



December 2024

Facility Plan - 2024

2326150.00

Glenbard Wastewater Authority
Glen Ellyn, Illinois

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1. Executive Summary

1.1. Purpose

Glenbard Wastewater Authority (GWA) is required by its bylaws to update its Facility Plan every five years. The most recent Plan was prepared in 2018 and is now five years old. The focus of the 2018 Facility Plan was to develop a Capital Improvements Plan (CIP) to assist in budgeting for necessary improvements to meet new and pending effluent standards. That plan also reviewed in detail each unit process throughout each facility and identified necessary projects to improve those facilities to meet current and known future requirements.

The purpose of this 2024 Facility Plan (Plan) is to:

- 1) Estimate the additional flows and loads associated with future growth within the planning area during the 20-year planning period.
- 2) Update the cost opinions from the 2018 Facility Plan for previously identified projects to account for cost increases between 2018 and 2024.
- 3) Evaluate, in detail, options to meet future nutrient (phosphorus and nitrogen) limits.
- 4) Weight, score, and rank options to determine the most favorable approach for GWA to meet future nutrient limits.

This Facility Plan intentionally does not:

- 1) Evaluate the adequacy of the existing collection and treatment facilities under the current flows, loads, and regulatory requirements.
- 2) Review the maintenance history and current condition of wastewater treatment units and lift stations, as well as identify any required maintenance repairs/replacements that are necessary.

This work was thoroughly completed in the 2018 Facility Plan and conditions have not changed substantially between 2018 and the writing of this Plan. Refer to the 2018 Facility Plan for details intentionally not included in this plan.

1.2. Pending Regulatory Requirements

The main wastewater treatment facility's (WWTF) National Pollution Discharge Elimination System (NPDES) permit outlines the requirements related to effluent total phosphorus, which are explained in detail in Section 2.2.2. GWA is a member of the DuPage River Salt Creek Workgroup (DRSCW), and the anticipated effluent total phosphorus limits will be dictated by DRSCW's Nutrient Implementation Plan (NIP). The two key points for GWA as it relates to phosphorus are:

- 1) An effluent total phosphorus (TP) limit of 0.35 milligrams per liter (mg/L) seasonal geometric mean for warm weather months as part of an annual 0.5 mg/L TP geometric mean is expected to apply.
- 2) The limit is anticipated to go into effect on May 1, 2040. Facilities needed to meet the phosphorus limit by May 1, 2040, must be constructed and placed into operation no later than May 1, 2038.

It is important to note that no NPDES permits for DRSCW members have been issued with the proposed effluent TP limits included. The Illinois Environmental Protection Agency (IEPA) is currently working through comments received from Environmental Action Groups (EAGs) on the Nutrient Implementation Plan (NIP) prior to issuing permits, but it appears that the recommendations of the NIP are likely to be implemented.

After phosphorus, the next nutrient likely to be subject to effluent limitations is nitrogen. The language in other NPDES permits in the state suggests that if a nitrogen limit were to be implemented addressing total nitrogen (TN), a limit of 10 mg/L is within reason. The key takeaway here is that if GWA is going to substantially modify its existing treatment process to remove phosphorus, it would be highly beneficial to implement a process with the flexibility to remove total inorganic nitrogen (TIN) as well.

1.3. Current and Future Capacity Evaluation

The IEPA places a facility on Critical Review whenever the IEPA determines that the organic or hydraulic loading of any facility is greater than 80% of its permitted or designed capacity. Once under Critical Review, a facility is required to begin planning for its next expansion. As part of this Facility Plan, the 2050 capacity of GWA’s main WWTF was tabulated utilizing GWA’s current influent flow and loading data, as well as using Illinois Recommended Standards for Sewage Works (IRSSW) guidelines for flow and loading per population equivalent (PE). Future flows and loadings were projected based on Chicago Metropolitan Agency for Planning (CMAP) ON to 2050 projections. The results are shown in Table ES 1, and further detail can be found in Sections 3.3 and 3.4.

Table ES 1: GWA 2050 Plant Capacity Calculations

Parameter	Flow (MGD)	5-Day Biochemical Oxygen Demand (BOD5) [ppd]	Total Suspended Solids (TSS) [ppd]
Design Condition	16.02	27,256	32,066
2050 Low Flow Condition (actual per capita flows and loadings)	10.37	13,803	18,580
2050 Loading (% of Design)	65	51	58
2050 Low Flow Condition (IRSSW per capita flows and loadings)	10.60	14,336	18,993
2050 IRSSW Loading (% of Design)	66	53	59

The WWTF is not expected to approach the 80% Critical Review capacity limit for flow or loading in the foreseeable future.

1.4. 2018 Facility Plan Cost Updates

The 2018 Facility Plan identified a program of 12 capital improvements projects that could be completed by GWA. GWA staff, Baxter & Woodman, and Carollo refined that list to five projects that GWA still desires to complete. The 2024 and anticipated construction year Opinions of Probable Construction Cost (OPCC) are tabulated below which include both design and construction engineering costs. The Supplemental Technical Memorandum included as Appendix C details each project to meet the IEPA’s facility planning requirements. Appendix C was submitted to IEPA on December 24, 2024, with the goal of obtaining approval prior to March 31, 2025, to make the projects eligible for funding in IEPA fiscal year 2026 and onward.

Table ES 2: GWA Non-BNR Capital Project OPCCs

Capital Project Name	2024 OPCC	Project Year OPCC
Primary Clarifier Rehabilitation*	--	\$5,595,000
Intermediate Clarifier/Intermediate Pumping Station Rehabilitation (2026)	\$4,686,300	\$4,929,866
Final Clarifier Rehabilitation (2026)	\$7,546,550	\$7,933,809
CSO Facility Rehabilitation (2028)	\$13,780,350	\$15,239,441
Primary Sludge Direct Digester Feed (2026)	\$693,750	\$729,554

*Project bid in 2024

1.5. Liquid Treatment Process Improvements

The regulatory drivers for liquid treatment process improvements are the anticipated NPDES permit limit for effluent TP and a hypothetical future effluent TN or total inorganic nitrogen (TIN) limit. The existing two-stage high purity oxygen activated sludge (TSHPOAS) treatment process cannot meet an effluent TP or TN/TIN limit biologically.

Previous nutrient removal studies have looked in detail at converting much of the existing TSHPOAS system into a new treatment process capable of enhanced biological phosphorus removal (EBPR). GWA staff have previously identified the significant challenges associated with attempting to maintain plant operations during construction of a major conversion and requested that this Plan evaluate options to reduce construction sequencing challenges during the liquid treatment process conversion.

Influent special sampling was completed to estimate wastewater fractionation for steady-state biological process modelling. After two rounds of sampling, an abnormally low soluble chemical oxygen demand (sCOD) to total COD ratio was observed, which could pose challenges for achieving robust EBPR. The special sampling campaign is only a snapshot in time, and regular special sampling to confirm the observed fractionation is recommended.

Initially, the Anaerobic/Oxic (A/O), and Anaerobic/Anoxic/Oxic (A2O) processes were considered as viable EBPR treatment configurations. However, the A/O configuration was removed from further consideration

due to its inability to meet a future TN or TIN limit without another subsequent, major capital improvement project. Similarly, the A2O process was eliminated because the addition of the anoxic (denitrification) step increases supplemental carbon demand without a regulatory driver for doing so. Ultimately, the project team settled on an Extended A/O configuration as the most beneficial configuration for EBPR. The Extended A/O configuration is similar to the A2O configuration, but what would be anoxic volume in the A2O configuration is used as additional anaerobic volume in the Extended A/O. The Extended A/O configuration offers the flexibility to convert to an A2O process in the future if a TN or TIN limit is implemented and eliminates the denitrification step, which keeps supplemental carbon usage to a minimum.

Once the Extended A/O configuration was established as the most favorable EBPR configuration, steady-state process modeling was conducted for the 90-day average low-flow condition and the maximum month condition (Appendix B). The results of the process modeling indicated that substantial (>1,400 gallons per day (gpd) during maximum month conditions) supplemental carbon (assumed to be MicroC 2000) would be required to meet the expected effluent TP limit based on the assumed influent carbon fractionation and primary clarifier performance. As such, a lifecycle cost comparison of chemical coagulant precipitation versus EBPR was conducted.

Assuming current unit prices for MicroC 2000, aluminum sulfate (alum), energy, and sludge removal, annual consumable costs were calculated in a stepwise fashion from purely chemical phosphorus removal (0 gpd MicroC 2000 dose) to purely EBPR (~1,100 gpd MicroC 2000 dose). The results are shown in Figure ES 1.

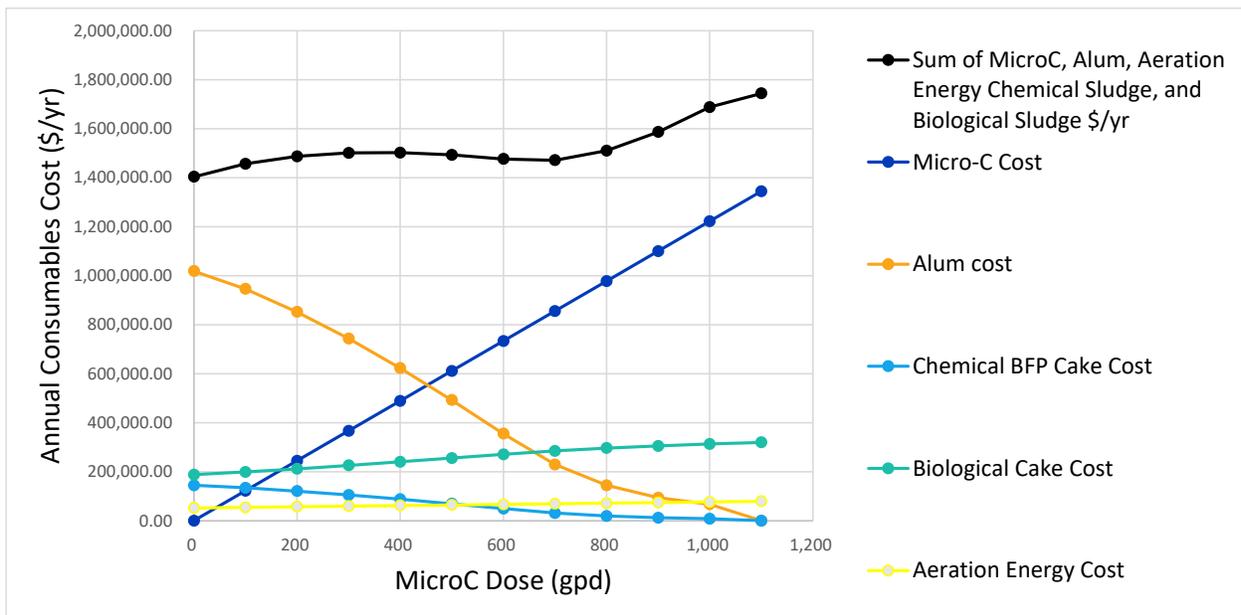


Figure ES 1: Annual Consumable Cost Results Assuming Unit Prices in Table 10

The results indicated that a purely chemical phosphorus removal approach is marginally the most cost-effective solution given the input unit prices. However, consumable costs are extremely similar and equally volatile (within less than 1%) up to approximately 800 gpd of MicroC 2000 addition. An abbreviated sensitivity analysis was conducted holding all other unit prices for consumables constant but increasing the alum price from \$1.40/gallon to \$2.00/gallon. The results are shown in Figure ES 2.

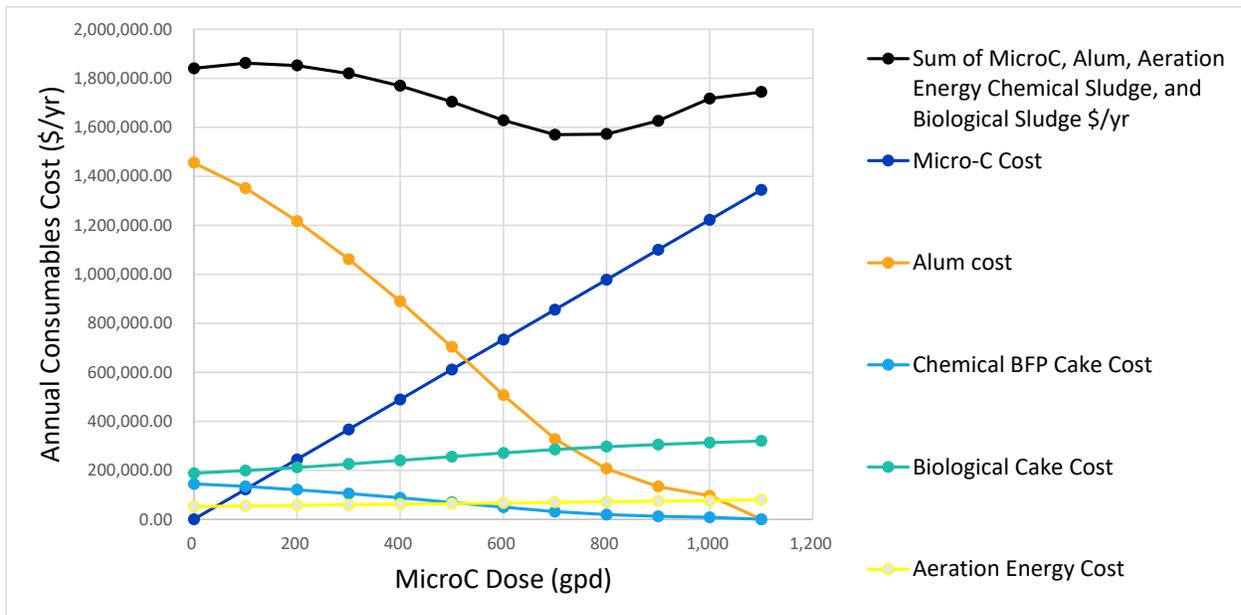


Figure ES 2: Annual Consumable Costs with Alum Increased to \$2/gallon

This analysis demonstrates that even for small increases in alum costs, the most cost-effective solution becomes more heavily reliant on EBPR. It is, of course, impossible to accurately predict changes to unit prices for chemicals between the time of writing of this report and the time that this project will be constructed. Therefore, two principal alternatives were identified for further consideration:

- 1) Rehabilitate the TSHPOAS system and implement only chemical phosphorus removal.
- 2) Construct a new biological treatment process with both supplemental carbon and metal salt polishing chemical feed facilities. This flexibility would allow GWA to determine relative chemical proportions based on current chemical pricing and actual EBPR performance.

Lifecycle costs were evaluated for the two principal alternatives and are described in detail in Section 5.6. The results are summarized in Figure ES 3.

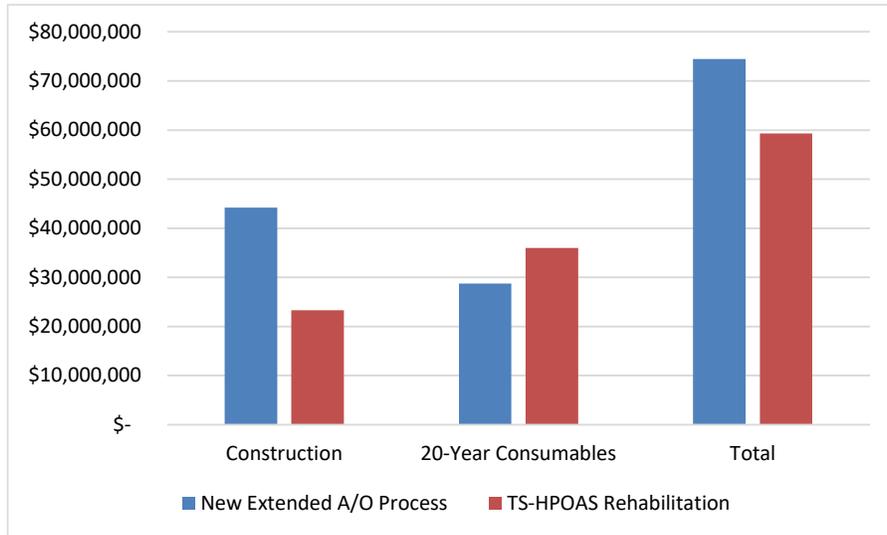


Figure ES 3: Lifecycle Cost Comparison

Clearly, the TSHPOAS rehabilitation has the lower of the two 20-year lifecycle costs. The TSHPOAS lifecycle cost of approximately \$59M is approximately 81% of that for the new extended A/O process. The above figure demonstrates that construction of the new extended A/O process is approximately \$20M more expensive than rehabilitating the existing process, but the 20-year consumable costs are approximately \$7.5M lower.

Next, the capacities of the downstream treatment processes (final clarifiers, anaerobic digesters, and belt filter presses (BFP)) were evaluated at a high-level to ensure that neither the Extended A/O process or TSHPOAS rehabilitation alternatives would require additional unplanned improvements. The capacity of each of the treatment processes appears to be sufficient, regardless of the pursued process alternative.

To comprehensively compare alternatives, GWA staff, together with Baxter & Woodman and Carollo, went through an iterative process to select the criteria upon which the alternatives would be evaluated. The selected criteria are shown in Table 18. A pairwise criteria evaluation was utilized to determine the weights of each criterion as shown in

Figure 11.

The Extended A/O process was compared against the TSHPOAS Rehabilitation, and scores were assigned for each alternative for each criterion. The weighted scores for the two alternatives are shown in Figure ES 4.

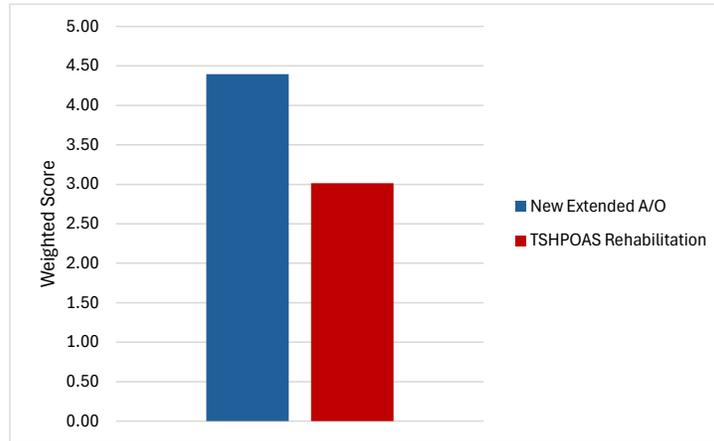


Figure ES 4: Weighted Scoring Summary

It was therefore determined that the Extended A/O process is most favorable with respect to GWA’s long-term goals principally because it provides the flexibility to meet a future TN limit, the new process can be constructed with built-in reliability and redundancy, and it provides the ability to balance a hybrid of chemical and biological phosphorus removal. These non-cost factors together outweigh the additional lifecycle costs associated with the construction of the new Extended A/O process.

Although the anticipated effluent TP limit doesn’t require compliance until 2040, the 2018 Facility Plan identified that the replacement year for much of the existing TSHPOAS system was around the year 2000. Therefore, although the recommended improvements could be constructed later, it is recommended to initiate the design of the recommended improvements no later than May 2030. GWA should monitor the condition of the existing infrastructure and consider initiating design sooner if critical equipment shows evidence of failure. If GWA intends to purchase additional parcels to accommodate the new liquid treatment process, those efforts should be initiated as soon as possible.

Table ES 3: Schedule for construction of recommended improvements

Task	Compliance-Based Schedule	Recommended Schedule
Begin design	May 2033	May 2030
Complete design and bidding	November 2035	November 2032
Begin construction	December 2035	December 2032
Complete construction	May 2038	May 2035
Comply with effluent TP limit	May 2040	May 2037

1.6. Conclusions and Recommendations

- 1) Perform ongoing special sampling to confirm influent wastewater fractionation for design of future liquid treatment process improvements.
- 2) Rehabilitation of the TSHPOAS system commits GWA to purchasing liquid oxygen in the long term. If liquid oxygen prices increase significantly in the future, GWA's only relief is to reconstruct the previous cryogenic plant, which was recently decommissioned due to the cost of rehabilitation.
 - a. Additionally, if the TSHPOAS system is rehabilitated and a TN limit is enforced, the rehabilitated TSHPOAS system would have no way to meet that limit, and a new liquid treatment process would need to be constructed.
- 3) The Extended A/O process alternative excels in the criteria to which GWA assigned the highest priority: Compliance, Reliability and Redundancy, and Operational Impacts/Flexibility. These non-cost factors offset the additional \$14M in estimated 20-year lifecycle cost in the pairwise criteria evaluation.
- 4) The Extended A/O process should be equipped with chemical feed facilities for both supplemental carbon and chemical coagulant precipitation (mainstream and sidestream). These facilities will provide GWA with the ability to bias their reliance on EBPR or chemical phosphorus removal based on future changes in unit prices of chemicals or changes to quantity/quality of secondary treatment carbon loading.
- 5) The proposed Extended A/O process is recommended to be constructed in two phases:
 - a. New primary effluent pump station, anaerobic and aerobic reactors, blower building, and chemical feed facilities for phosphorus removal, only.
 - b. If a TN limit is implemented, conversion of a portion of the previous TSHPOAS reactors to anaerobic volume, and conversion of the previously constructed anaerobic volume to anoxic (addition of nitrified mixed liquor recirculation pumps).
 - i. A planning level cost opinion for the Phase 2 work is \$3M
 - c. This phased approach limits the construction cost of new infrastructure in Phase 1 to what is required to comply with known effluent permit limits. If a TN limit is imposed, the costs for Phase 2 can be justified at a later date.

