TOWN OF THOMPSON, NY

SULLIVAN COUNTY, NEW YORK

KIAMESHA LAKE WASTEWATER TREATMENT PLANT UPGRADE MAP, PLAN, & REPORT

PREPARED FOR:

TOWN OF THOMPSON, NY

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1.0 Introduction

In August 2020, the Town commissioned the preparation of a Map, Plan, & Report (MPR) to assist local officials and residents in evaluating the public benefit of a proposed upgrade project at the Kiamesha wastewater treatment plant (WWTP). Traditionally, the facility served not only the Kiamesha Lake community, but also treated waste from the Harris Woods, Lake View, Anawana, and Adelaar Resort sewer districts as well. A comprehensive upgrade of the 65 year-old facility is needed in order for the plant to meet recently updated water quality standards, to improve and expand bio-solids processing capacity, and to ensure the plant's long-term permit compliance and viability. Completion of an MPR is required under New York State Town Law 202b and is necessary whenever a town resolves to undertake a project to improve or reconstruct existing facilities on behalf of a sewer district. This revised MPR has been prepared to update the public on changes to the proposed facility upgrade plan and project costs. It also includes an accounting analysis of funding commitments from state and federal agencies and an analysis of the final rate impacts to system users.

1.1 Background

The Town of Thompson, Sullivan County, is located in the foothills of New York State's Catskill Mountain region. The Town owns and operates the Kiamesha Lake wastewater treatment plant (WWTP) one of five treatment facilities owned, operated and maintained by the Town. The Kiamesha plant is located on a 48.3-acre parcel along Rock Ridge Road, northeast of the NYS Route 17/42 interchange.

Since the authorization of the original August 2020 MPR, the Town has approved the formation of the Consolidated Kiamesha Sewer District which combined the Kiamesha Lake, Harris Woods, Lake View, and Anawana Sewer Districts into one district. The Consolidated Kiamesha Sewer District (CKSD) has ± 684 service accounts of which ± 350 (51%) are single-family homes. While there are no large industrial users connected to the system, wastewater from the Adelaar Resort complex and the Route 42 commercial corridor is treated at the Kiamesha Lake WWTP. A map identifying the Kiamesha WWTP site and sewer district boundaries is included as **Figure 1 – Location Map**.

The WWTP is regulated by the New York State Department of Environmental Conservation (NYSDEC) under the State Pollutant Discharge Elimination System (SPDES) Permit program and operates under SPDES Permit No. NY 003 0724. The SPDES permit regulates the volume (capacity) and quality of water (effluent) permitted to be discharged from the facility, and details the daily and monthly water quality monitoring requirements.



The SPDES permit allows for the plant to discharge up to 2.0 million gallons per day (MGD), although the plant typically operates at approximately 50% capacity. Outflows from the plant are received by an unnamed tributary of the Kiamesha Creek. In 2017, the SPDES permit was modified to include discharge limits for fecal coliform and chlorine residual. To meet the updated permit limits, the Town will install ultra-violet (UV) disinfection facilities as part of the planned facility upgrade.

1.2 Reasons for the Project

- The Kiamesha Lake WWTP has been in service for over 65 years and while the equipment, systems and processes have been regularly maintained throughout that period, the plant has exceeded its typical design life expectancy of 35-40 years. In addition, the plant employs older technologies that are costly to repair and maintain due to the difficulties in obtaining replacement parts.
- 2) In order to maintain SPDES permit compliance, the Town is required to install disinfection facilities to meet the updated permit limits for fecal coliform. The plant does not currently have any disinfection facilities to address the modified permit limits. Since the Town intends to employ UV disinfection, chlorine residual limits will not be a factor in the proposed plant upgrade.
- 3) In addition to the Kiamesha Lake WWTP, the Town of Thompson owns and operates four additional wastewater treatment facilities. The Kiamesha facility is the only plant with functional sludge handling and processing equipment. Consequently, sludge from the other Town plants is sent to the Kiamesha facility for processing. Processing the additional sludge strains the plant's aging equipment, making upgrades to the existing system both necessary and prudent.

To address these conditions, the Town is proposing a comprehensive WWTP upgrade with an estimated capital project cost of **\$34,762,361**. The proposed project will upgrade the existing plant and provide new treatment facilities for the estimated loading conditions up to the 2.0 MGD permit limit and will ensure continued compliance with SPDES requirements for both the near and long-term. The August 2020 MPR included a project cost estimate of **\$26,535,721** to complete all proposed upgrades. An adjustment of 25% was added to the construction costs to account for the effects of inflation and the contingency budget was increased from 10% to 20% of construction costs. (Ref. Table 1 - 2020/2023 Cost Comparison Table)

2.0 District Boundary Description

Historically, the Kiamesha WWTP served not only the Kiamesha Sewer District, but also the Adelaar, Anawana, Harris Woods and Lake View Estates districts as well. In 2021, the Town combined the five sewer districts creating the Kiamesha Consolidated Sewer District (CKSD). A boundary map of the CKSD is included herein as **Figure 1**. The map includes the 14 extension parcels added to the sewer district following the initial consolidation.

