RS Means 2014 and bid tabulations from recent B&L sewer construction projects.