2. Introduction and Background

2.1. General Background

The Glenbard Wastewater Authority (GWA) is in Glen Ellyn, Illinois and was formed in 1977 as part of an intergovernmental agreement between the Villages of Lombard and Glen Ellyn. GWA’s mission is to operate and maintain municipal wastewater treatment facilities (WWTF), to protect public health, and to protect the environment for the communities it serves.

GWA serves four principal entities: Village of Lombard, Village of Glen Ellyn, a development served by Illinois American Water, and an area in unincorporated DuPage County known as Glen Ellyn Heights. The GWA Facility Planning Area (FPA) is shown in Figure 1.

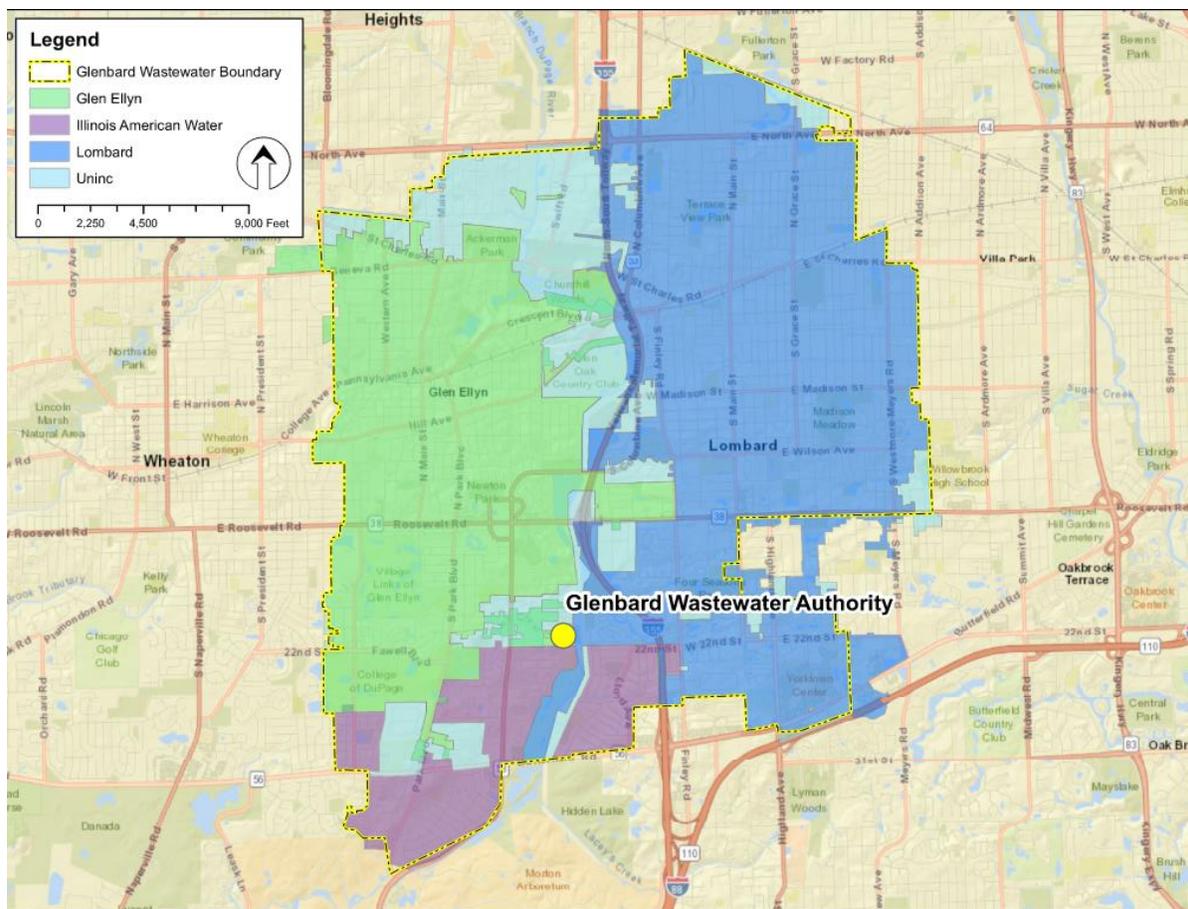


Figure 1: GWA Facility Planning Area (based on CMAP 2016)

GWA maintains five lift stations, a Main WWTF, a Combined Sewage Treatment Facility (CSTF), and interceptor sewers tributary to both treatment facilities. The five lift stations include: Hill Avenue, SRI, St. Charles, Sunnyside, and Valley View.

GWA's two main interceptor sewers are the North and South Regional Interceptors. Both sewers are tributary to the Main WWTF and when flows increase beyond the facility's design maximum flow (DMF), they are automatically diverted to the CSTF.

The Main WWTF is located at 945 Bemis Road in Glen Ellyn and was originally constructed in the 1930s. In 1977, the WWTF was significantly modified and many of the facilities constructed in that project are still in use today. The Main WWTF has a permitted design average flow (DAF) of 16.02 million gallons per day (MGD) and a permitted DMF of 47.0 MGD. An aerial image of the Main WWTF is provided as Figure 2.



Figure 2: Main WWTF Aerial Image

The CSTF is located at 625 W. Glen Oak Road in Lombard. This facility is only used during wet weather and can treat up to 58.0 MGD. When flow exceeds 58.0 MGD, it is diverted to two lagoons each designed to treat 14.5 MGD. An aerial image of the CSTF is provided as Figure 3.

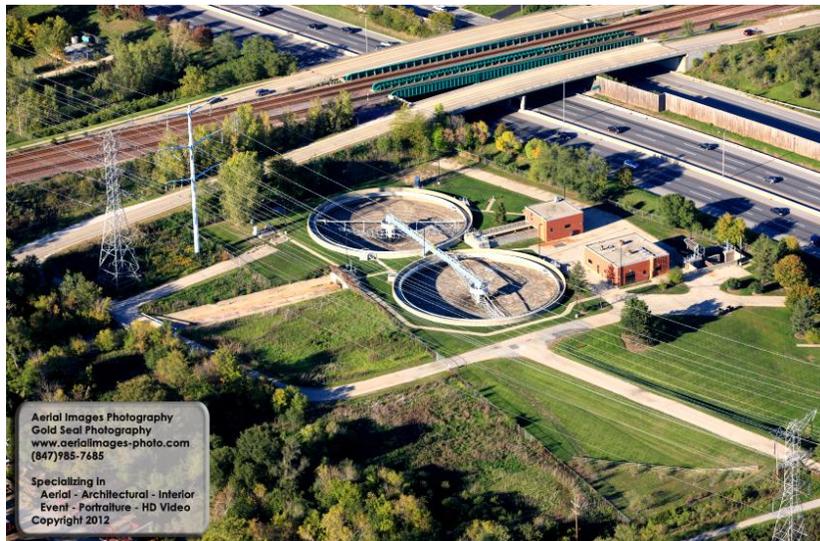


Figure 3: CSTF Aerial Image

2.2. Purpose and Scope

2.2.1. Facility Plan

A Wastewater Facility Plan is a planning document intended to identify and plan for modifications and/or improvements at a treatment facility. They are required by the Illinois Environmental Protection Agency (IEPA) for any wastewater improvements that intend to utilize State Revolving Fund (SRF) Water Pollution Control Loan Program (WPCLP) funds to finance the project.

GWA is required by its bylaws to update its Facility Plan every five years. The most recent Plan was prepared in 2018 and is now five years old. The focus of the 2018 Facility Plan was to develop a Capital Improvements Plan (CIP) to assist in budgeting for necessary improvements to meet new and pending effluent standards. That plan reviewed in detail each unit process throughout each facility and identified necessary projects to improve facilities to meet current and known future requirements.

The purpose of this 2024 Facility Plan (Plan) is to:

- Estimate the additional flows and loads associated with future growth within the planning area during the 20-year planning period.
- Update the cost opinions from the 2018 Facility Plan for previously identified projects to account for cost increases between 2018 and 2024.
- Evaluate, in detail, options to meet future nutrient (phosphorus and nitrogen) limits.
- Weight, score, and rank options to determine the most favorable approach for GWA to meet future nutrient limits.

This Facility Plan intentionally does not:

- Evaluate the adequacy of the existing collection and treatment facilities under the current flows, loads, and regulatory requirements.
- Review the maintenance history and current condition of wastewater treatment units and lift stations, as well as identify any required maintenance repairs/replacements that are necessary.

This work was thoroughly completed in the 2018 Facility Plan and conditions have not changed substantially between 2018 and the writing of this Plan. Refer to the 2018 Facility Plan for details intentionally not included in this plan.

2.2.2. Pending Regulatory Requirements

In the Main WWTF's National Pollution Discharge Elimination System (NPDES) permit (No. IL0021547) an effluent total phosphorus (TP) limit of 1.0 is listed. However, Special Conditions 18.F.1 and 18.F.2 state that the effluent limitation "shall be 1.0 milligram per liter (mg/l) on a monthly average basis, effective September 23, 2028, (if chemical precipitation is utilized, or September 23, 2029, if biological phosphorus removal will be utilized) or in accordance with the implementation schedule included in the Nutrient Implementation Plan (NIP) unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program or limit. Special Condition 18 also requires GWA to participate

in the DuPage River Salt Creek Workgroup (DRSCW). Special Condition 18.H is particularly relevant, it states “...a NIP for the DRSCW watersheds that identifies phosphorus input reductions by point source discharges, non-point source discharges and other measures necessary to remove dissolved oxygen (DO) and offensive condition impairments...” must be submitted to the IEPA that “...shall also include a schedule for implementation of the phosphorus input reductions and other measures...The Agency will renew or modify the NPDES permit as necessary to incorporate NIP requirements.”

The DRSCW finalized its NIP in December 2023. It recommended “that targeted physical projects focused on eliminating DO sags and improving instream habitat be implemented. Recommendations include that (1) WWTFs discharging to Salt Creek and the East and West Branches of the DuPage River adopt an effluent limit of 0.35 mg/L TP (leading to an effective mean effluent concentration of 0.28 mg/L, assuming a 20 percent margin of safety) seasonal geometric mean for warm weather months (May–October) as part of an annual 0.50 mg/L TP geometric mean; (2) WWTFs discharging to the mainstem of the Lower DuPage River adopt an effluent limit of 0.50 mg/L TP (leading to an effective mean effluent concentration of 0.4 mg/L, assuming a 20 percent margin of safety) for warm weather months as an annual geometric mean, rolling 12-month basis; and (3) the Crest Hill STP, which discharges to a tributary on the Lower DuPage River, adopt the 0.35 mg/L TP limit.” The implementation schedule for compliance with the proposed limits is included as Figure 4. The two key points for GWA as it relates to phosphorus are:

- An effluent TP limit of 0.35 mg/L seasonal geometric mean for warm weather months as part of an annual 0.5 mg/L TP geometric mean is expected to apply.
- The limit is anticipated to go into effect on May 1, 2040. Facilities needed to meet the phosphorus limit by May 1, 2040, must be constructed and placed into operation no later than May 1, 2038.

It is important to note that no NPDES permits for DRSCW members have been issued with the proposed effluent TP limits included. IEPA is currently working through comments received from Environmental Action Groups (EAGs) on the NIP prior to issuing permits, but it appears that the recommendations of the NIP are likely to be implemented.

After phosphorus, the next nutrient likely to be subject to effluent limitations is nitrogen. The only nitrogen related limit in GWA's current NPDES permit is ammonia-nitrogen (NH₃). However, language included in Lower Des Plaines Watershed Group (LDWG) member NPDES permits hints at what might apply to GWA in the future. Typically, Special Condition 23 in LDWG member permits reads “The Permittee shall notify the IEPA in writing of any operational deficiencies and corrective measures to be taken if the treatment plant (proposed facility) exceeds a monthly average concentration value of 10 mg/L of Total Nitrogen in the effluent.” This language suggests that if a nitrogen limit were to be implemented addressing total nitrogen (TN), a limit of 10 mg/L is within reason. The key takeaway here is that if GWA is going to substantially modify its treatment process to remove phosphorus, it would be highly beneficial to implement a process with the flexibility to remove total nitrogen in addition to phosphorus.

Figure 4: DRSCW Phosphorus Limit Timelines

Agency Members	IL NPDES	Current Permit TP (1.0 mg/L Monthly Average) Implementation Date (for Chemical Treatment) ^a	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
DuPage River Salt Creek Workgroup (DRSCW)																
Addison - AJ LaRocca	IL0027367	1/1/2029	▲	▲	▲	▲	△	△	△	△	△	△				
Addison - North	IL0033812	1/1/2029	▲	▲	▲	▲	△	△	△	△	△	△				
Bartlett	IL0027618	10/1/2025					△	△	△	△	△	△				
Bensenville	IL0021849	Already at 1.0 mg/L					△	△	△	△	△	△				
Bloomington	IL0021130	10/1/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Bolingbrook #1	IL0032689	9/23/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Bolingbrook #2	IL0032735	7/2/2029	▲	▲	▲	▲	△	△	△	△	△	△				
Carol Stream	IL0026352	10/1/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Downers Grove Sanitary District	IL0028380	8/1/2028	▲	▲	▲	▲	△	△	△	△	△	△				
DuPage County Greene Valley	IL0031844	9/1/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Elmhurst	IL0028746	8/1/2031	▲	▲	▲	▲	△	△	△	△	△	△				
Glenbard WW Authority	IL0021547	9/23/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Glendale Heights	IL0028967	10/1/2025					△	△	△	△	△	△				
Hanover Park	IL0034479	10/1/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Itasca	IL0026280	Already at 1.0 mg/L					△	△	△	△	△	△				
MWRDGC (Egan WRP)	IL0036340	12/9/2030	▲	▲	▲	▲	△	△	△	△	△	△				
MWRDGC (Hanover Park)	IL0036137	12/9/2030	▲	▲	▲	▲	△	△	△	△	△	△				
Roselle - Botterman	IL0048721	9/23/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Roselle - Devlin	IL0030813	9/23/2028	▲	▲	▲	▲	△	△	△	△	△	△				
Salt Creek Sanitary District	IL0030953	5/2/2029	▲	▲	▲	▲	△	△	△	△	△	△				
West Chicago	IL0023469	10/1/2025					△	△	△	△	△	△				
Wheaton Sanitary District	IL0031739	8/2/2026					△	△	△	△	△	△				
Wood Dale - North	IL0020061	8/1/2031	▲	▲	▲	▲	△	△	△	△	△	△				
Wood Dale - South	IL0034274	1/2/2030	▲	▲	▲	▲	△	△	△	△	△	△				

Note:
^a Implementation date is one year later, if WWTP uses biological treatment. Date would be suspended under the NIP unless the column to the right is highlighted green.

Legend

- TP removal to 1.0 mg/l removed from permit
- TP removal to 0.5 mg/l excluded from permit
- ▲ Assessment paid in lieu of TP treatment to 1.0 mg/l
- △ Assessment paid in lieu of TP treatment to 0.5 mg/l
- Capital upgrade period (for construction of facilities to meet lower TP limit)
- Treatment system optimization period (TP removal operational and being optimized to meet 0.35 mg/L TP limit by May 1, 2040)
- WWTP removing TP to 1.0 mg/l

3. Community Needs

3.1. Introduction

This section includes a summary of the GWA planning area, current and future population equivalents, wastewater flows, pollutant loadings, current regulatory requirements, and potential future regulatory requirements. This background information provides the basis for the process modeling described in subsequent sections, which outlines what is required at the Main WWTF for meeting potential future effluent nutrient limits. An in-depth summary of the historical flows and loads evaluation, the methodology followed, and the current and future flows, loads and design concentrations used in the process modelling phase are detailed in the Project Memorandum included as Appendix A.

3.2. General Background

Village of Glen Ellyn

The Village of Glen Ellyn occupies the western portion of the planning area and includes the primary campus of College of DuPage. The Village has an area of roughly 4,300 acres, or 28% of the planning area.

Village of Lombard

The Village of Lombard occupies the eastern portion of the planning area and includes the Yorktown Shopping Center. The Village has an area of roughly 6,350 acres, or 41% of the planning area.

Illinois American Water

Illinois American Water Company (IAWC) is a private water utility that provides drinking water distribution and wastewater treatment services in Illinois. IAWC provides service to a 1,300-acre area within GWA's FPA. The service area is in the southern portion of the FPA and represents approximately 8% of the planning area.

Unincorporated DuPage County

The remaining area (23%) is unincorporated DuPage County. This area is primarily residential, with small areas of open space and golf courses.

3.3. Existing Conditions

3.3.1. Current Population Equivalents (PE)

For the purposes of evaluating wastewater production and usage estimates, a metric called 'population equivalents' or PE, was used. One PE is the equivalent of the wastewater produced by one resident, which is determined using historical data provided by GWA. Historical operating data from OpWorks and previous Facility Plans were reviewed to compare the methodologies used in previous PE estimating efforts, and to update the PE estimate based on the latest data available.

The 2018 Facility Plan summarizes the different methodologies that have been used to estimate existing and ultimate available PE. These methodologies vary dating back to the original Facility Plan and design in 1976 and are last documented in the 2018 Facility Plan.

Later PE estimates were aided by the documentation of all proposed and constructed developments within GWA’s FPA via a tracking spreadsheet, which has been updated continuously since the GWA’s inception. The 2018 PE estimate was developed using several sources, including the development tracking spreadsheet kept by GWA and the 1976 population data from the original facility plan. The data from the tracking spreadsheet was separated by commercial and residential growth. These values were added together to estimate the 2018 PE in Table 1:

Table 1: 2018 FP PE Estimates

Population Type	P.E.
1976 Facility Design Population	60,317
Glen Ellyn PE Growth	11,271
Lombard PE Growth	27,665
Unincorporated DuPage County Growth	1,459
Illinois American Water Growth	2,019
Total Existing PE (2018)	102,731

To estimate current PE in 2024, Table 1 was updated to account for the commercial and residential developments between 2018 and 2024 that were recorded by GWA’s tracking spreadsheet. The result is shown in Table 2, which estimates the total existing PE in the FPA at 104,931. This is generally consistent with expectations for an FPA that is considerably built-out with growth coming from vertical, rather than horizontal, expansion.

Table 2: 2024 FP PE Estimates

Population Type	P.E.
1976 Facility Design Population	60,317
Glen Ellyn PE Growth	12,044
Lombard PE Growth	28,869
Unincorporated DuPage County Growth	1,556
Illinois American Water Growth	2,145
Total Existing PE	104,931
2018 Facility Plan PE (for comparison)	102,731
PE growth from 2018-2023	2,200

3.3.2. Current Influent Flows and Loading

Data on influent flows and contaminant concentrations from 2019 to 2024 were obtained from OpWorks and consolidated in Table 3:

Table 3: GWA Historical Influent Flows and Contaminant Concentrations (2019 to 2024)

Year	Average Flow (MGD)	Annual Change in Flow (%)	Total Rainfall (Inch)*	Increase Rainfall (%)	BOD ₅ (mg/L)	TSS (mg/L)	NH ₃ (mg/L)	TN (mg/L)	TP (mg/L)
2019	14.3	-	49.9	-	148	190	23.8	29.9	4.9
2020**	11.9	-17	35.0	-30	162	212	25.3	32.3	5.8
2021**	10.1	-15	25.0	-29	168	211	26.0	40.2	7.1
2022	11.4	12	34.3	38	152	206	28.1	33.0	7.2
2023	10.8	-5	29.5	-14	149	180	29.8	37.3	7.3
2024 (YTD***)	14.5	34	-	-	152	191	25.7	42.4	6.1
Avg (2019-2023)	11.7	-	34.8	-	156	200	26.6	34.5	6.5

*Rainfall data obtained from GWA as average of RG1 (Valley View Lift Station) and RG2 (CSO Facility) rain gauges.

**RG2 failed at the CSO Facility, no rainfall data available from November 2020 - January 2021.

***2024 YTD flows and loadings captured through 2/22/2024.

Influent to the treatment plant remained steady from 2020 through 2023. The highest flow year (2019) was also the year with the highest recorded precipitation. The 2024 data was recorded year-to-date through February 22, 2024, so the fields for percent increase rainfall and total rainfall were left blank. Five-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) concentrations were stable over this period. Nutrient concentrations increased substantially in 2021, with TP staying above 7 mg/L from 2021-2023. A reason for this increased phosphorus loading could not be identified with GWA staff at the time of planning.

3.3.3. Infiltration

To estimate inflow and infiltration (I/I) within the FPA, the historical dry weather flows per PE and average wastewater received per PE were calculated. The difference between these two values represents the I/I within the FPA.

Table 4 was prepared to summarize dry weather flows using OpWorks data from 2019 through 2023. IRSSW recommends calculating annual low flows using the average of three low flow calendar months (these months are not required to be consecutive). To better reflect the dry weather conditions for the sake of modeling, a 90-day rolling average (RA) flow was calculated, and the minimum value was tabulated for each year. This basis provides a more conservative estimate for evaluating the available capacity of the plant.