3.0 Description of Existing WWTP Facilities

The Kiamesha Lake WWTP is an extended aeration, oxidation ditch style, activated sludge treatment plant that achieves biological ammonia removal through nitrification. The secondary treatment process includes two clarification tanks, while tertiary treatment uses sand filtration units to meet discharge permit levels.



Process Diagram from SPDES permit

Influent enters the facility through the influent channel structure where it passes through a mechanically cleaned bar screen, Parshall flume, grit chamber, and flow splitter box. At the flow splitter box, the incoming sewage is divided and conveyed to the three oxidation ditches.

Effluent from the oxidation ditch flows to the secondary clarifiers and then to the sand filter units for tertiary treatment. Tertiary effluent passes through the post aeration tank prior to discharge to an unnamed tributary of the Kiamesha Creek.

4.0 General Plan of Improvements

The comprehensive facility upgrades and improvements will encompass plant buildings, equipment, systems, and site conditions. Significant improvements include installation of a new UV disinfection system, Autothermal Thermophilic Aerobic Digestion (ATAD) system and sludge press, and construction of a new Maintenance and Shop building.

The upgrade will occur within the current property limits and within previously disturbed areas.

Since the approval of the August 2020 MPR, boring tests completed for the new sludge digester facilities determined that soil conditions adjacent to the oxidation ditches are not be suitable for supporting the proposed structure. The site plan has since been revised and the facility relocated to a previously disturbed area of the same parcel approximately 500' NE of the previous location. There will be no net increase in the proposed area of disturbance which will remain less than 1.0 acre.

The following is a summary of the principal proposed upgrades and improvements necessary to adequately treat current demands and provide for future needs. The current proposed layout of these facilities is shown on the site plan (see Figure 2 – Upgrade Site Plan - Revised).

- Influent Channel and Flow Splitter Box Improvements
- Grit Removal Improvements
- Oxidation Ditch Improvements
- Process Air Supply Blower Improvements
- Sand Filter Improvements
- Post Aeration Improvements
- New UV Disinfection System & Building
- Sludge Holding Tank Improvements
- RAS/WAS Pump Improvements
- Aerobic Sludge Digestion Improvements (new ATAD system)
- Sludge Press Improvements
- Sludge Drying Bed Improvements
- Pump Station Process Improvements
- Control Building Improvements
- Grit Removal Building Improvements
- Filter Building Improvements
- Storage Building Improvements
- Blower Building Improvements
- New Work Shop and Maintenance Building
- New emergency generator
- Yard Piping Improvements
- Site Work Improvements
- SCADA Improvements
- Instrumentation Improvements



5.0 Proposed District Operations

The Town of Thompson Water and Sewer Department oversees day-to-day operations, maintenance and administration of all four of the Towns' wastewater treatment facilities. The department is managed by the superintendent and assistant superintendent with support provided by a foreman and account clerk. Additionally, the Kiamesha plant employs a dedicated staff of one 3a-certified licensed operator and three 2a-certified operators.

It is anticipated that additional personnel will not be required to operate or maintain the upgraded facilities, and staffing is anticipated to remain at current levels.

6.0 Statement of Regulatory Review & Approvals Required Prior to Construction

Regulatory review and approvals of the engineering report and design documents are anticipated to be conducted by the NYS Department of Environmental Conservation (DEC) and the NYS Environmental Facilities Corporation (EFC).

Plans will also be submitted to the Delaware River Basin Commission (DRBC), a regional water resource management consortium made up of four states and the US Army Corps of Engineers. The DRBC coordinates with states and local governments on water and wastewater projects throughout the Delaware River Basin region. The WWTP is located in an area identified by the DRBC as "special protection waters" and DRBC review is required for any new treatment facility or expansion of an existing facility with an average daily discharge rate of 10,000 gallons a day or more during any consecutive 30-day period.

Because this action will require the discretionary approval of multiple governmental and quasigovernmental agencies, NYS requires the completion of a State Environmental Quality Review (SEQR) coordinated with all involved, and potentially involved agencies. The SEQR process was initiated at the May 19, 2020 meeting of the Thompson Town Board, at which time the Board declared their intent to serve as lead agency for the Unlisted action. The review determined that the project would not result in any adverse environmental impacts and a negative declaration was subsequently issued for the project on July 10, 2020.