Table 4: GWA Historical Dry Weather Flows

Year	90-day RA Low Flow (MGD)
2019	9.55
2020	7.82
2021	8.29
2022	8.34
2023	8.89
Max	9.55

Using the maximum annual 90-day low flow running average flow of 9.55 MGD from 2019 and the calculated 2024 PE of 104,931 from Table 2 results in a dry weather flow per capita of 91 gallons per capita day (GCD). In comparison, the average influent flow per capita is 111.5 GPD, based on the 2019-2023 average influent flow of 11.7 MGD from Table 3 above. The calculated I/I for GWA is thus approximately 20.5 GCD, which is substantially less than the 50 GCD from infiltration that US EPA considers to be excessive.

3.3.4. Inflow

USEPA considers inflow to be excessive when average daily flow during heavy rainfall exceeds 275 GCD (water usage, inflow, and infiltration combined). The maximum daily flow to the treatment plant since 2019 was 43.27 MGD. Using GWA’s 2024 PE of 104,931 results in a per capita flow of 412.37 GCD. This is higher than the US EPA standard of 275 GCD for excessive inflow for separate sanitary sewer systems, which makes sense given that GWA serves a sewer system that is partially comprised of combined sewers.

3.3.5. Current Capacity Evaluation

As stated in Section 3.3.3, the approach for evaluating dry weather flows in this study looked at the maximum of the 90-day running average low flow from 2019-2023. This was calculated to be 9.55 MGD. The average per capita loading under these low flow conditions from 2021-2023 was 0.12 pounds BOD₅ per capita per day (pcd) and 0.16 pounds TSS pcd. Both values are slightly lower than the IEPA reference values of 0.17 pounds BOD₅ pcd and 0.20 pounds TSS pcd. Actual flows and loadings, as well as flows and loadings assuming standard IRSSW per capita values, are tabulated in Table 5.

Table 5: GWA Current Flows and Loadings VS Design Basis

Parameter	Flow (MGD)	BOD ₅ (lbs/day)	TSS (lbs/day)
Permitted Condition	16.02	27,256	32,066
Current Low Flow Condition	9.55	12,542	16,882
Current Loading (% of Design)	60	46	53
Current Low Flow Condition (IRSSW per capita flows and loadings)	10.49	17,838	20,986
Current IRSSW Loading (% of Design)	65	65	65

Using the more conservative approach of 90-day RA low flows and loadings shows that the loading to the plant is still well below the 80% trigger for critical review required by IEPA in terms of flows, organic loading, and solids loading.

Note that this evaluation of plant capacity does not look at the plant’s capacity to meet future nutrient limits, which will require new treatment processes to be implemented to promote phosphorus and nitrogen removal. This will be discussed further in subsequent sections.

3.4. Future Conditions

A PE estimate for 2050 was developed by building off the 2024 PE estimate of 104,931 in Table 2 above, which assumed 2.8 PE/single-family residence (as established in the 2018 Facility Plan). Population growth estimates from Chicago Metropolitan Agency for Planning’s (CMAP) ‘ON TO 2050’ Comprehensive Plan for both the Village of Lombard and Village of Glen Ellyn were used to estimate population growth within the FPA. CMAP’s forecasts show that an approximate 10% increase in residential population is anticipated by 2050 for the Village of Lombard and Village of Glen Ellyn.

GWA contacted the Village of Lombard and Village of Glen Ellyn for information on anticipated non-residential growth in their zoning areas; however, no information could be obtained from either community. In the absence of this information, future PE was modeled to be entirely residential based on the growth projections provided by CMAP. Based on these assumptions, the total PE is expected to be 115,488 in 2050. See Table 6 below for a summary of the 2050 PE estimate.

Table 6: GWA 2050 Projected PE

Population Type	Population Equivalent (PE)
Residential PE Growth (10.06% of current total PE)	10,557
Nonresidential PE Growth*	0
Total Additional Future PE	10,557
Current PE	104,931
Total Anticipated 2050 PE	115,488

*Nonresidential growth estimates could not be obtained from Village of Lombard and Village of Glen Ellyn.

3.4.1. Future Capacity Requirements

The future capacity requirements for GWA were evaluated in this study based on the 2050 PE estimates gathered in Table 6 above. Using these data, and a per capita daily average water usage of 78.4 GCD calculated between 2021 and 2023, the following Table 7 was developed to estimate reserve capacity in 2050.

Table 7: GWA 2050 Plant Flow and Loading Calculations

Parameter	Flow (MGD)	BOD ₅ (lbs/day)	TSS (lbs/day)
Current Rated Design Capacity	16.02	27,256	32,066
Future Low Flow Condition (actual per capita flows and loadings)	10.37	13,803	18,580
Future Loading (% of Design)	65	51	58
Future Low Flow Condition (IRSSW per capita flows and loadings)	10.60	14,336	18,993
Future IRSSW Loading (% of Design)	66	53	59

Even with the conservative low-flow estimates calculated using the 90-day RA approach, the facility is expected to maintain reserve capacity for flow and BOD₅/TSS loading. This remains the case even when applying IRSSW's higher loading guidelines of 0.17 pounds of BOD₅ and 0.20 pounds of TSS pcd.

3.5. Current and Future Nutrient Loading and Design Concentrations

To evaluate the optimal approach to biological nutrient removal (BNR) at the facility, two design flow and load conditions were used: 90-Day Average Low and Wet-Weather Max Month.

3.5.1. 90-Day Average Low

As discussed in the preceding sections, the 90-day average low flow was derived from the three-lowest-flow-month average approach recommended by IRSSW. This method was chosen as a more representative and conservative way to capture average conditions. Current and future nutrient loadings of NH₃ and TP were calculated using the methodology outlined in Sections 3.3 and 3.4. This process began

by identifying the maximum annual 90-day RA load for each parameter from 2019 to 2023 to establish the current load. Future loads were then projected based on population growth estimates and average per capita loading calculated from current conditions. Using the 90-day average low flow in combination with the 90-day average low load for each constituent and flow/loading condition, the design concentrations were back-calculated. This approach was applied to both current and projected future conditions.

3.5.2. Wet-Weather Max Month

The Wet-Weather Max Month flow and load condition was estimated for confirming secondary treatment basin sizing implications under a non-average, more extreme seasonal scenario. The most extreme scenario would be the combination of high flows and high loads occurring simultaneously. Analysis of GWA's historical process data, detailed in section 2.0 of the flows and loads project memorandum in Appendix A, revealed that such peaks in flows and loads can and do coincide with one another; this is particularly the case during the wet-weather periods from March to May. Based on these findings, it was recommended that the Wet-Weather Max Month flow and load condition constitute a combination of the max month flow and max month loads together.

The Wet-Weather Max Month flows and loads were taken as the max annual 30-day RA from the last five full years of data. The future max month flow was calculated from a peaking factor relating the current max month flow (25.25 mgd) and current 90-day low flow (9.55 mgd) and then applied to the future 90-day average low flow (10.37 mgd) to yield a future max month flow of 27.4 mgd. Like the 90-Day Average Low condition, the design concentrations for the Wet-Weather Max Month condition were back-calculated based on the max month flows and loads. For the future load condition, it was assumed that flows and loads increase at the same rate, thus the design concentrations were assumed to remain constant and in combination with the future max month flow were used to calculate future loading.

3.5.3. Current and Future Flows, Loads, and Design Concentrations

A summary of the current and future influent flows, loads, and design concentrations is provided in Table 8. These calculated values were carried forward into the secondary treatment process modeling efforts discussed below.

Table 8 - Summary of Current and Future Influent Flows, Loads, and Design Concentrations

Parameter	Units	90-Day Average Low	30-Day Max Month
Current Influent Flows and Loads			
Influent Flow	mgd	9.55	25.25
Influent Load			
BOD ₅	ppd	12,542	24,376
TSS	ppd	16,882	30,123
NH ₃	ppd	2,038	3,175
TP	ppd	543	1,073
Projected Future Influent Flows and Loads			
Influent Flow	mgd	10.37	27.4
Influent Load			
BOD ₅	ppd	13,664	26,558
TSS	ppd	18,335	32,748
NH ₃	ppd	2,215	4,932
TP	ppd	588	1,166
Calculated Design Concentrations			
BOD ₅	mg/L	158	116
TSS	mg/L	212	143
NH ₃	mg/L	25.6	21.6
TP	mg/L	6.8	5.1

3.6. Regulatory Considerations

As part of this Facility Plan, concepts to modify the existing treatment processes at the plant were evaluated to meet potential future effluent limits for TN and TP. While the capacity analysis in previous sections show that the treatment plant as currently designed is adequate for current and future population demands, this is evaluated only based on flow and BOD/TSS loadings and does not account for changes to the NPDES permit for TN and TP effluent.

The plant is currently not designed for optimal nutrient removal. As part of this study, biological process modeling and chemical phosphorus removal analysis was conducted to evaluate different process configurations for meeting TN and TP effluent limits. Section 5 summarizes the results of these modeling efforts and the conclusions from previous nutrient removal studies conducted for GWA.

4. Cost Updates – Non-BNR Capital Projects, Existing Wastewater Treatment Facility

4.1. General Background

As part of this Facility Plan, cost estimates were prepared for the non-BNR capital improvement projects identified in the 2018 Facility Plan that are still anticipated to proceed. A general description of those capital projects are as follows:

Primary Clarifier & Gravity Thickener Improvements

- Replacement of clarifier mechanisms.
- Replacement of primary sludge pumps.
- Replacement of gravity thickener mechanism.
- Replacement of gravity thickener cover.

Combined Sewerage Overflow (CSO) Improvements

- Replacement of existing mechanical screen with a finer mechanical bar screen.
- Replacement of four raw sewage pumps and motors.
- Replacement of two existing aerated grit blowers.
- Blasting/painting of excess flow clarifier mechanisms.
- Chlorine disinfection upgrades.

Intermediate Clarifier/Intermediate Pumping Station (IC/IPS) Rehabilitation

- Replacement of two intermediate clarifier mechanisms, drive motors, draft tubes, and walkways.
- Replacement of six telescoping valves.
- Re-anchoring of weirs to weir wall.
- Removal and replacement of IPS screw pumps #2 and #3.
- Replacement of screw pump #1 bearings, gearbox, and motor.
- Replacement of existing motor control centers (MCC) and programmable logic controllers (PLC).

Final Clarifier Rehabilitation

- Replacement of four clarifier mechanisms, drives, and gearboxes.
- Blasting and coating of existing launders.
- Rehabilitation of return activated sludge (RAS)/waste activated sludge (WAS) pumping station.

Primary Sludge Direct Digester Feed

- Re-routing of primary sludge force main from co-thickener to anaerobic digesters.
- Cleaning of Anaerobic Digester #1 and disposal of digester contents.

Further descriptions of the project summary, basis of design, costing assumptions, and anticipated project schedules for these non-BNR capital projects are described in the Supplemental Technical Memorandum included as Appendix C.

4.2. Cost Updates to Projects Identified in 2018 Facility Plan

As part of this study, the 2018 OPCCs for non-BNR process improvements were re-evaluated and updated based on current equipment costs and updated price indices. Table 9 includes 2024 and expected construction year cost opinions for each of the previously identified projects. Notably, these costs account for the maximum scope of work that could be undertaken, contingent on the decision regarding the liquid treatment process improvements approach outlined in Section 5.

Table 9: GWA Non-BNR Capital Project OPCCs

Capital Project Name	B&W 2024 OPCC	Project Year OPCC
Primary Clarifier Rehabilitation*	--	\$5,595,000
Intermediate Clarifier/Intermediate Pumping Station Rehabilitation (2026)	\$4,686,300	\$4,929,866
Final Clarifier Rehabilitation (2026)	\$7,546,550	\$7,933,809
CSO Facility Rehabilitation (2028)	\$13,780,350	\$15,239,441
Primary Sludge Direct Digester Feed (2026)	\$693,750	\$729,554

*Actual bid price in 2024

Further descriptions of the project, basis of design, and anticipated project schedules for these non-BNR capital projects are described further in the Supplemental Technical Memorandum appended to this report as Appendix C. Also included in the Supplemental Technical Memorandum are loan repayment schedules for these capital projects based on a 20-year loan term at 2% interest. Note that an OPCC was not prepared for the Primary Clarifier Rehabilitation project, as this project was already advertised to bid during the preparation of this Plan.

5. Liquid Treatment Process Improvements

5.1. General

GWA's Main WWTF discharges to the East Branch of the DuPage River and ultimately to the DuPage River itself. According to the IEPA Clean Water Act Section 303(d) List, the DuPage River does not meet water quality standards for its intended use in most segments. The DuPage River is impaired for aquatic life based on low DO and high phosphorus concentrations. Elevated dissolved phosphorus concentrations are due to a combination of both non-point (such as agricultural runoff) and point (such as WWTF effluent) sources.

GWA, among other communities along the DuPage River, formed the DRSCW in 2005 in order to address concerns about the East and West Branch DuPage River total maximum daily load (TMDL) allocations and the Salt Creek TMDL. The DRSCW is working with the IEPA to issue NPDES permits that will help achieve their goal of improving the water quality within the watershed. The details of expected limits for these permits are outlined in Section 2.2.2.

5.2. Previous Nutrient Removal Studies

Multiple consultants have evaluated options to meet a hypothetical future effluent TP limit as part of previous Facility Plans. Generally, previous efforts have indicated that:

- 1) The TSHPOAS system cannot remove phosphorus biologically.
- 2) Supplemental carbon is likely required to drive biological phosphorus removal in a conventional BNR approach.
- 3) Chemical polishing is likely required in addition to supplemental carbon based on past sampling of influent carbon fractionation.

The 2018 Facility Plan recommended maintaining the existing TSHPOAS system until such a time as TN and NH₃ limits are determined. At the time of writing of that plan, a 1.0 mg/L TP limit was expected to apply in 2025. The 2018 Facility Plan recommended implementing chemical phosphorus removal to address the near-term phosphorus limit. Now, with more clarity on what future effluent TP limits are likely to be, this Plan focuses on detailed process modelling to determine the most beneficial option to comply with future nutrient limits.

Previous nutrient removal studies have looked in detail at converting much of the existing TSHPOAS system into a new treatment process capable of EBPR. GWA staff have identified the significant challenges associated with maintaining existing plant operations during construction of a major (in-basin) conversion and requested that this Plan evaluate options to reduce construction sequencing challenges during the liquid treatment process conversion.

5.3. Biological Process Modelling

Comprehensive steady-state process modelling was conducted to assess the hydraulic and biological loading capacities of the secondary treatment system for compliance with current and anticipated effluent permit limits. The study utilized BioWin (by EnviroSim, version 6.2), incorporating assumptions related to primary and secondary treatment, sludge handling, anaerobic digestion, and sidestream phosphorus sequestration. Special influent sampling campaigns provided key wastewater fractionation data for the steady-state modelling. The sampling data highlighted unique influent characteristics such as an elevated chemical oxygen demand (COD) to BOD₅ ratio (i.e., COD:BOD₅) and a particulate-heavy carbon profile, which poses challenges for EBPR. **A key recommendation emanating from this Plan is to implement routine special sampling to update/confirm the fractionation developed based on the abbreviated special sampling regime that supports the modelling efforts described herein. See Appendix D for recommendations for ongoing special sampling.**

The project memorandum in Appendix B provides a detailed summary of the modelling efforts conducted for this Plan, including a summary of the adopted key performance indicators (e.g., wastewater temperature, primary clarifier performance, aerobic solids retention time (aSRT), etc.). Key findings from the modelling and sensitivity analyses are discussed in the sections below.

5.4. Biological Treatment Alternatives Analysis

The project team identified the nitrifying A/O and A2O configurations as the two conventional treatment alternatives for meeting the future effluent TP limit. Two rounds of steady-state process modelling, with multiple sensitivity analyses, were conducted based on these configurations and the assumptions detailed in previous sections.

The first round of modelling focused on a comparative analysis, with four model scenarios run for each treatment configuration under future 90-day average low flow and load conditions:

- 1) **Scenario 1:** No external carbon addition; internal carbon generation via primary sludge fermentation; no sidestream phosphorus sequestration; DO concentration of 2 mg/L.
- 2) **Scenario 2:** External carbon addition (as MicroC 2000); DO concentration of 2 mg/L.
- 3) **Scenario 3:** External carbon addition (as MicroC 2000), sidestream phosphorus sequestration, and DO concentration of 2 mg/L.
- 4) **Scenario 4:** Similar to Scenario 3 but operated at a reduced DO concentration of 0.7 mg/L.

The following sections summarize the key findings from these modeling efforts. For brevity of this report, the numerical modeling results are presented in Appendix B.

5.4.1. Anaerobic/Oxic (AO) Treatment Configuration

Based on a target secondary effluent orthophosphate concentration of approximately 0.8 mg/L (initially acceptable for comparative analysis with the A2O process but later refined to a lower concentration to match anticipated regulatory limits), the process modeling yielded the following key findings.

- 1) Stable and robust EBPR is unlikely with the assumed influent fractionation unless external carbon is added.
- 2) Primary sludge fermentation offsets only a portion of the external carbon demand required to achieve effluent phosphorus concentrations below 1 mg/L. It is likely not cost effective to construct primary sludge fermentation facilities for such a marginal offset in carbon demand.
- 3) While sidestream phosphorus sequestration does not eliminate the need for external carbon, it significantly reduces the demand. This reduction in external carbon addition (e.g., MicroC 2000) lowers mixed liquor suspended solids (MLSS) concentrations, potentially enabling smaller aeration basins at the same target aSRT.
- 4) Operating at low DO concentrations reduces carbon demand but is insufficient to fully offset the need for external carbon.

The following aeration basin volumes are recommended for the 90-day average low flow and load condition:

- 1) Anaerobic Volume: 1.15 million gallons (MG), approximately 25% of the total recommended aeration basin volume.
- 2) Aerobic Volume: 3.46 MG, approximately 75% of the total aeration basin volume.
- 3) Total Volume: 4.61 MG.

Ultimately, upon discussion with GWA staff, the AO configuration was eliminated from further evaluation because it cannot be readily reconfigured to meet both a future effluent TP and TN limit if a TN limit is imposed in the future.

5.4.2. Anaerobic/Anoxic/Oxic (A2O) Treatment Configuration

Based on the same target secondary effluent orthophosphate concentration of approximately 0.8 mg/L, the process modelling yielded the same findings as the AO process with the following additions/exceptions:

- 1) Additional external carbon would be required to simultaneously meet a future effluent nitrate, or TN limit. This was briefly evaluated but is not a near- or mid-term driver for GWA at this time.

The following aeration basin volumes are recommended for the 90-day average low flow and load condition:

- 1) Anaerobic Volume: 1.15 MG, approximately 20% of the total recommended aeration basin volume.
- 2) Anoxic Volume: 1.15 MG, approximately 20% of the total recommended aeration basin volume.
- 3) Aerobic Volume: 3.46 MG, approximately 60% of the total aeration basin volume.
- 4) Total Volume: 5.76 MG.

Ultimately, the A2O treatment configuration was eliminated from further evaluation because the only value the anoxic volume provides is for denitrification to meet a potential future effluent TN limit.

Operating in an A2O configuration in the absence of a TN limit increases the supplemental carbon demand increasing operational expenses for no reason in the short term.

5.4.3. Extended AO Treatment Configuration

Following discussions with GWA staff, the project team collaboratively selected an “extended AO” treatment configuration for further evaluation, including costing, site layouts, and additional modelling under future wet-weather maximum month conditions. This configuration addresses the infrastructure requirements for implementing EBPR in the coming years, with additional tankage volume allocated for in-line mixed liquor fermentation. If future effluent nitrogen limits require denitrification, a portion of the unaerated volume can be converted to anoxic volume, enabling a transition to the A2O configuration without significant reconfiguration.

While initial planning for this configuration assumed the aeration basin volumes outlined in the A2O subsection, including a combined unaerated volume of 2.3 MG dedicated to anaerobic conditions, the project team determined that additional modelling was needed. This further analysis was aimed at evaluating whether additional basin volume would be required to meet wet-weather maximum month conditions. Based on this sensitivity analysis, the following supplemental carbon dosage and aeration basin volumes are recommended for wet weather maximum month flow and load condition:

- 1) MicroC 2000 Dose-Response Curve (future wet-weather maximum month):
 - a. Developed dose-response curves for MicroC 2000, plotted in Figure 6 of Appendix B, assuming no primary sludge fermentation and no sidestream phosphorus sequestration as a worst-case scenario.
 - b. Extremely high Micro-C volumes (~2,000 gpd) are required to drive effluent soluble-P lower than 0.5 mg/L under maximum month conditions
- 2) Anaerobic Volume: 4.27 MG (approximately 40% of the total aeration basin volume).
 - a. If future nitrogen limits are implemented, a portion of this volume can be converted for anoxic conditions under an A2O configuration.
- 3) Aerobic Volume: 6.4 MG (approximately 60% of the total aeration basin volume).
- 4) Total Volume: 10.67 MG.

This total volume of 10.67 MG represents an increase of approximately 4.9 MG compared to the aeration basin volume required to treat the 90-day average low-flow and load conditions.

5.4.3.1. *Extended AO Treatment Configuration with Sidestream Chemical Phosphorus Removal*

Consideration of the maximum month conditions resulted in nearly doubling the biological reactor sizes that are required for the 90-day low average conditions. To reduce the reactor sizes that need to be constructed (since facilities need to be constructed that can meet maximum month conditions), sidestream phosphorus removal was re-evaluated under maximum month conditions.

Assuming chemical phosphorus removal would be implemented to drive centrate TP down to 50 mg/L, the following supplemental carbon dosage and reactor sizes were established.

- 1) MicroC 2000 Dose-Response Curve (future wet-weather maximum month):
 - a. Developed dose-response curves for MicroC 2000, assuming no primary sludge fermentation and sidestream phosphorus sequestration (via alum addition).
 - b. The Micro-C dosage was reduced to 1,400 gpd to drive effluent soluble-P lower than 0.5 mg/L under maximum month conditions.
- 2) Anaerobic Volume: 3.47 MG (approximately 40% of the total aeration basin volume).
 - a. If future nitrogen limits are implemented, a portion of this volume can be converted for anoxic conditions under an A2O configuration.
- 3) Aerobic Volume: 5.20 MG (approximately 60% of the total aeration basin volume).
- 4) Total Volume: 8.67 MG.

This 2.0 MG reduction in reactor volumes also relies on allowing the MLSS in the aeration tanks during maximum month conditions to rise to 4,100 mg/L. In addition to reducing the reactor sizes, sidestream phosphorus removal also reduces the amount of Micro-C that needs to be added to meet the effluent TP limit. Table 10 demonstrates the incremental cost savings of implementing sidestream phosphorus removal. Overall, sidestream phosphorus removal reduces daily chemical costs by \$963 per day, which indicates that it is economically favourable under maximum month conditions.

Table 10: Incremental Cost of Sidestream Phosphorus Removal at Max Month

Parameter	Biological Supplemental Carbon (Micro-C)	Sidestream P-Precipitation (Alum)
<i>Dose change (gpd)</i>	-640	+771
<i>Unit price</i>	\$3.35	\$1.40
<i>Extended (\$/day)</i>	-\$2,140	\$1,080
<i>Net chemical savings (\$/day)</i>	-	\$1,060
<i>Sludge production change (ppd)</i>	-2,000 (biological)	1,950 (chemical)
<i>Cake production change (CY/day)</i>	-4.3	7.23
<i>Net Change (CY/day)</i>	-	2.93
<i>Net sludge disposal cost (\$/day)</i>	-	\$97
<i>Overall savings (\$/day)</i>	\$963	

5.5. Chemical Phosphorus Removal

As discussed in Section 5.4, it is theoretically possible to meet expected future effluent TP limits via EBPR, but significant quantities of supplemental carbon would be required. Another option exists, which is to replace or supplement biological treatment with chemical phosphorus removal.

For each point on the 90-day average low flow and load MicroC 2000 dose response curve, plotted in Figure 5, the theoretical dose of alum to obtain an effluent soluble phosphorus concentration of 0.25 mg/L was calculated utilizing the following assumptions:

- 1) The Al:P molar ratio for alum dosing was assumed to be 3.0 regardless of the initial phosphorus concentration.
- 2) All alum that was assumed to react with phosphorus was assumed to form aluminium phosphate (Al(PO)₄).
- 3) All excess alum was assumed to form aluminium hydroxide (Al(OH)₃).

Ultimately, GWA seeks to meet the future effluent TP limit in the most cost-effective manner possible. As such, annual consumable costs were calculated for each point along the MicroC 2000 dose response curve. The unit prices shown in Table 11 were assumed.

Table 11: Consumable Unit Price Assumptions

Consumable	Assumed Unit Price
Aluminum Sulfate (\$/gal)	1.40
MicroC 2000 (\$/gal)	3.35
Dewatered Cake Disposal (\$/CY)	32.95
Liquid Oxygen (\$/100 CF)	0.41344
Energy (\$/kWh)	0.10

The results of the annual consumable cost analysis are shown in Figure 5.

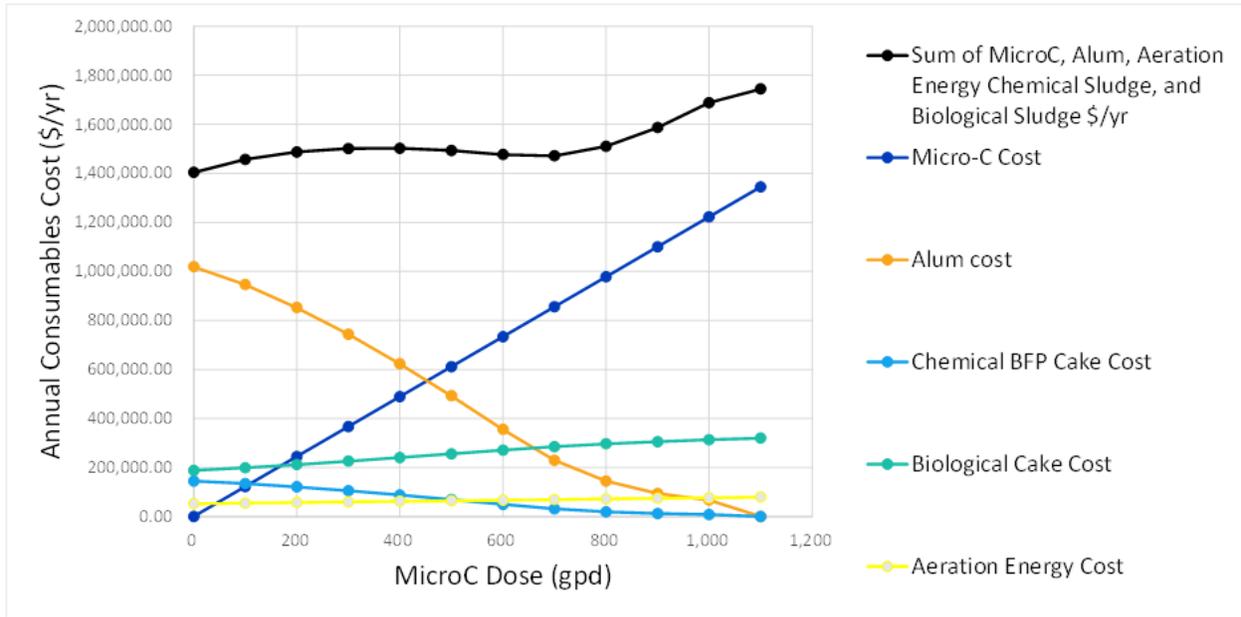


Figure 5: Annual Consumable Cost Results Assuming Unit Prices in Table 10

Figure 5 indicates that relying entirely on chemical phosphorus removal is marginally the most cost-effective solution given the input unit prices. However, consumable costs are extremely similar and volatile (within less than 1%) up to approximately 800 gpd of Micro-C 2000 addition.

To evaluate the sensitivity of the results to the input unit prices, a sensitivity analysis was run assuming that the price of alum increases to \$2/gallon while holding the other unit prices shown in Table 11. The results are shown in Figure 6.

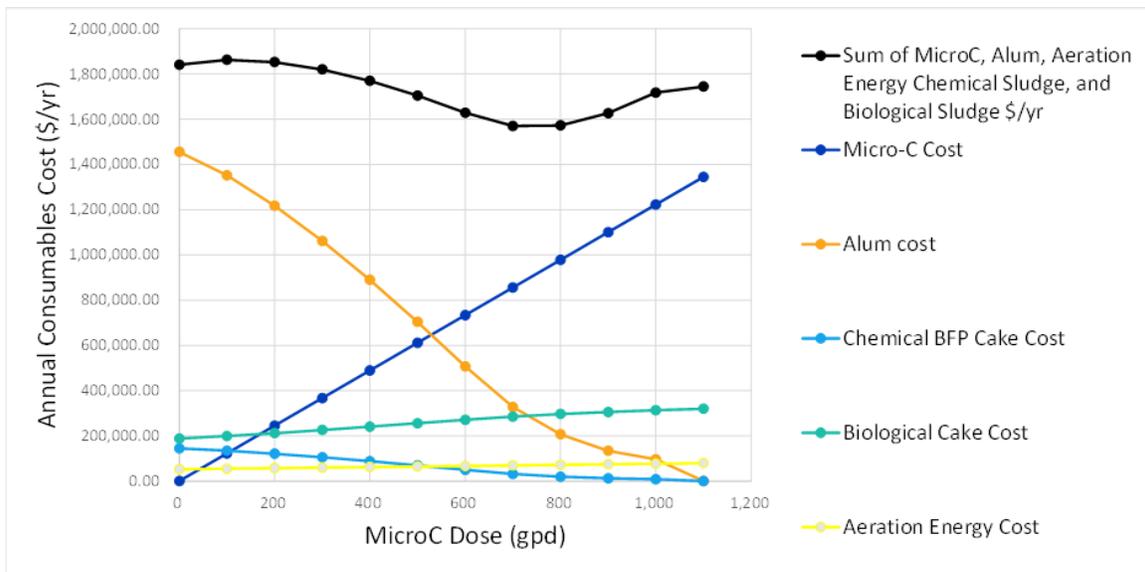


Figure 6: Annual Consumable Costs with Alum Increased to \$2/gallon

Figure 6 demonstrates that even for small increases in alum costs, the most cost-effective solution becomes more heavily reliant on EBPR. It is, of course, impossible to accurately predict changes to unit prices for chemicals between the time of writing of this report and the time that this project will be constructed. Therefore, two principal alternatives were identified for further consideration:

- 1) Rehabilitate the TSHPOAS system and implement only chemical phosphorus removal.
- 2) Construct a new biological treatment process with both supplemental carbon and metal salt polishing chemical feed facilities. This flexibility would allow GWA to determine relative chemical proportions based on current chemical pricing and actual performance of the biological system.

5.6. Lifecycle Cost Analysis

Clearly, the capital costs associated with rehabilitation of the existing TSHPOAS system and construction of a new EBPR system are substantially different. For that reason, a lifecycle cost analysis was performed considering the opinion of probable cost for construction of requisite infrastructure, as well as ongoing expenses for chemicals (supplemental carbon and/or metal salt), energy, sludge disposal, and liquid oxygen (TSHPOAS rehabilitation, only). This analysis is described in the subsections that follow.

5.6.1. New Extended A/O Process

Generally, the construction costs for a new extended A/O process include:

- 1) New primary effluent pump station to divert primary clarifier effluent to the new aeration basins.
- 2) 5.2 MG of aerobic aeration tank volume and 1.74 MG of anaerobic aeration tank volume.
 - a. The construction of the remainder of the 1.74 MG of unaerated volume included in the Extended A/O process modelling was deferred to a “Phase 2” to reduce construction costs. That volume would only ever need to be constructed if a future TN limit came into play and an A2O process was required.
- 3) Blower building.
- 4) Chemical feed systems that could be located in the existing Cryo Building, which is no longer used.
- 5) Site piping to connect the PE Pump Station to the new aeration basins, and the new aeration basins to the existing final clarifiers.

The consumable costs include the items and unit prices shown in Figure 5. The lowest annual consumable cost was utilized in projecting the 20-year consumable costs with no inflation of unit prices. Changes in unit prices are highly likely, but any efforts at projecting future prices would be a guess and could result in erroneous inflation of costs. Further, a parcel acquisition cost of \$1.2M was included in this analysis as shown and described in the following section. The lifecycle cost analysis for this alternative is shown in Table 12. A detailed OPCC is included as Appendix E.

Table 12: Extended A/O Process Lifecycle Cost

New Extended A/O Process (Max Month Sizing)	
Description	Probable Cost
GENERAL CONDITIONS	\$770,000
SITE WORK	\$1,130,000
MODIFY TSHPOAS AS ANAEROBIC BIO P TANKS (DEFERRED TO PHASE 2)	\$0
EXTENDED A/O PROCESS TANKS	\$16,206,390
CHEMICAL FEED BUILDING - LOCATED IN EX CRYO BUILDING	\$510,000
BLOWER BUILDING	\$2,495,000
PE TRANSFER PUMP STATION	\$3,000,000
<i>Sub-Total</i>	\$24,110,000
<i>Electrical (20%)</i>	\$1,420,000
<i>Instrumentation (10%)</i>	\$710,000
Construction Sub-Total	\$26,240,000
<i>Contingency (30%)</i>	\$7,870,000
<i>Overhead, Bonds, Profit, Insurance (15%)</i>	\$3,940,000
<i>Construction with Contingency</i>	\$38,050,000
<i>Engineering, Legal, Admin (13%)</i>	\$4,950,000
Probable Project Cost	\$43,000,000
<i>20-Year Carbon, Metal Salt, and Sludge</i>	\$28,738,975
<i>Parcel Acquisition</i>	\$1,200,000
Total 20-Year Costs	\$72,938,975

5.6.1.1. New Extended A/O Process Preliminary Layouts

One key issue not fully addressed in previous process modelling efforts was ensuring uninterrupted plant operations during the construction of a new EBPR process. Earlier plans focused on repurposing the existing TSHPOAS tankage as aeration tanks. In conversations with GWA staff, it was mutually agreed that modifying the existing TSHPOAS system while maintaining compliance with current NPDES permit limits would be very challenging during construction. This would lead to an extended construction schedule, higher costs, and higher risk of a permit violation. These discussions with GWA staff highlighted the preference for constructing new, independent aeration tanks to maintain operations during construction, manage costs, and mitigate risk of permit violations. This approach would minimize downtime, requiring only a brief shutdown to transition from the existing treatment process to the new system. There are two options that were discussed with GWA for locating the new infrastructure: on existing GWA property and

on adjacent parcels to be acquired by GWA. The only feasible location for new aeration basins within the existing fence line is in the location of the existing Administration Building and Maintenance Garage. The major downside to this location is that it would require the construction of a new Administration Building and Maintenance Garage, estimated conservatively at approximately \$6.3M. Conversely, although the Main WWTF is located in a residential area, GWA already owns 21W518 Bemis Road (at the corner of Bemis Road and Sunnybrook Road) and could purchase the two lots to the west (21W534 and 21W546 Bemis Road) to accommodate the new aeration tanks. Based on recent sale prices in the area, GWA advised using a price of \$1.2M to acquire both parcels. Preliminary layouts are shown in Figure 7 and Figure 8. For the sake of the lifecycle cost evaluation, it was assumed that new parcels would be acquired. The intent of the layout shown in Figure 7 was to verify that it is possible to construct the requisite infrastructure on property already owned by GWA in the event that parcel acquisition is prevented from proceeding or becomes cost prohibitive.

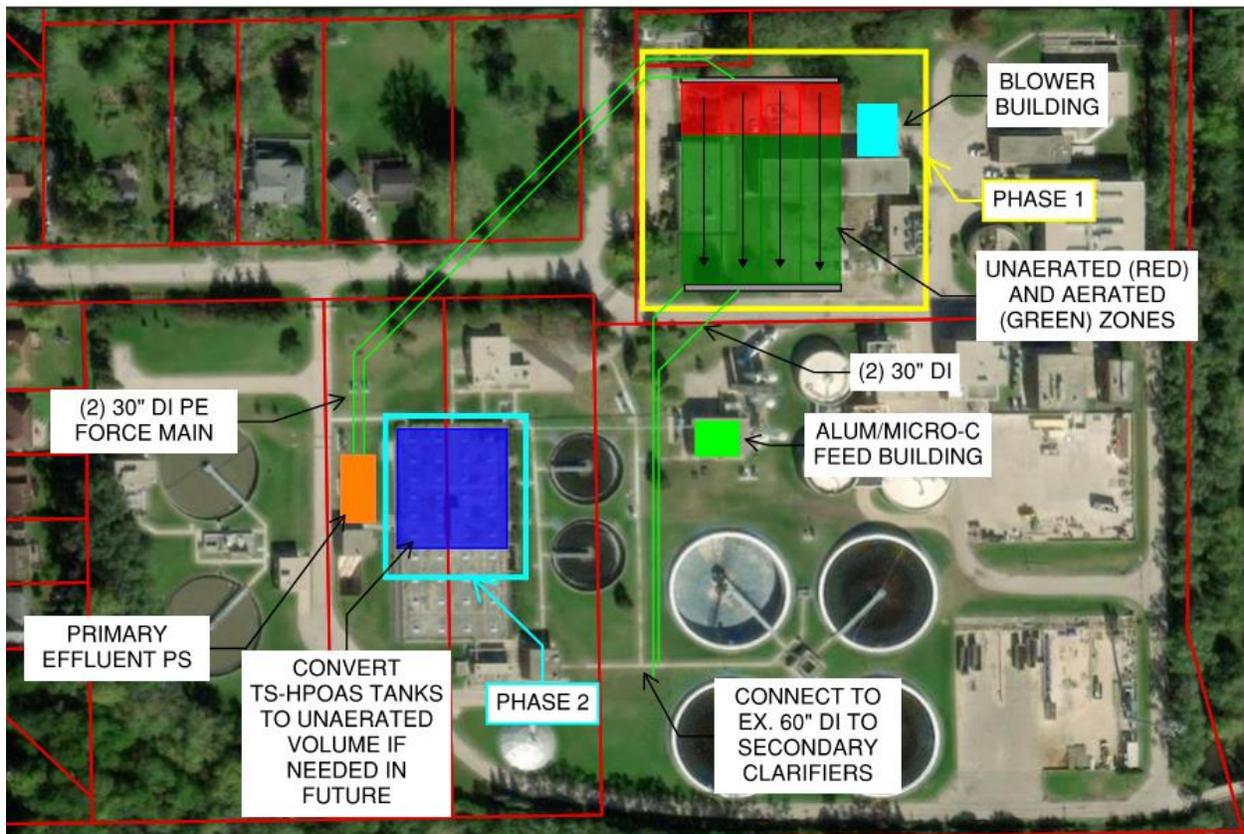


Figure 7: New A/O Process Layout on Existing GWA Property

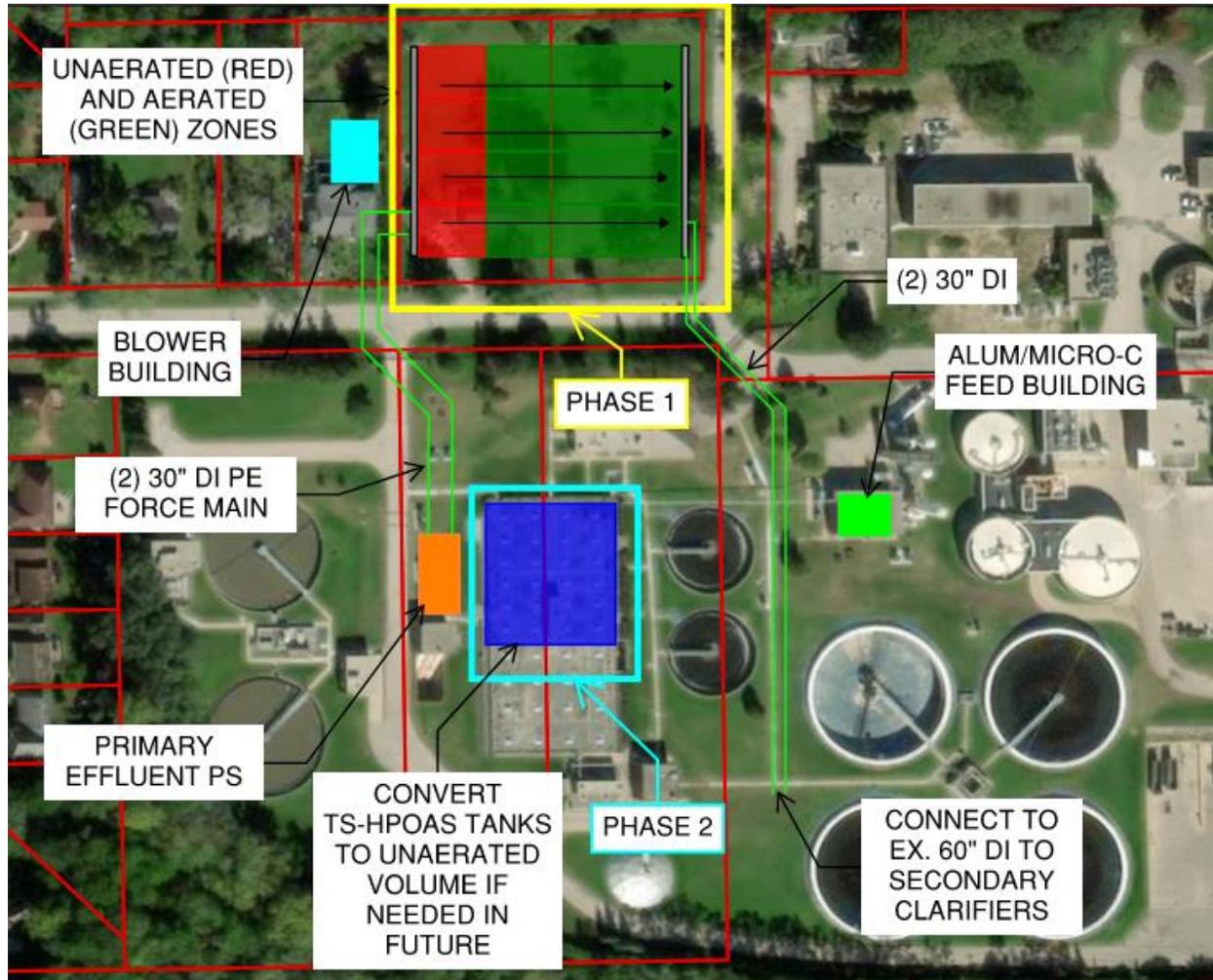


Figure 8: New A/O Process Layout Assuming Parcel Acquisition

5.6.2. Rehabilitate Existing Two-Stage High Purity Oxygen Activated Sludge System

Another option to meet a future effluent TP limit is to rehabilitate the existing TSHPOAS system and rely entirely on chemical phosphorus removal. The costs to rehabilitate the TSHPOAS system were evaluated in the 2018 Facility Plan and updated as part of this plan. The TSHPOAS rehabilitation costs are tabulated in Table 13. A detailed OPCC is provided as Appendix E.