Recent changes to the proposed site plan (i.e., relocation of the digester facilities) has prompted the Town Board to reconsider the potential environmental impacts that may result from the change and, on January 16, 2024, the Town Board reaffirmed the negative declaration previously issued for the project.

7.0 Maximum Amount to be Expended

The maximum amount that is planned to be expended is **\$34,762,361.** A breakdown of costs and a comparison with the 2019 cost estimate is provided in Table 1 below.

	1	2019	2023			
Table 1- Estimated Project Cost Summary	м	ajor Cost Items	Major Cost Items			
1) Construction - All Trades (General Electrical HVAC & Plumbing)						
a) Influent Channel/Flow Splitter Box Process Improvements	\$	34 000	\$ 34,000			
b) Oxidation Ditch D1 & D2 Process Improvements	\$	949 140	\$ 949 140			
c) Oxidation Ditch D3 Process Improvements	¢ \$	330 925	\$ 330 925			
d) Blower Building Process Improvements	Ψ ¢	558 1/6	\$ 558 1/6			
a) Secondary Clarifier Process Improvements	φ \$	1 200	¢ 000,140 \$ 1,200			
f) Filter Building Process Improvements	Ψ ¢	564 450	\$ 564.450			
a UV Disinfaction Process	φ	1 042 250	¢ 1042.250			
g.) OV Distinection Process	ф Ф	1,043,230	\$ 1,043,230 \$ 267,250			
	φ ¢	207,230	\$ 207,230 \$ 255,200			
i.) Aavabia Sludga Digastar Drassas	¢ Q	555,200	\$ <u>355,200</u>			
J. Aerobic Studge Digester Process	Ð Ð	5,171,780	5 5,171,780			
K.) Sludge Dewatering Process Improvements and Sludge Tanker I	ruck \$	1,033,400	\$ 1,033,400			
I.) Sludge Drying Bed Improvements	\$	401,360	\$ 401,360			
m.) Pump Station Process Improvements	\$	46,400	\$ 46,400			
n.) Control Building Improvements	\$	191,305	\$ 191,305			
o.) Grit Removal Building Improvements	\$	28,150	\$ 28,150			
p.) Filter Building Improvements	\$	477,025	\$ 477,025			
q.) Storage Building Improvements (old Blower Building)	\$	40,400	\$ 40,400			
r.) Blower Building Improvements	\$	63,900	\$ 63,900			
s.) WWTP Work Shop/8-Bay Maintenance Building (9,900 SF) - New	Item \$	2,944,100	\$ 2,944,100			
t.) Yard Piping	\$	387,145	\$ 387,145			
u.) Site Work	\$	185,106	\$ 185,106			
v.)SCADA	\$	438,000	\$ 438,000			
w.) Instrumentation	\$	70,950	\$ 70,950			
x.) WWTP Emergency Generator	\$	576,000	\$ 576,000			
y.) Other Expenses	\$	85,200	\$ 85,200			
z.) NYSEFC Contract Compliance	\$	38,500	\$ 38,500			
aa.) Contractors Overhead and Profit (15% Max)	\$	2,442,342	\$ 2,442,342			
ab.) Mobilization/Demobilization/Bonds/Insurance (3% Max)	\$	561,739	\$ 561,739			
Subtotal - All Construction	\$	19 286 363	\$ 19 286 363			
2) Construction Cost Adjustment ¹	ΙΨ	13,200,000	φ 13,200,000			
Subtatel Construction Cost Inflation Adjustment	¢	1 157 190	¢ 5.079.772			
Subtotal - Construction Cost initiation Adjustment	φ ¢	20 442 545	\$ 3,970,772			
2) Other Costs	- P	20,443,545	\$ 25,265,155			
3.) Other Costs	¢	2 524 996	¢ 2,406,622			
	ф Ф	3,531,660	\$ 3,400,032			
b.) Other Town Costs	\$	147,952	\$ 158,453			
Subtotal - Other Costs	\$	3,679,838	\$ 3,565,085			
4.) Project Contingency (% of Construction and Other Costs) ³	- I		1			
Subtotal - Project Contingency (% of All Project Costs)	\$	2,412,338	\$ 5,962,140			
5.) SRF Issuance Costs (1.84% - with hardship, this goes to 0%) ⁴	\$	488,257	\$-			
Total Estimated Project	Total Estimated Project Cost \$ 27,023,978					
Added Construction Cost Inflation Adjustment (an additional 25% increase to the 2019 Inflation Adjustment						
2023 column reflects the actual contract amount. Percentage-based line item: contingency adjusted from 10% in 2019 to 20% in 2023						
Project is eligible for hardship, SRF Issuance Costs do not apply.						