Table 13: Two-Stage High Purity Oxygen Activated Sludge Lifecycle Cost

TSHPOAS Rehabilitation	
Description	Probable Cost
GENERAL CONDITIONS	\$1,690,000
SITE WORK	\$390,000
CHEMICAL FEED BUILDING - LOCATED IN EX CRYO BUILDING	\$510,000
INTERMEDIATE CLARIFER REHABILITATION	\$1,870,000
INTERMEDIATE PUMPING STATION REHABILITATION	\$1,360,000
UNOX DECK AND MIXER REHABILITATION	\$4,420,000
<i>Sub-Total</i>	<i>\$10,240,000</i>
<i>Electrical (20%)</i>	<i>\$2,050,000</i>
<i>Instrumentation (10%)</i>	<i>\$1,020,000</i>
Construction Sub-Total	\$13,310,000
<i>Contingency (40%)</i>	<i>\$5,320,000</i>
<i>Overhead, Bonds, Profit, Insurance (15%)</i>	<i>\$2,000,000</i>
<i>Construction with Contingency</i>	<i>\$20,630,000</i>
<i>Engineering , Legal, Admin (13%)</i>	<i>\$2,680,000</i>
Probable Project Cost	\$23,310,000
<i>20-Year Oxygen Costs</i>	<i>\$7,500,000</i>
<i>20-Year Metal Salt and Chemical Sludge</i>	<i>\$28,487,616</i>
Total 20-Year Costs	\$59,297,616

5.6.3. Lifecycle Cost Comparison

Clearly, the TSHPOAS rehabilitation has the lower of the two 20-year lifecycle costs. The TSHPOAS lifecycle cost of approximately \$59.3M is approximately 81% of that for the new extended A/O process. Figure 9 demonstrates that construction of the new extended A/O process is approximately \$20M more expensive than rehabilitating the existing process, but the 20-year consumable costs are approximately \$7.5M lower. While cost is a factor in selecting the most favorable alternative, a more comprehensive evaluation is provided in Section 5.8.

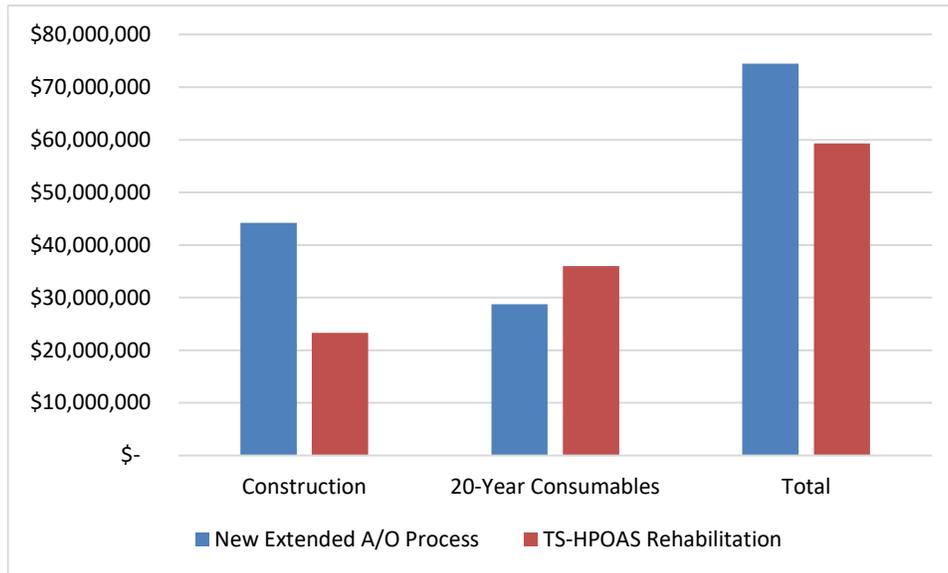


Figure 9: Lifecycle Cost Comparison

5.7. Downstream Process Impacts

Before moving on to a comprehensive ranking and prioritizing exercise, it is important to ensure that there are no downstream impacts of either the new extended A/O process or the TSHPOAS rehabilitation with chemical phosphorus removal that would require downstream improvements. The following subsections evaluate the capacities of the existing secondary clarifiers, anaerobic digesters, and belt filter presses (BFPs), respectively.

5.7.1. Existing Final Clarifier Capacity

A state point analysis (SPA) was conducted at the future wet weather maximum month condition to estimate, at a high level, if the existing units can handle the anticipated future BNR conditions. The main driver for this analysis is that a new Extended A/O process would need to operate at higher MLSS concentrations than the existing TSHPOAS system does currently. This analysis assumed the following conditions:

- 1) Maximum aeration basin MLSS of 4,000 mg/L.
- 2) 30-minute sludge volume index (SVI) of 150 milliliters per gram (mL/g).
- 3) The “Daigger and Roper” sludge settling correlation model.
- 4) Four clarifier units in service, with a total surface area of approximately 57,256 square feet (ft²).
- 5) A non-ideality factor of 1.15.
- 6) RAS flow of 80% of the facility’s influent flow.

Figure 10 presents the resulting SPA plot, which suggests that the existing clarifiers can treat a peak flow of approximately 37.5 MGD, corresponding to a calculated solids loading rate (SLR) of 39.4 pounds per square foot per day (lb/day/ft²) and surface overflow rate (SOR) of 655 gallons per day per square foot

(gpd/ft²). For comparison, the calculated SLR and SOR at the permitted design max flow of 47 MGD are 45 lb/day/ft² and 821 gpd/ft², respectively. IRSSW allows SLRs up to 50 lb/day/ft² and SORs up to 1,000 gpd/ft². Although the SPA suggests clarification failure may occur short of design maximum flow, the existing final clarifiers meet all settling requirements outlined in IRSSW. Therefore, additional secondary clarifier capacity is likely not required. It is recommended, however, that the designer of the final clarifier improvements project complete a detailed analysis (potentially including computational fluid dynamics) to ensure that any improvements made to the final clarifiers will be sufficient to handle potential future process changes. Some options to enhance the settling performance of the existing final clarifiers include Stamford baffles, energy dissipating inlets, and sludge densification (e.g., inDENSE™ hydrocyclones).

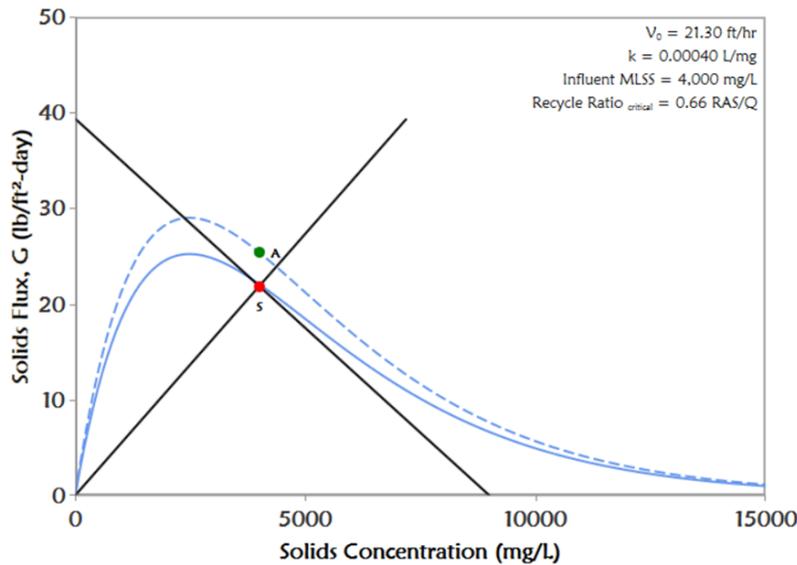


Figure 10: State Point Analysis Plot Estimating Peak Flow Capacity of Existing Secondary Clarifiers

5.7.2. Existing Anaerobic Digester Capacity

GWA currently utilizes three digesters – two primary digesters in parallel that both flow to a secondary digester for further processing. Table 14 summarizes the physical properties of the digesters.

Table 14: Anaerobic digester properties

Digester Volumes		
	Quantity	Unit
Digester 1: Primary Digester	933,000	Gallons
Digester 2: Primary Digester	525,000	Gallons
Digester 3: Secondary Digester	375,000	Gallons
Total Volume of Digesters	1,833,000	Gallons
	245,053	Cubic Feet

Digester capacity was evaluated for the new Extended A/O process under 90-day low average conditions, max month without sidestream phosphorus sequestration, and max month with sidestream phosphorus sequestration. Additionally, capacity was evaluated for a purely chemical phosphorus removal system. The results are summarized in Table 15. Note that the listed hydraulic and solids loadings include the volume of the primary digesters, only.

Table 15: Anaerobic Digester Capacity Evaluation

	Biological Phosphorus Removal			Chemical Phosphorus Removal
	90-Day Low Average	Max Month	Max Month w/ Sidestream P	Max Month
Primary sludge (ppd)	6,128	8,782	8,782	8,782
Waste Activated Sludge (ppd)	12,362	21,183	18,486	12,503
Chemical sludge (ppd)	-	-	1,945	5,653
Primary digester loading (ppd VSS/kcf)	70	112	102	81
Primary digester loading (gpd)	99,876	129,563	130,025	128,693
Primary digester HRT (days)	14.60	11.3	11.2	11.3

IRSSW suggests that completely mixed digesters can be loaded at an organic loading rate up to 80 pounds per day volatile suspended solids per 1,000 cubic feet (ppd VSS/kcf). For the 90-day low average, the organic loading rate is roughly 70 ppd VSS/kcf, which meets the IRSSW requirements. For maximum month biological conditions, the organic loading rate without sidestream phosphorus removal is approximately 112 ppd/kcf and with sidestream removal it is 100 ppd/kcf. Organic loading rates around 100 ppd/kcf are generally well tolerated. The Water Environment Federation (WEF) Manual of Practice (MOP) 11 suggests organic loading rates between 100 and 200 ppd/kcf are typical. GWA currently co-digests fats, oils, and grease with their primary and waste activated sludge and has not observed digester upsets until they get into organic loading rates around 150 ppd/kcf.

The 90-day low average hydraulic retention time (HRT) of 14.6 days is on the low end of the typical 15-20 day range that is customary in the United States. For the maximum month conditions, HRTs fall to around 11.25 days depending on the scenario. WEF MOP 11 supports intermittent digester HRTs as low as 10 days.

One important note is regarding the mass of primary sludge that is shown in all of the maximum month conditions. The BioWin modelling shows potential primary sludge capture of approximately 17,000 ppd of primary sludge during maximum month flows and loadings. However, current plant data indicate that on average, only 4,000 ppd of primary sludge is pumped to the digesters, irrespective of changes to flows and loadings. The primary sludge pumping operations are being adjusted as part of the ongoing primary clarifier improvements project. A key consideration during maximum month conditions is for GWA staff to monitor the mass of primary sludge pumped to the digester to prevent organic overload. Overall, it seems that additional digester capacity will not be necessary to support the liquid treatment process modifications required to meet the effluent TP limit.

5.7.3. Belt Filter Press Capacity Evaluation

Downstream of the anaerobic digesters, GWA employs two BFPs to dewater digested sludge prior to disposal. The BFPs were rebuilt in 2022 and have the capabilities outlined in Table 16. Notably, GWA operates their BFPs seven days per week, and six – eight hours per day. The decision was made in 2022 to rebuild the BFPs rather than replace them with larger (and potentially more units) because any additional BFP capacity would require a new building, which was cost prohibitive at the time.

Table 16: Belt Filter Press Performance Data

Belt Filter Presses		
Qty	2	
Size	2	meters
Solids Loading Capacity/Unit	800	lb/m/hr
Solids Loading Capacity/Time	3,200	lb/hr
Hydraulic capacity/m	75	gpm/m
Hydraulic capacity	300	gpm
Operating Schedule	8	hours/day
	7	days/week
Solids Loading Capacity/Op Day	25,600	lb/op day
Solids Loading Capacity/Op Week	179,200	lb/op week
Hydraulic Capacity/Op Day	144,000	gal/op day
Hydraulic Capacity/Op Week	1,008,000	gal/op week

Assuming 55% volatile solids reduction in the digesters and 1.75% total solids coming out of the digesters, the capacity of the existing BFPs under 90-day low average and maximum month conditions for both EBPR and chemical phosphorus removal are shown in Table 17.

Table 17: Existing BFP Capacity Evaluation

	Biological Phosphorus Removal			Chemical Phosphorus Removal
	90-Day Low Average	Max Month	Max Month w/ Sidestream P	Max Month
Digester VS out (ppd)	6,100	9,834	8,985	7,100
Digester TS out (ppd)	11,035	17,946	18,232	18,260
BFP hydraulic loading/week	529,245	860,694	874,428	875,793
BFP hydraulic loading capacity	1,008,000	1,008,000	1,008,000	1,008,000
BFP solids loading/week	77,243	125,618	127,623	127,822
BFP solids loading capacity	179,200	179,200	179,200	179,200

Table 17 demonstrates that the existing BFP capacity is sufficient under maximum month conditions for both EBPR and chemical phosphorus removal.

5.8. Ranking and Prioritizing

GWA staff, together with Baxter & Woodman and Carollo, went through an iterative process to select the criteria upon which alternatives would be evaluated. Ultimately, GWA decided to utilize the criteria shown in Table 18.

Table 18: Evaluation Criteria

Criteria	Evaluation Criteria with Definitions/Descriptions	
1	Compliance	Ability to meet current and known future permit limits.
2	Lifecycle Costs	Conceptual level capital cost estimate for implementing the alternative at the WWTF + conceptual level O&M cost estimates for implementing the alternative at the WWTF. O&M costs include energy, consumable chemicals, labor, and materials
3	Ease of Construction Phasing/Sequencing	The extent to which the alternative will impact the existing plant operations during construction.
4	Reliability and Redundancy	Ability of the alternative to absorb issues. Power outages, natural gas outages, flow swings, changes in process conditions, etc., are considered.
5	Operational Impacts/ Flexibility	This criterion considers impacts on current operations, operational complexity of the alternative, and the ability of the alternative to create or maintain flexible platforms to accommodate future improvements. The relative impacts to workforce staffing and required operator knowledge are included in the assessment relative to this criterion.
6	Opportunity Cost - Land Use Model	This criterion considers the opportunity cost of using space on-site that could otherwise be beneficially used for other activities/infrastructure. Alternatives receive higher scores where they have the lowest opportunity-cost and make the most beneficial use of space that is consumed on-site.

The criteria were weighted relative to one other using a pairwise comparison analysis. The matrix generated based on the qualitative rankings and discussions that were used to develop the relative weights is shown in

Figure 11.

Criteria	Compliance (conventional pollutants and nutrients)	Lifecycle Costs (CAPEX + OPEX)	Ease of Construction Phasing/Sequencing	Reliability and Redundancy	Operational Impacts/Flexibility	Opportunity Cost - Land Use Model	Score	Relative Weights
Compliance (conventional pollutants and nutrients)	1	5.00	3.00	2.50	4.00	5.00	20.5	33.9%
Lifecycle Costs (CAPEX + OPEX)	0.20	1	3.00	0.33	0.33	1.00	5.9	9.7%
Ease of Construction Phasing/Sequencing	0.33	0.33	1	0.25	1.00	1.00	3.9	6.5%
Reliability and Redundancy	0.40	3.00	4.00	1	2.50	5.00	15.9	26.3%
Operational Impacts/Flexibility	0.25	3.00	1.00	0.40	1	5.00	10.7	17.6%
Opportunity Cost - Land Use Model	0.20	1.00	1.00	0.20	0	1	3.6	6.0%
Total							60	100%

Figure 11: Pairwise Criteria Matrix

Once criteria were developed and prioritized, the New Extended A/O Process and TSHPOAS alternatives were compared against one another to determine the most favourable liquid treatment process alternative. Alternatives were scored on a one to five scale with a score of three representing the baseline. Scores lower than three represent alternatives that are less favourable for a given criterion than baseline, and scores higher than three are more favourable for a given criterion than baseline.

Detailed scoring is provided in Table 19 and the weighted scores for the New Extended A/O and TSHPOAS Rehabilitation are shown in Figure 12.

It was therefore determined that the New Extended A/O process is most favourable with respect to GWA’s long-term goals.

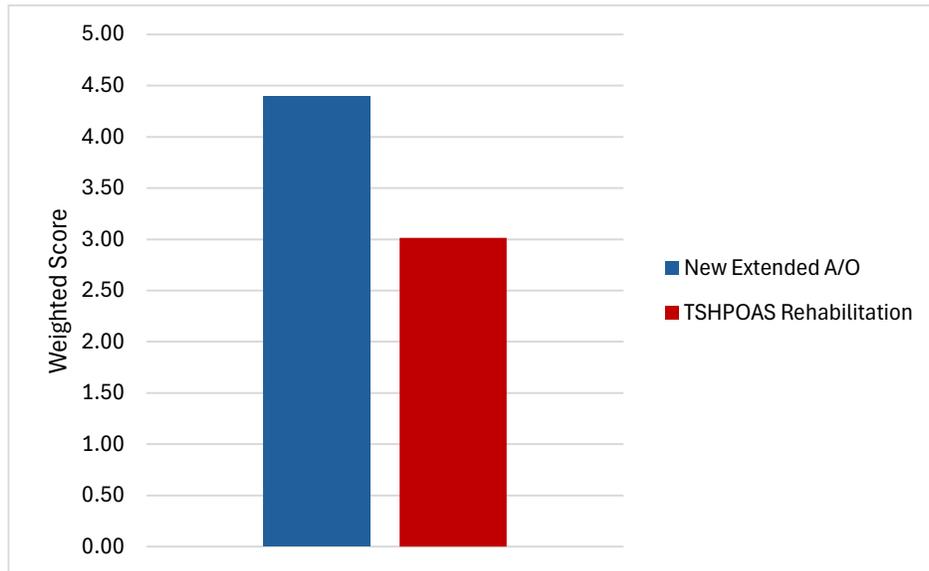


Figure 12: Weighted scoring summary

Table 19: New Extended A/O Versus TSHPOAS Rehabilitation Detailed Comparison

		Criterion						Total Raw Score	Total Weighted Score
		Compliance	Lifecycle Costs	Ease of Construction Phasing/Sequencing	Reliability and Redundancy	Operational Impacts/Flexibility	Opportunity Cost - Land Use Model		
-	Criterion Weight	34%	10%	6%	26%	18%	6%		
Alternative Description									
Baseline	<i>Score</i>	3	3	3	3	3	3		
	<i>Justification</i>	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline		
New Extended A/O	<i>Score</i>	5	2	2	5	5	3	22	4.40
	<i>Justification</i>	Can meet both TP and potential future TN limit.	More than 20% more costly than lowest.	Requires transitioning away from existing process which will be disruptive.	New treatment process design for full redundancy. New technology	Allows for both chem-P and bio-P. If chemical prices change, can adjust preferred treatment modality.	Builds new infrastructure with options to repurpose existing in the future		
TSHPOAS Rehabilitation	<i>Score</i>	3	5	2	3	2	4	19	3.01
	<i>Justification</i>	Can only meet TP. Would require overhaul if TN limit is imposed.	Lowest lifecycle cost alternative.	Rehab-in-place of existing infrastructure. Difficulties maintaining operations while active reactors are rehabilitated.	Provide redundancy. Limited manufacturers/supplies of TSHPOAS equipment	Locks GWA into a long-term future utilizing HPO. If liquid oxygen prices increase, GWA has no relief	Makes beneficial use of existing infrastructure and leaves space for future expansion.		

5.9. Conclusions and Recommendations

- 1) Perform ongoing special sampling to confirm influent wastewater fractionation for design of future liquid treatment process improvements.
- 2) Rehabilitation of the TSHPOAS system commits GWA to purchasing liquid oxygen in the long term. If liquid oxygen prices increase significantly in the future, GWA's only relief is to reconstruct the previous cryogenic plant, which was recently decommissioned due to the cost of rehabilitation.
 - a. Additionally, if the TSHPOAS system is rehabilitated and a TN limit is enforced, the rehabilitated TSHPOAS system would have no way to meet that limit, and a new liquid treatment process would need to be constructed.
- 3) The Extended A/O process alternative excels in the criteria to which GWA assigned the highest priority: Compliance, Reliability and Redundancy, and Operational Impacts/Flexibility. These non-cost factors offset the additional \$14M in estimated 20-year lifecycle cost in the pairwise criteria evaluation.
- 4) The Extended A/O process should be equipped with chemical feed facilities for both supplemental carbon and chemical coagulant precipitation (mainstream and sidestream). These facilities will provide GWA with the ability to bias their reliance on EBPR or chemical phosphorus removal based on future changes in unit prices of chemicals or changes to quantity/quality of secondary treatment carbon loading.
- 5) The proposed Extended A/O process is recommended to be constructed in two phases:
 - a. New primary effluent pump station, anaerobic and aerobic reactors, blower building, and chemical feed facilities for phosphorus removal, only.
 - b. If a TN limit is implemented, conversion of a portion of the previous TSHPOAS reactors to anaerobic volume, and conversion of the previously constructed anaerobic volume to anoxic (addition of nitrified mixed liquor recirculation pumps).
 - i. A planning level cost opinion for the Phase 2 work is \$3M
 - c. This phased approach limits the construction cost of new infrastructure in Phase 1 to what is required to comply with known effluent permit limits. If a TN limit is imposed, the costs for Phase 2 can be justified at a later date.

APPENDIX A

Project Memorandum Flows, Loads, and Design Concentrations

GLENBARD WASTEWATER AUTHORITY

Facility Plan - 2024

Project No.: 202917
Date: January 31, 2025
Prepared By: George Kontos
Reviewed By: Bryan Coday, PhD, PE & Lindsey Busch, PE
Subject: Flows, Loads, and Design Concentrations

This document is released for the purpose of information exchange review and planning only under the authority of Lindsey I. Busch, January 31, 2025, Illinois PE No. 062-069452.

1.0 INTRODUCTION

This project memorandum reviews historical influent flows and loads for the Glenbard Wastewater Authority's (GWA) Water Resource Recovery Facility (WRRF) and develops projections for flows and loads through the planning period. The future flows and loads form the basis of the design criteria and the alternate flow and loading conditions that were fed into the process model for the secondary treatment/biological nutrient removal (BNR) evaluation.

This memorandum provides a comprehensive summary of the historical flows and loads evaluation, the methodology followed, and the current and future flows, loads, and design concentrations for the two averaging periods chosen. An abbreviated walkthrough of the flow and load analysis is included in the main body of the Project report. A detailed review of the process modeling effort utilizing the resulting flow and load inputs is included as a separate project memorandum and complementary attachment to the final Project report.

2.0 HISTORICAL WASTEWATER FLOWS AND LOADS

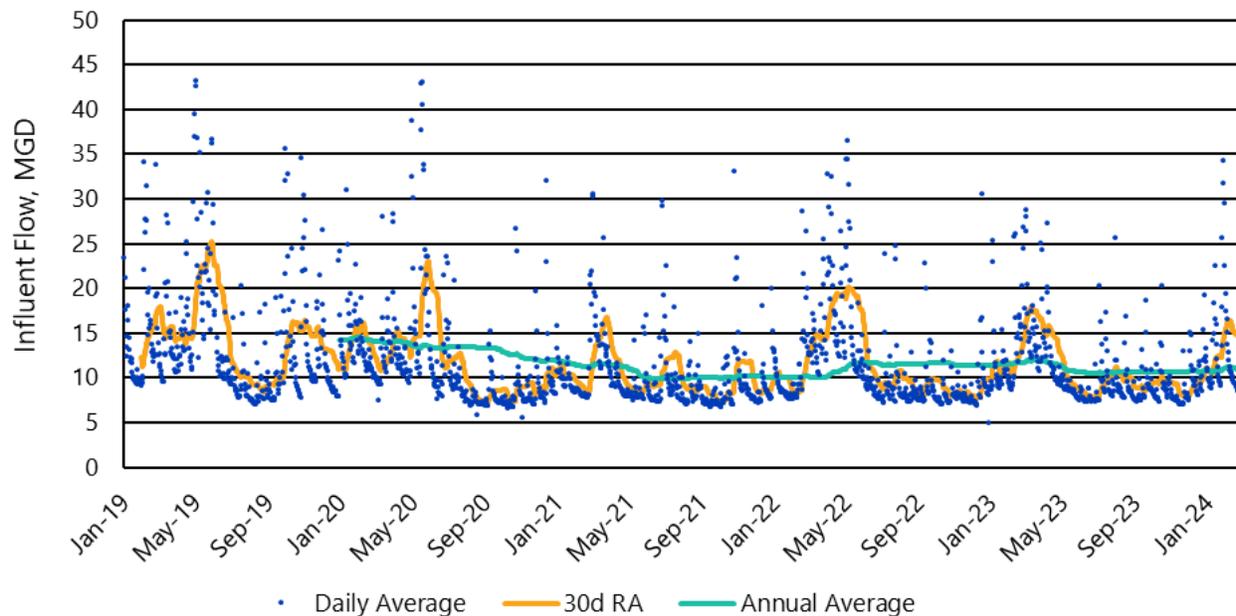
Historical data from January 1, 2019, to February 22, 2024, was analyzed to determine the appropriate averaging periods and calculate the current and future projected flow and loading conditions to carry forward into process modeling. Overviews of the flow and loads analyses are covered in the sections that follow for the constituents of interest: influent flows, 5-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), nitrogen as ammonia (NH₃), and total phosphorus (TP).

2.1 Influent Flows

Figure 1 presents the daily average influent flow data for the entire 5+ year data period. The influent flow displays notable volatility during wet weather periods and an overall decreasing trend over time. The observed decrease in influent flow could be attributed to dryer conditions in the region in recent years, consistent with observations at other facilities in the area along with limited service area population growth since the service area communities are already near full buildout. Daily average flows have typically ranged from approximately 7 million gallons per day (mgd) to 16 mgd with short term peaks

upwards of 25 mgd and beyond. The long-term average flow over the entire 5+ year dataset is 11.75 mgd.

The influent flows exhibit a repeating seasonal pattern, with peak flows occurring during the spring season between the months of March and May, followed immediately by the dry weather season. The dry weather season has become increasingly protracted in recent years, extending from early summer to mid-winter between the months of June and January. The 30-day rolling average (RA) illustrates this development, whereby the minor peaks during this part of the year, observable in years past, such as in 2019 and 2020, have noticeably dampened to blend with the surrounding data, further evidence of the overall downward trend of influent flows.



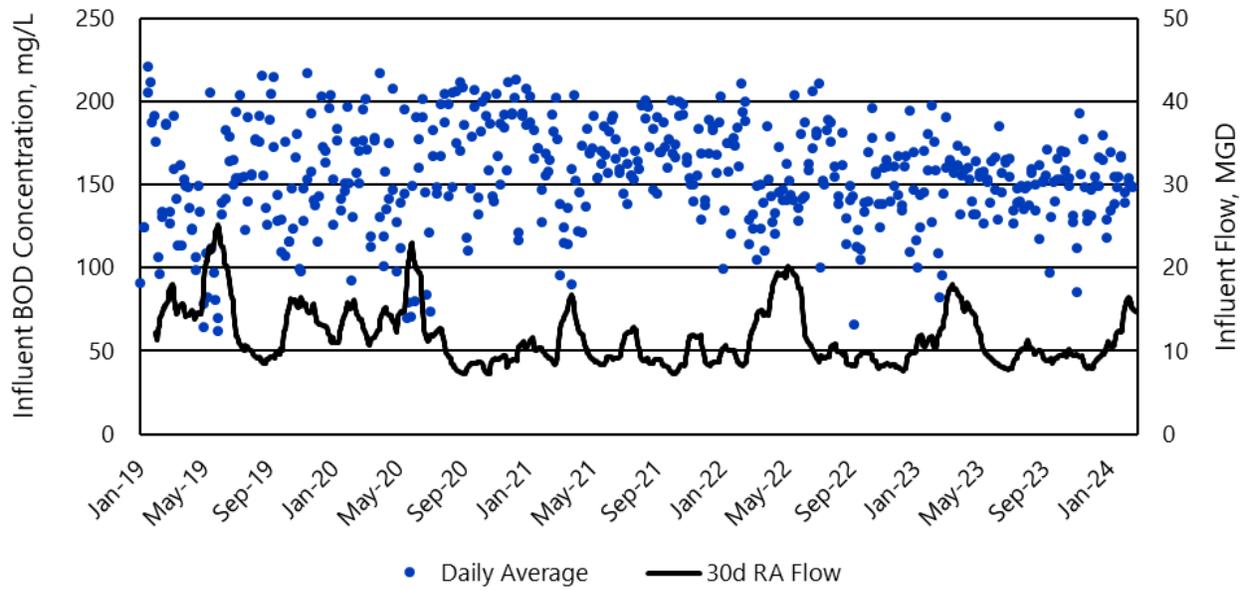
[GWA_Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 1 Historical Influent Wastewater Flows

2.2 Influent Loads and Concentrations

2.2.1 5-day Biochemical Oxygen Demand

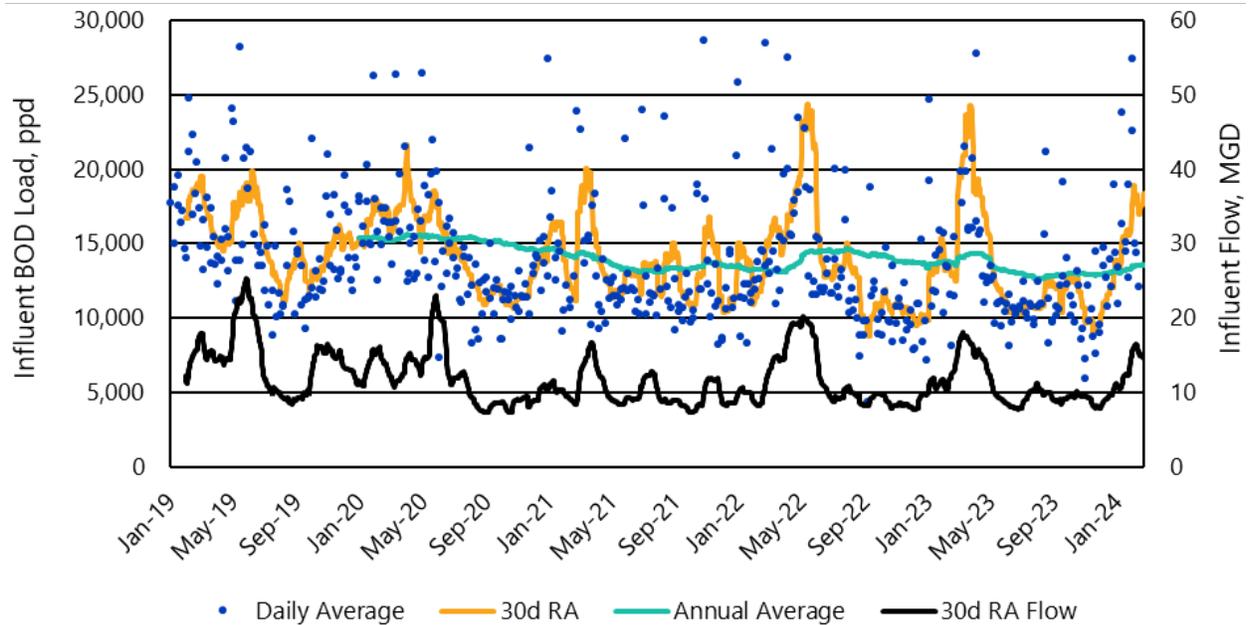
The influent BOD₅ concentrations for the entire 5+ years of data are presented in Figure 2. Influent concentrations have typically ranged from approximately 80 to 210 milligrams per liter (mg/L) with a long-term average over the full dataset of 155 mg/L. The daily average concentration data is noisy and scattered across the dataset making trends or relationships to influent flow difficult to discern. Regardless of season, daily average concentrations can roughly span the full range of observed concentrations. Nonetheless, when analyzed more closely and compared against the 30-day average flow, a seasonal pattern becomes apparent that is related to flow. When influent flow peaks in the spring season, the corresponding concentrations are at their lowest, signaling an inverse relationship predicated on wet weather hydraulic loading. Otherwise, BOD₅ concentrations have remained relatively unchanged year-over-year. Though the spread of data has gotten tighter over time, when a linear line of best fit is applied to the dataset (not shown), it is flat, indicating no upward or downward trend.



[GWA_Process Data_2019-2024.xlsx](#) (Memo Graphs tab)

Figure 2 Historical Influent BOD₅ Concentration Overlaid with Influent 30-day Average Flow

Going a step further, when overlaying the calculated influent BOD₅ load with influent flow, as presented in Figure 3, a relationship between BOD₅ load and flow becomes even more evident. Whereas the influent concentrations exhibited a vague seasonal pattern, when converted to a load basis, a more defined seasonal pattern emerges. Furthermore, that seasonal pattern aligns almost exactly with that of influent flow, with load peaks synced up with flow peaks, suggesting that the load profile is directly related to influent flow. These observations further affirm the seasonal variability of BOD₅ concentrations and loads as mediated by the repeating seasonal pattern of influent flow. Organic loading has typically ranged from about 8,000 pounds per day (ppd) to as much as 30,000 ppd with a long-term average of approximately 14,100 ppd. The data does suggest a slight decreasing trend consistent with the decreasing trend observed for influent flows. Based on discussions with GWA staff, the incoming wastewater to the facility is mainly municipal with a minor contribution from industrial dischargers suggesting that like influent flow, the slight decreasing trend in organic loading is likely the result of drier regional conditions and minimal population growth in the service area.

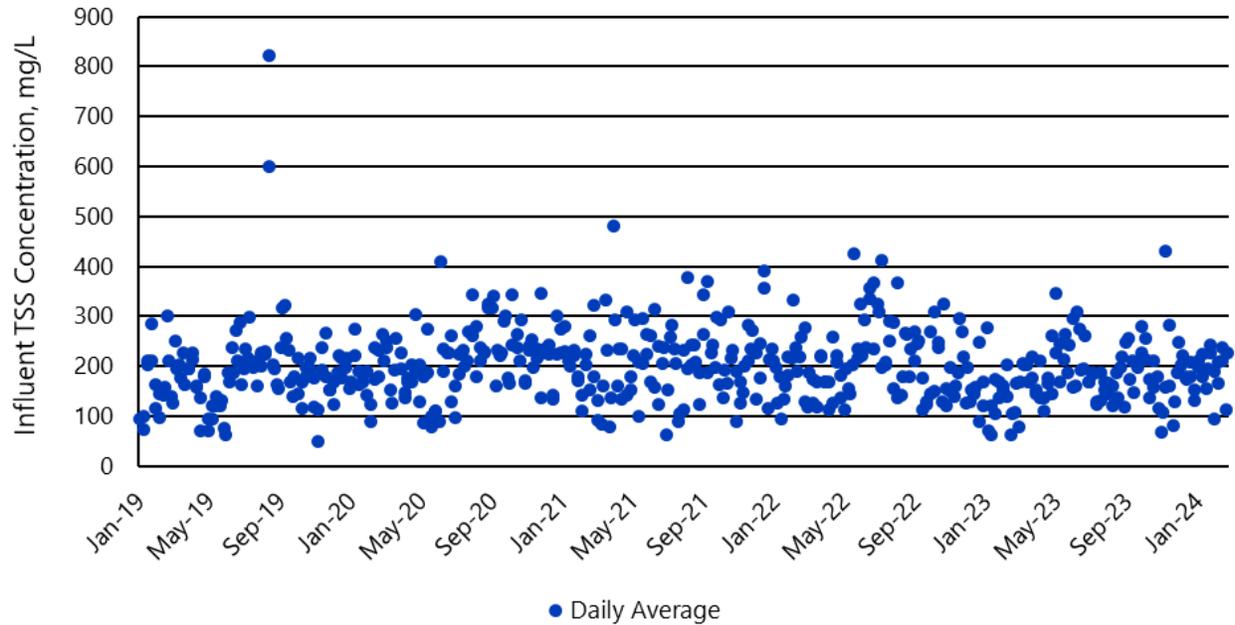


[GWA_Process Data_2019-2024.xlsx](#) (Memo Graphs tab)

Figure 3 Historical Influent BOD₅ Load Overlaid with Influent 30-day Average Flow

2.2.2 Total Suspended Solids

Aside from the main parameters of interest, hydraulic and organic loading, it is important to consider other typical influent loading parameters such as TSS, nitrogen, and phosphorus. Each of these parameters and their corresponding loads into the facility have a direct impact on design, process configuration selection, sizing, and performance unit processes in the liquids and solids streams, thus each was analyzed as well. Figure 4 presents the historical influent TSS concentrations into the facility since 2019. Influent concentrations have typically ranged from approximately 50 to 400 mg/L with a few outliers greater than 400 mg/L and a long-term average over the entire dataset of 200 mg/L. The daily average concentrations do not readily indicate seasonal variability, instead, the data is consistently scattered throughout. However, the data appears constrained to a band between the bounds of the typical range remaining relatively constant and flat across the dataset, not indicating a trend up or down in concentration over time.

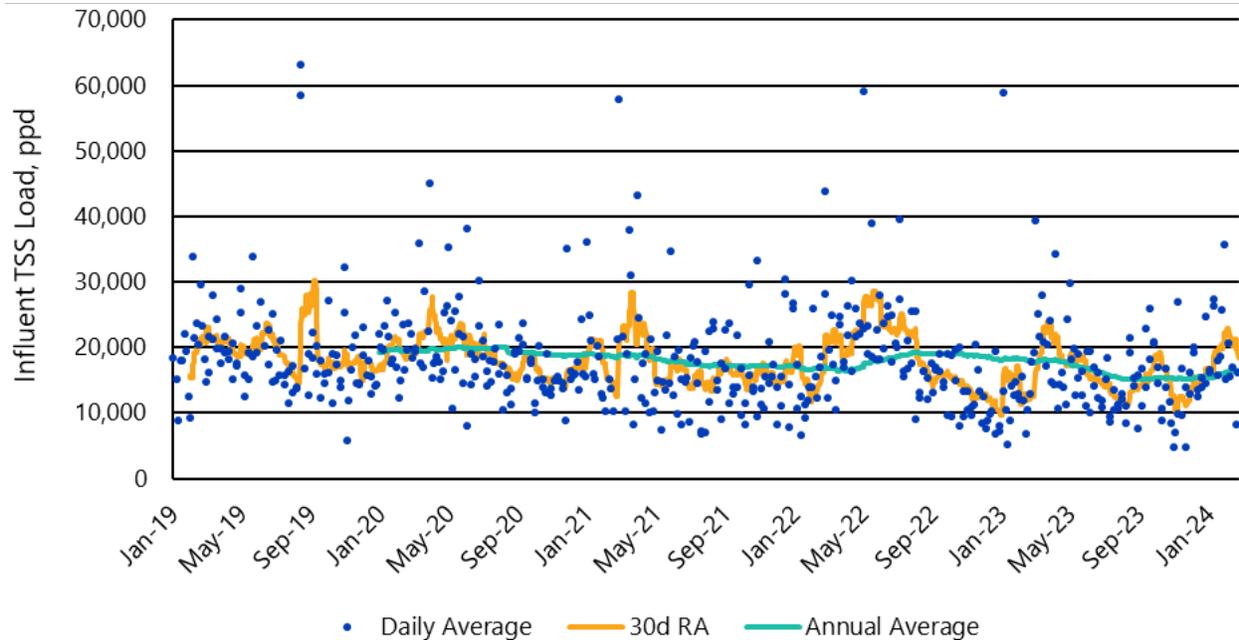


[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 4 Historical Influent TSS Concentration

The calculated TSS loads for the same dataset are presented in Figure 5. While the daily average concentration data revealed no easily distinguishable seasonal trend, the TSS loading profile shows a seasonal pattern, though to a much lesser degree. The highest influent loading appears to occur in the spring, much like the seasonal trend observed for influent flow and BOD₅ loading before trailing off for most of the rest of the year. Occasional spikes, though, are observed in the late summer and early fall, such as in 2019, 2022, and 2023. In 2022, unlike in other years, instead of a dip between spring and summer/fall, the spike in loading was continuous, making for an extended period of elevated TSS loading to the facility. The increase in TSS loading concurrent with increased flows could potentially be explained by the collection system experiencing some “flushing” of settled solids as flows through the system increase over time. Further investigation into the link between influent flows and TSS loading, as well as additional data, such as influent VSS, would be required to validate this hypothesis and determine the true explanation.

TSS loading has typically ranged from about 7,000 ppd to 40,000 ppd with a few outliers upwards of 58,000 ppd. The long-term average load across the full dataset is 17,900 ppd and has remained relatively steady over time, showing no signs of an increasing or decreasing trend.