8.0 Cost of Hook-Up Fees Charged by District, If any

The Town intends to continue with its current policy regarding hook-up fees and reserves the right to modify this in the future.

9.0 Detailed Explanation of Costs (How Costs are Computed)

The schedule of rates for capital improvements and operation and maintenance (O&M) expenses for properties included in the Consolidated Kiamesha Sewer District are computed based on the number of rent points assigned to each property. Rent points are determined based on property use and codified in *§194-46 Schedule of Points* of the Town Code. Single family dwellings are assigned 10 debt points each for capital improvements and 10 rent points for operations and maintenance costs.

Costs to the typical user are calculated based on the total operations and maintenance (O&M) costs plus a unit share of any debt service owed by the sewer district. Only those properties within the consolidated district or approved extensions that are connected to public sewer system are responsible for a share of the O&M costs. However, all properties owners -- including vacant land not connected to the sewer system – currently are and will continue to be charged for a share of any debt service associated with district improvements.

Since the plan is for the other Town sewer districts to utilize the sludge handling facilities, users in those districts will be charged an added fee for the increased O&M associated with the processing of the additional septage.

Costs associated with the planned upgrade will be presented based on the receipt of interestfree (0%) financing through the NYSEFC for a term of 30-years, less any state and federal grant monies approved for the project.

9.1 Operations and Maintenance (O&M)

In the Adopted 2024 Town of Thompson Budget, districts users are charged for O&M of the system as follows:

	0&M	Points assigned to	Annual	
	(cost per point)	typical user	Cost	
Kiamesha Consolidated SD	\$48.93	10	\$489.30	

The planned upgrade primarily entails the replacement of existing equipment and the addition of two new processes – UV disinfection and Autothermal

Thermophililic Aerobic Digestion (ATAD). A post-construction increase in O&M costs is expected due to higher energy use and periodic UV bulb replacement and the annual O&M budget is anticipated to increase by approximately 1.7% following completion of the upgrade.

As previously noted, other Town sewer districts historically send sludge to the Kiamesha plant for processing and therefore, users in those districts will be responsible for a share of the annual O&M costs. These costs will be apportioned based on the percentage of septage contributed from each of the other districts.

9.2 Debt Service

In the Adopted 2024 Town of Thompson Budget, district users are charged for debt service as follows:

	Debt Service	Points assigned to	Annual
	(cost per point)	typical user	Cost
Kiamesha Consolidated SD	\$10.15	10	\$101.50

The project cost is estimated at \$34.8 million and the Town is eligible receive hardship financing (0% interest) for a term of 30-years from NYSEFC. The Town has also been notified that the project has been awarded \$1.0 million through the *Water Quality Improvement Program* (WQIP), \$6.38 million through the *Water Infrastructure Improvement Act* (WIIA), and \$13 million through the *Federal Infrastructure Investment & Jobs Act* (aka *Bipartisan Infrastructure Law* (BIL)) resulting in a net principal balance of \$14.42 million.

10.0 Cost to a Typical Single-Family Home

The Kiamesha Consolidated SD is considered to have 1,854 equivalent dwelling units (EDUs). The estimated rate impact to a typical sewer user (i.e. a single-family home (SFH)) in the Kiamesha Consolidated SD is projected to be as follows:

2024 Annual Sewer Costs for a Typical SFH							
		O&M		Debt		Total	
Kiamesha Consolidated Sew	er District	\$	\$489.30 \$101.50		\$101.50	\$590.80	
Estimated Future Annual Sewer Costs for a Typical SFH							
		Addition		ditional Additional			
Current C		Costs	s Debt Service		O&M	Total	
Kiamesha Consolidated SD	Consolidated SD \$590.80		\$141.16		\$12.04	\$744.00	

The above costs and rate impacts are based on the current number and type of district users, 2024 Sewer Rates, pledged state and federal aid, and 0% financing from NYSEFC. Future development will reduce the cost to individual users as the user base increases.

11.0 Method of Finance

At this time, the Town has a commitment from NYSEFC to provide hardship (0% interest) short and long-term financing for the project through the CWSRF Program. Principal costs will be reduced from \$34.7 M to \$14.3 M through \$20.4M in state and federal grants and the remainder will be financed at 0% interest for a term of 30 years.

12.0 Statement as to Benefit Assessment

The costs associated with the debt service from the bond to be secured to finance the facility upgrades, and associated increases in O&M costs will be charged on a benefit basis. Each holder of real property within the sewer district that will benefit from the project, as well as any out of district users, will be levied a share of those costs in accordance with the current Town Code and/or sewer use agreements/contracts. The full cost of the improvements will be assessed against those properties benefitted by the project. All property upon which the assessments are imposed will be benefited by the project, and no properties that are benefited by the project will be excluded.