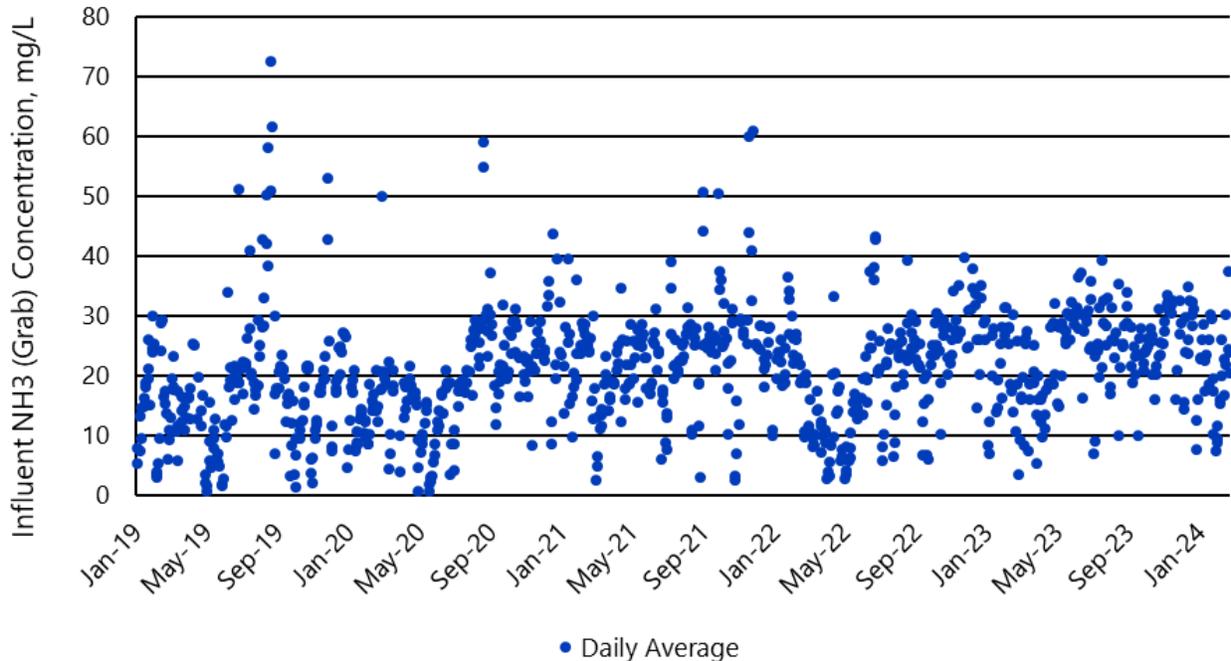


[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 5 [Historical Influent TSS Load](#)

2.2.3 Nitrogen

Influent NH_3 concentrations from 2019 through the end of the data period are presented in Figure 6. Influent concentrations have typically ranged from approximately 1 to 40 mg/L with a few outliers as high as 72.5 mg/L. The long-term average across the 5+ years of data is about 21 mg/L. Though the data is noisy, there is a faintly detectable seasonal pattern with concentration peaks occurring around late summer/early fall which coincides with the dry weather period of the year before dropping off in the winter. Similarly, there is a slight upward trend in daily average concentrations over time, which can at least, in part, be explained by decreasing influent flows to the facility leading to higher concentrations. In addition, the data noticeably becomes more tightly grouped with less noise and less outliers over time, indicating a more stable process.

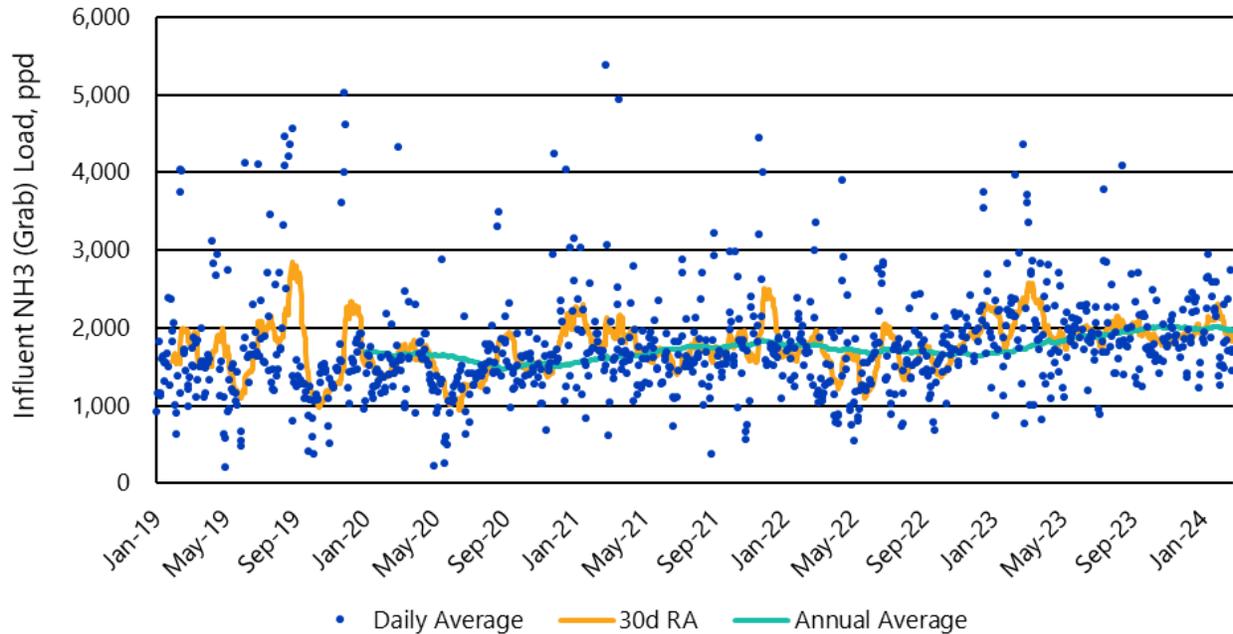


[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 6 Historical Influent NH₃ Concentration

The calculated influent NH₃ loads for the same dataset are presented in Figure 7. Unlike the preceding parameters, a seasonal pattern for NH₃ does not become significantly more evident or pronounced when converted to a load basis. Nevertheless, a seasonal pattern is exhibited that deviates from the seasonal pattern followed by influent flow and BOD₅ and TSS loads. Whereas the peaks for those parameters reliably occur during spring, the seasonal pattern for NH₃ load is a bit more random with peaks occurring in the late summer/early fall or winter or both, depending on the year and dips occurring in the spring. NH₃ loading has typically ranged from approximately 500 to 3,000 ppd with outliers up to 5,376 ppd. The long-term average load is about 1,747 ppd.

Of note is the general upward trend observable in NH₃ load over time, suggesting that the upward concentration profile is not solely the result of decreasing influent flows and that more NH₃ is getting sent to the facility. When combined with the gradual decrease in organic loading to the facility it follows that if these trends continue or become exacerbated it could hinder denitrification due carbon limitation. This could pose an issue if/when a nitrate, total inorganic nitrogen (TIN) or total nitrogen (TN) limit is implemented. A nitrogen effluent permit limit is not anticipated until far out into the future, but GWA conveyed their vision that for the secondary treatment/BNR evaluation under the new construction scenario, the design should not only address phosphorus, but nitrogen as well. Based on that guidance, steps were taken in the design process to incorporate the necessary flexibility for future nitrogen removal. The specifics of these design provisions are described in greater detail in the process modeling project memorandum.

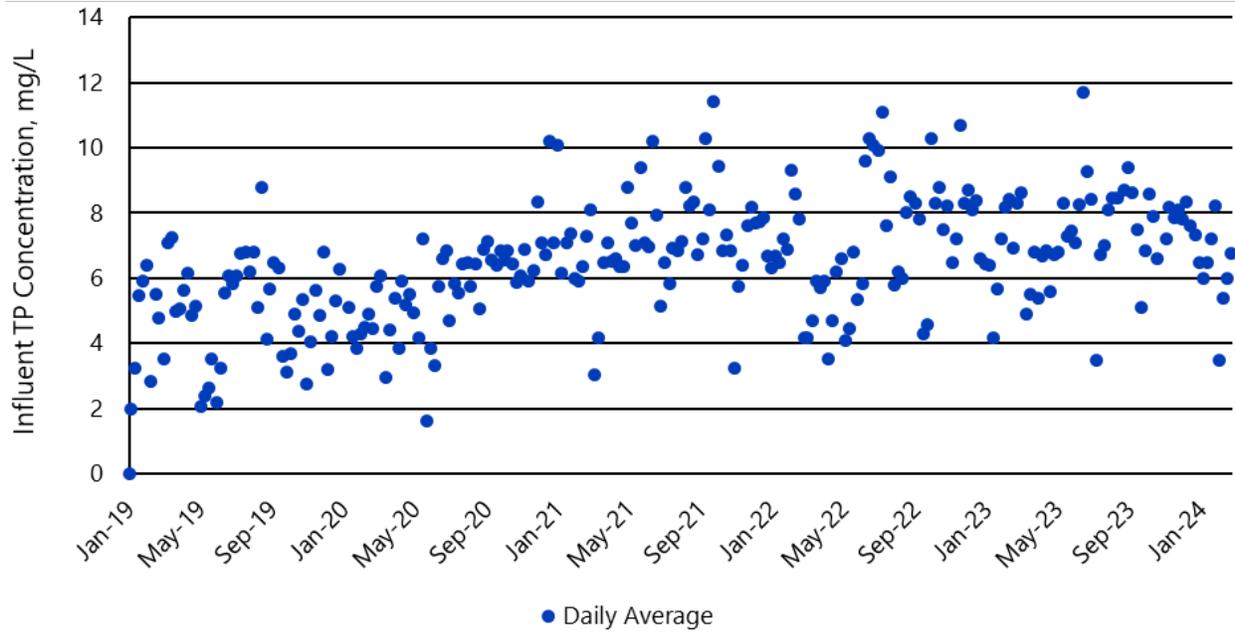


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Figure 7 Historical Influent NH₃ Load

2.2.4 Total Phosphorus

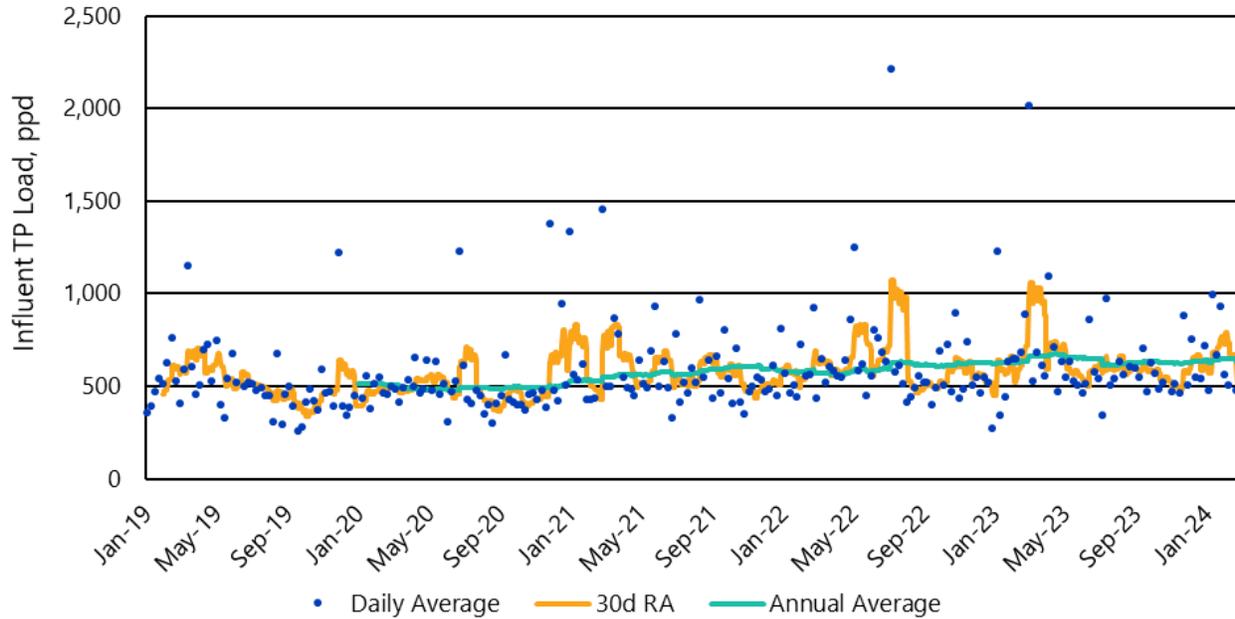
Influent TP concentrations since 2019 are shown in Figure 8. Influent concentrations have typically ranged from approximately 1.6 to 11.7 mg/L with a long-term average over the entire dataset of 6.5 mg/L. Like BOD₅ and NH₃, there is some noticeable seasonal variability in influent concentration due to wet weather flow that is also observed in the TP concentration profile, though much like the other parameters, the pattern is obscured by noisy data. Furthermore, also like NH₃, there is a clear upward trend in TP concentrations over time that may at least partly be the result of decreasing influent flows over that same period. Per the scope and feedback from GWA staff, historical TP data is of particular consequence because TP removal is the main driver underlying the secondary treatment/BNR evaluation. Phosphorus is the more pressing nutrient of concern due to the anticipated effluent permit limit that is expected to come in the near future.



[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 8 Historical Influent TP Concentration

The calculated TP loads for the same dataset are presented in Figure 9. Like the influent concentrations, the data noise and overall spread, which becomes exacerbated with time, makes a seasonal pattern difficult to decipher, but the influent TP load data appears to exhibit some seasonality. Peak loads primarily occur in late winter and spring consistent with seasonal hydraulic loading, with the occasional, anomalous peak over the summer, like in 2020 and 2022. TP loading has generally ranged from approximately 260 to 1,000 ppd with outliers up to 2,218 ppd. The long-term average for the whole dataset is approximately 577 ppd. While the influent concentrations showed a general increasing trend with time, the corresponding loads have remained flat, neither trending up nor down across the dataset.



[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 9 Historical Influent TP Load

3.0 CURRENT AND PROJECTED FLOWS AND LOADS

3.1 Flow and Load Methodology

To evaluate the optimal approach to BNR at the facility, two design flow and load conditions were used. Based on the findings of the historical flow and load data analysis and in coordination and collaboration with GWA, the following two averaging periods defining the modeling flow and load conditions were established: 90-Day Average Low and Wet-Weather Maximum (Max) Month.

3.1.1 90-Day Average Low

The 90-Day Average Low is based on the approach followed by the previous facility plan (Trotter & Associates, Inc., 2018). Per guidance from the Illinois Environmental Protection Agency (IEPA) and the Illinois Recommended Standards for Sewage Works (IRSSW), a treatment facility’s remaining hydraulic capacity is based on the average of the three low-flow months (they need not be consecutive) over the past 12 months. Furthermore, per Title 35 of the Illinois Administrative Code, a sewer system has reached “Critical Review” status when a system reaches 80 percent of the design capacity. Following the same approach, the 2023 three-month low flow average is 8.12 mgd or 51 percent of the design capacity of 16.02 mgd.

To provide a more realistic picture of dry weather conditions, a modified approach was recommended. The minimum of the 90-day RA for each of the last five full years was calculated and is summarized in Table 1. For conservatism, the max annual 90-day low (2019) was selected as the “current” 90-day average low. Using this approach, the current 90-day average low flow is 9.55 mgd or 60 percent of the design capacity.

Table 1 Annual 90-Day Rolling Average Low Flow for 2019 to 2023

	2019	2020	2021	2022	2023	5-Year MAX
90-Day RA Low Flow	9.55	7.82	8.29	8.34	8.89	9.55

Projecting forward through the planning period per population growth projections detailed in section 2.4 of the main Project report, the 90-day average low flow is increased to 10.37 mgd or 65 percent of the design capacity. Both the current and future 90-day average low flows, though more conservative than the original three-month low flow average, remain safely below the IEPA “Critical Review” status threshold.

For the 90-Day Average Low condition, current and future loads were similarly determined for the other constituents of interest: BOD₅, TSS, nitrogen as TN, total Kjeldahl nitrogen, and NH₃, and TP. Beginning with identifying the max annual 90-day RA load for each parameter from 2019 to 2023 to establish the current load. Then projecting forward based on population projections and average per capita loading calculated from the current condition to determine the future load. Using the 90-day average low flow in conjunction with the 90-day average low load for a given constituent and flow/loading condition, the design concentrations were then back-calculated, applying to both current and future conditions. The current and future flows, loads, and design concentrations for the 90-Day Average Low and Wet-Weather Max Month conditions, described in the following section, are summarized in section 3.2 of this project memorandum.

3.1.2 Wet-Weather Max Month

To round out the secondary treatment/BNR evaluation, a max month flow and load condition was established to explore the basin sizing implications under non-average, higher flow scenarios. The most conservative scenario would be the combination of high flows and high loads occurring simultaneously. Analysis of GWA’s historical process data, detailed in section 2.0, revealed that such peaks in flows and loads can and do coincide with one another, specifically during the wet-weather period from March to May.

Based on these findings, it was recommended that the Wet-Weather Max Month flow and load condition constitute a combination of the max month flow and max month loads together. The Wet-Weather Max Month flows and loads were taken as the max annual 30-day RA max from the last five full years of data. As an example, the annual 30-day RA max flows for 2019 to 2023 are summarized in Table 2. Using this approach, the current max month flow is 25.25 mgd.

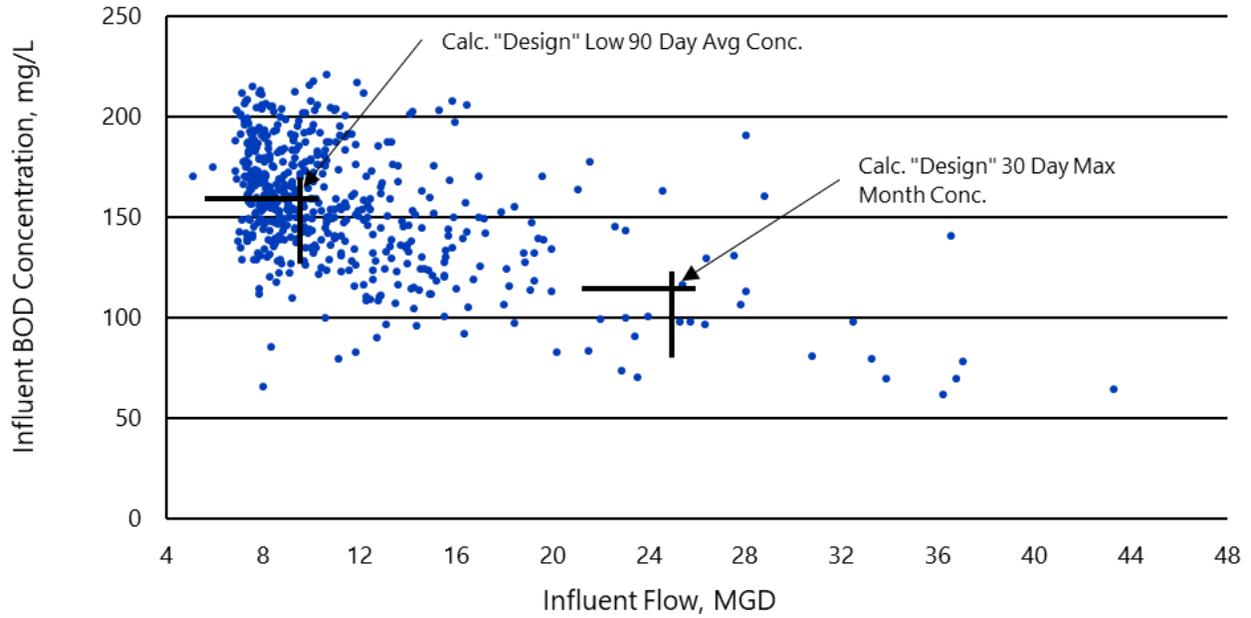
Table 2 Annual 30-Day Rolling Average Max Flow for 2019 to 2023.

	2019	2020	2021	2022	2023	Max
30-Day RA Max Flow	25.25	23.01	16.78	20.16	18.02	25.25

To determine the future max month flow, a peaking factor was calculated based on the current max month flow (25.2 mgd) and current 90-day low flow (9.55 mgd) and then applied to the future 90-day average low flow (10.37 mgd) to yield a future max month flow of 27.4 mgd.

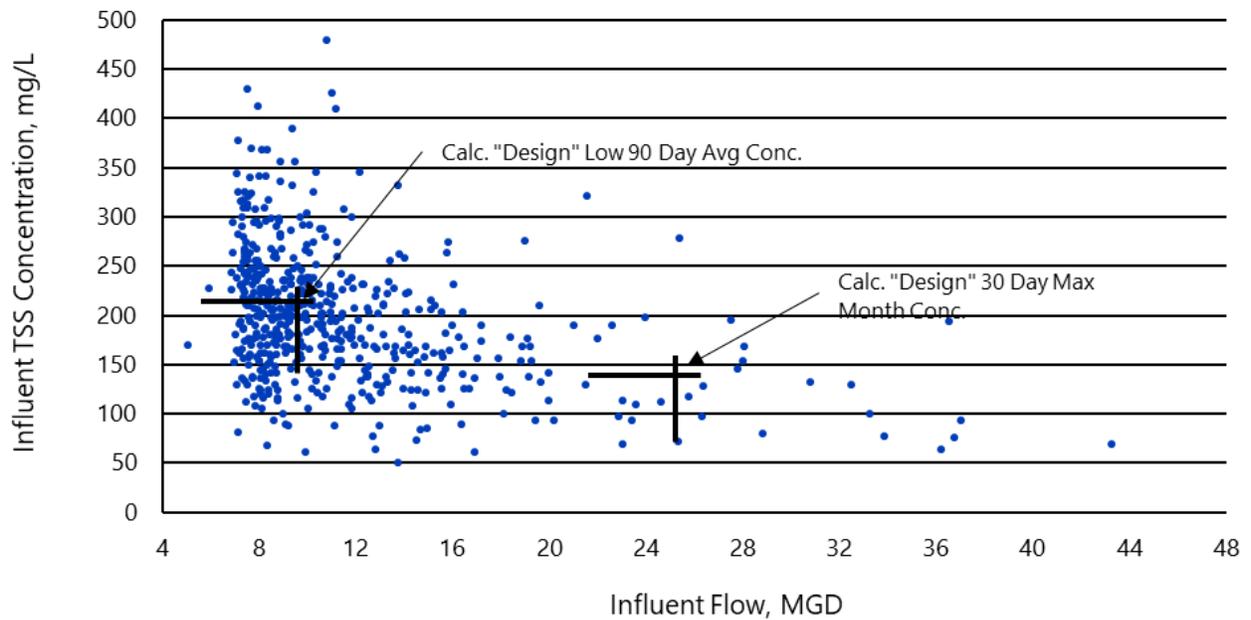
The same process outlined above was followed to determine the current max month loads for relevant constituents. Then, like the 90-Day Average Low condition, the design concentrations for the Wet-Weather Max Month condition were back-calculated based on the max month flows and loads. Those design concentrations at the max month flow were plotted on correlation plots of the constituents

of interest versus influent flow. The correlation plots for BOD₅, TSS, NH₃, and TP versus influent flow are provided in Figures 10, 11, 12, and 13, respectively.



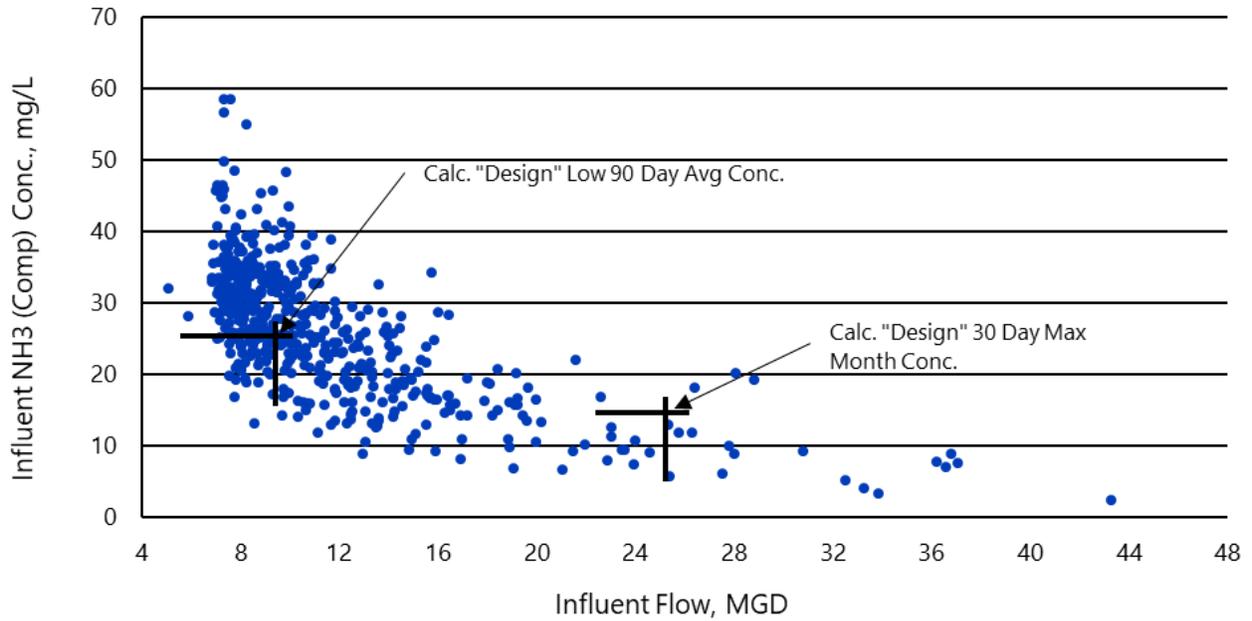
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Figure 10 Historical Influent Wastewater Flows versus Influent BOD₅ Concentration



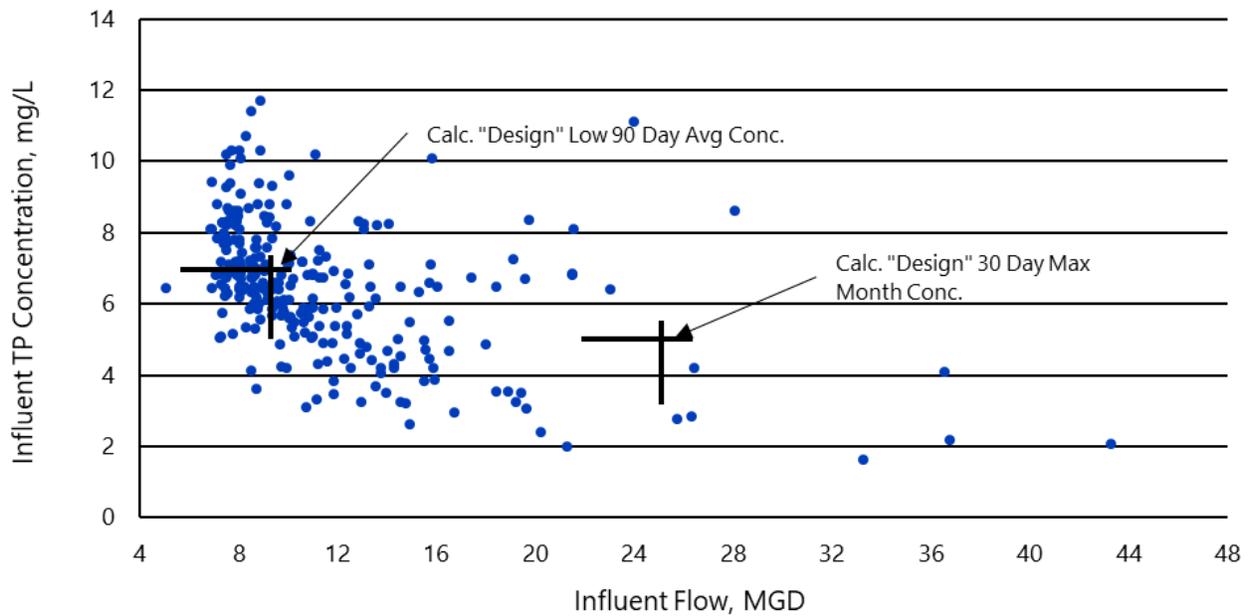
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Figure 11 Historical Influent Wastewater Flows versus Influent TSS Concentration



[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 12 Historical Influent Wastewater Flows versus Influent NH₃ Concentration



[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs tab)

Figure 13 Historical Influent Wastewater Flows versus Influent TP Concentration

When comparing against historical daily process data, the assumption that max month flows and loads can occur at the same time for the Wet-Weather Max Month condition was further validated as the plot of said condition landed in line and amongst actual historical data. For the future Wet-Weather Max Month condition, it was assumed that flows and loads increase at the same rate, thus the design concentrations

were assumed to remain constant and in combination with the future max month flow were used to calculate future loading.

3.2 Current and Future Flows, Loads, and Design Concentrations

A summary of the current and future influent flows, loads, and design concentrations, discussed in previous sections of this project memorandum, is provided in Table 3. The future flows, loads, and design concentrations were carried forward to be process modeling inputs as the basis for the secondary treatment/BNR evaluation outlined in the process modeling project memorandum.

Table 3 Summary of Current and Future Influent Flows, Loads, and Design Concentrations

Parameter	Units	90-Day Average Low	30-day Max Month
Current Influent Flows and Loads			
Influent Flow	mgd	9.55	25.25
Influent Load			
BOD ₅	ppd	12,542	24,376
TSS	ppd	16,882	30,123
NH ₃	ppd	2,038	3,175
TP	ppd	543	1,073
Future Influent Flows and Loads			
Influent Flow	mgd	10.37	27.4
Influent Load			
BOD ₅	ppd	13,664	26,558
TSS	ppd	18,335	32,748
NH ₃	ppd	2,215	4,932
TP	ppd	588	1,166
Calculated Design Concentrations			
BOD ₅	mg/L	158	116
TSS	mg/L	212	143
NH ₃	mg/L	25.6	21.6
TP	mg/L	6.8	5.1

APPENDIX B

Project Memorandum Process Modelling

BAXTER AND WOODMAN, INC.

Glenbard/Baxter and Woodman Facility Planning Study

Project No.: 202917
Date: January 31, 2025
Prepared By: Bryan Coday, PhD, PE
Reviewed By: George Kontos and Lindsey Busch, PE
Subject: Process Modeling Summary

This document is released for the purpose of information exchange review and planning only under the authority of Lindsey I. Busch, January 31, 2025, Illinois PE No. 062-069452.

1.0 INTRODUCTION

Process simulation modeling was employed to evaluate the hydraulic and biological loading capacities of the Glenbard Wastewater Authority's (GWA) Water Resource Recovery Facility (WRRF). The 2024 Facility Plan (the Project) represents a planning and feasibility-level effort aimed at determining the secondary treatment system capacity requirements necessary to produce effluent that complies with current and anticipated permit limitations. The project modeling specifically targeted effluent total phosphorus concentration of less than 0.35 milligrams per liter (mg/L) while fully nitrifying (unless specifically noted otherwise below) except during cold weather months (when the wet weather maximum month condition has historically occurred), where an effluent total phosphorus (TP) concentration of 0.65 mg/L was allowable due to the expected effluent TP limits. The expected limits generally include a 0.35 mg/L effluent TP during warm weather months as part of an annual 0.5 mg/L TP geometric mean, allowing for some excursions above 0.5 mg/L during cold weather months. A detailed discussion of future regulatory requirements is provided in the main report.

This memorandum provides a comprehensive summary of the modeling efforts conducted for the Project. Abbreviated summaries of these analyses are included in the main body of the Project report. Future influent flow and load projections assumed herein are documented in a separate project memorandum also included as an attachment to the final Project report.

2.0 PHYSICAL MODEL SETUP

At the start of the project, the Project Team collectively determined that developing a calibrated model of the existing two-stage high-purity oxygen process would add minimal value. Consequently, the BioWin model for this project was developed based on the following assumptions:

- Primary Treatment:
 - » Simulated using the ideal primary clarifier process node.
 - » Influent total suspended solids (TSS) removal was manually set, as described later.
 - » Five-day biochemical oxygen demand (BOD₅) removal was modeled based on the adopted influent fractionation and assumed TSS removal.

- Secondary Treatment:
 - » Simulated using suspended activated sludge biomass reactor nodes.
 - » Reactor node volumes were not tied to existing structures but were adjusted through sensitivity analyses to balance aerated and unaerated treatment volumes, meeting the project's capacity and effluent quality targets.
- Secondary Clarifiers:
 - » Simulated using ideal clarifier process nodes.
- Sludge Handling:
 - » Co-thickening of primary sludge and waste activated sludge (WAS) before anaerobic digestion.
 - » Thickening process supernatant was returned upstream to the primary clarifiers.
 - » In some scenarios, primary sludge fermentation was evaluated as an internal carbon source to enhance biological nutrient removal (BNR) performance. These models included an anaerobic digester node operated at the assumed global wastewater temperature, targeting an assumed fermentation yield of ~0.15 milligrams (mg) soluble chemical oxygen demand (sCOD) per mg volatile solids (VS) applied. This is the lower end of typical values presented in literature (0.15 to 0.3), depending on factors like solids retention time (SRT), temperature, and elutriation efficiency.
- Anaerobic Digestion:
 - » Three digesters were modeled: two operating in parallel with equal flow split by volume, and a third operating in series with the first two.
- Solids Dewatering:
 - » Solids dewatering was included, with dewatering liquor returned upstream to the primary clarifiers.
- Sidestream Phosphorus Sequestration:
 - » Certain model scenarios explored sidestream phosphorus sequestration to reduce carbon or metal salt coagulant demand in the mainstream process.
 - » The model assumed a MagPrex-style approach, precipitating soluble phosphorus into biosolids as struvite prior to dewatering. This was accomplished assuming an activated sludge bioreactor node downstream of the digesters, sized for approximately four hours of hydraulic retention time and dosing of sodium hydroxide (pH adjustment to approximately 8) and magnesium chloride to precipitate struvite until dewatering liquor soluble phosphorus concentration was approximately 50 mg/L.

A simplified process flow diagram illustrating the physical BioWin model layout is provided in Figure 1.

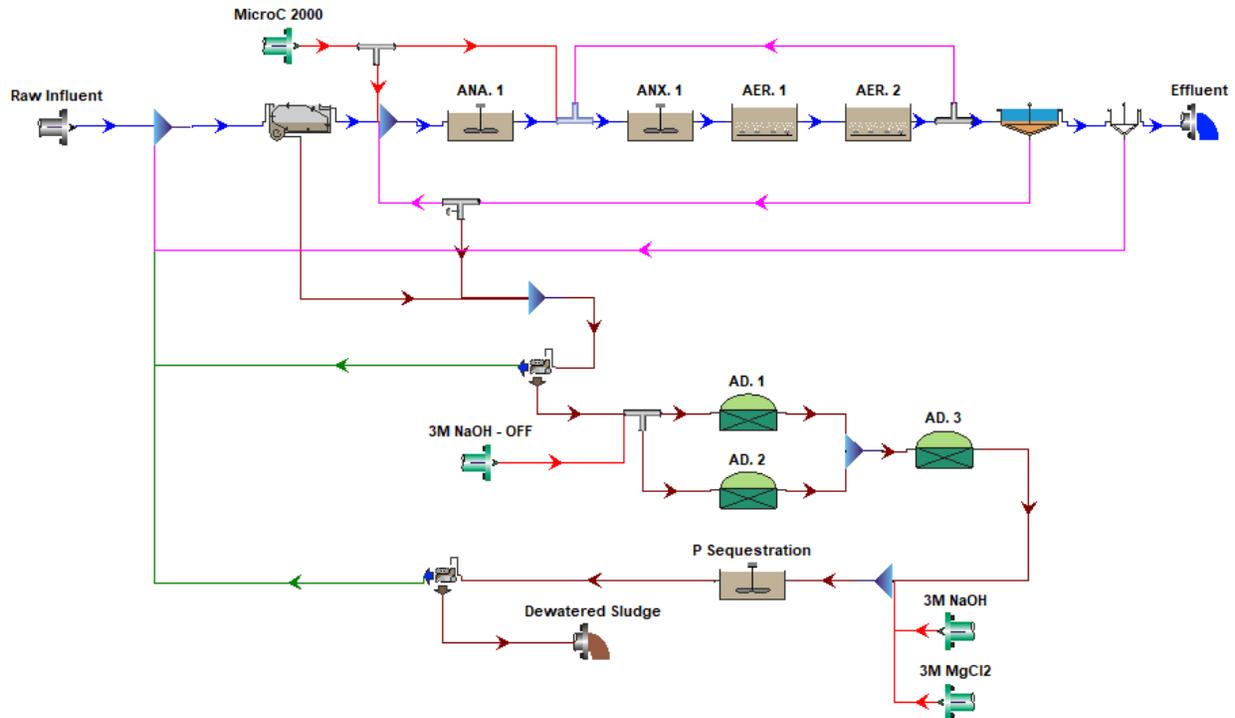


Figure 1 BioWin Layout of the GWA Facility Assuming BNR Reactors In Lieu of High-Purity Oxygen

2.1 Influent and Effluent Modeling Assumptions

2.1.1 Influent Special Sampling and Fractionation

Although model calibration was not pursued, the project team conducted influent special sampling to estimate appropriate wastewater fractionation for steady-state modeling. Two independent sampling campaigns were carried out over approximately two weeks each. The first campaign included eight sampling events, while the second comprised five. While typically a single campaign would suffice, the first round of sampling (March 4–19, 2024) encountered several irregularities potentially due to wet weather, necessitating further investigation. Key findings included:

- **High COD to BOD₅ Ratio:** An average COD:BOD₅ ratio of 3.2, significantly higher than the typical municipal wastewater range of 1.9–2.2.
- **Elevated COD to Volatile Suspended Solids (VSS) Ratio:** An average COD:VSS ratio of 3.1, which could suggest an influent composition dominated by lipids (unlikely) compared to the typical value of ~2. This should be more closely investigated and scrutinized in the future.
- **Slightly Elevated Particulate COD to VSS Ratio:** An average particulate COD:VSS ratio of 2, slightly above the expected value of ~1.7.
- **Low TSS to COD Ratio:** An average TSS:COD ratio of 0.35, well below the typical municipal wastewater value of ~0.5.
- **Anomalous Total Kjeldahl Nitrogen (TKN) and Ammonia Data:** Instances where soluble TKN concentrations were lower than ammonia concentrations.

Interestingly, the ratios of sCOD and filter-flocculated COD (ffCOD) to total COD were consistent with typical municipal values, leaving it unclear whether COD measurements were abnormally high or if BOD₅ and TSS data were underestimated. Additionally, potential bias was identified due to recycle streams from existing processes returning upstream of the autosampler.

To address these uncertainties, a second sampling campaign was conducted with the following adjustments:

- **Exclusion of Nutrient Sampling:** Recycle streams from thickening and dewatering lacked sufficient historical data to perform a meaningful mass balance with the raw influent.
- **Carbon and Solids Resampling:** Influent carbon and solids species were resampled, with composite samples analyzed by GWA's internal laboratory and two commercial laboratories for direct comparison.
- **Grab Samples from Alternative Locations:** Additional grab samples were collected from locations unaffected by recycle streams. These samples were inconclusive, and therefore no adjustments were made to the influent fractionation for this planning-level study.

This second sampling effort was more successful and was ultimately adopted for process modeling.

Table 1 summarizes the averaged influent special sampling data and calculated ratios across the three laboratories. Combined averages of all results were used to establish influent fractionation in BioWin for steady-state simulations.

One notable finding was the abnormally low sCOD:COD ratio, indicating a particulate-heavy carbon profile that could pose challenges for enhanced biological phosphorus removal (EBPR). Despite this, the project team opted not to adjust this value, considering it representative of a challenging carbon scenario that could vary seasonally. To improve future modeling and design efforts, the project team recommended that GWA implement recurring, seasonal fractionation sampling to build a comprehensive database for nutrient removal planning. An excel file of all special sampling data was provided to GWA under separate cover. For brevity of this document, it was not included and can be acquired separately from GWA.

Table 1 Abbreviated Summary of Influent Special Sampling Data and Calculated Ratios

Parameter	Units	Glenbard	1st	SUB	Combined Average	Typical Range Municipal
COD	mg/L	337	321	300	319	-
sCOD	mg/L	74.4	42.8	56.1	58	-
pCOD	mg/L	262	278	195	245	-
ffCOD	mg/L	31.2	30.4	32.4	31	-
BOD	mg/L	132.2	127.0	131.9	130	-
sBOD	mg/L	21.9	16.0	11.8	17	-
TSS	mg/L	178.4	148.2	181.3	169	-
VSS	mg/L	155	115	159	143	-
PE sCOD	mg/L	19.1	16.4	13.2	16	-

Parameter	Units	Glenbard	1st	SUB	Combined Average	Typical Range Municipal
CALCULATED RATIOS						
sCOD:COD	-	0.22	0.13	0.19	0.18	0.3 to 0.5
ffCOD:sCOD	-	0.42	0.71	0.58	0.54	~0.6
COD:BOD	-	2.55	2.52	2.27	2.45	1.9 to 2.2
COD:VSS	-	2.17	2.79	1.89	2.23	~2
pCOD:VSS	-	1.69	2.42	1.23	1.71	~1.7
TSS:COD	-	0.53	0.46	0.61	0.53	~0.5
BOD:TSS	-	0.74	0.86	0.73	0.77	~1 to 1.1
VSS:TSS	-	0.87	0.78	0.88	0.84	0.8 to 0.9

Notes:

1st - First Environmental Laboratories; BOD - biochemical oxygen demand; pCOD - particulate COD; PE - primary effluent; sBOD - soluble BOD; SUB - Suburban Laboratories.

Based on the special sampling data presented above, four influent fractionation parameters were adjusted in BioWin as shown in Table 2. Since special sampling for influent nutrients was abandoned during the second campaign, the project team assumed default fractionation parameters for nitrogen and phosphorus species.

Table 2 Summary of Modified BioWin Influent Fractionation Parameters

Parameter	Unit	BioWin Default	Adopted Value for GWA
Fbs – Readily biodegradable (including acetate)	gCOD / g of total COD	0.160	0.0470
Fac – Acetate	gCOD / g of rbCOD	0.150	0.2667
Fxsp – Non-colloidal slowly biodegradable	gCOD / g of slowly degradable COD	0.750	0.8874
Fus – Unbiodegradable soluble	gCOD / g of total COD	0.050	0.0502

Notes:

Fac - fraction of readily biodegradable COD which is VFA; Fbs - fraction of total influent COD which is readily biodegradable; Fus - fraction of total influent COD which is soluble unbiodegradable; Fxsp - fraction of slowly biodegradable influent COD which is particulate; g - gram(s); gCOD - grams of COD; rbCOD - readily biodegradable COD; VFA - volatile fatty acid.

Table 3 summarizes the stoichiometric and “other” parameters that were also adjusted in the BioWin model to achieve best possible match to the averaged influent special sampling data.

Table 3 Summary of Modified BioWin Stoichiometric and “Other” Parameters

Parameter	Unit	BioWin Default	Adopted Value for GWA
Particulate substrate COD:VSS ratio	mgCOD / mgVSS	1.6327	1.8000
Particulate inert COD:VSS ratio	mgCOD / mgVSS	1.6000	1.6660
Cellulose COD:VSS ratio	mgCOD / mgVSS	1.4000	1.4580
BOD calculation rate constant for Xsc degradation	1/d	0.500	0.120
BOD calculation rate constant for Xsp degradation	1/d	0.500	0.370

Notes:

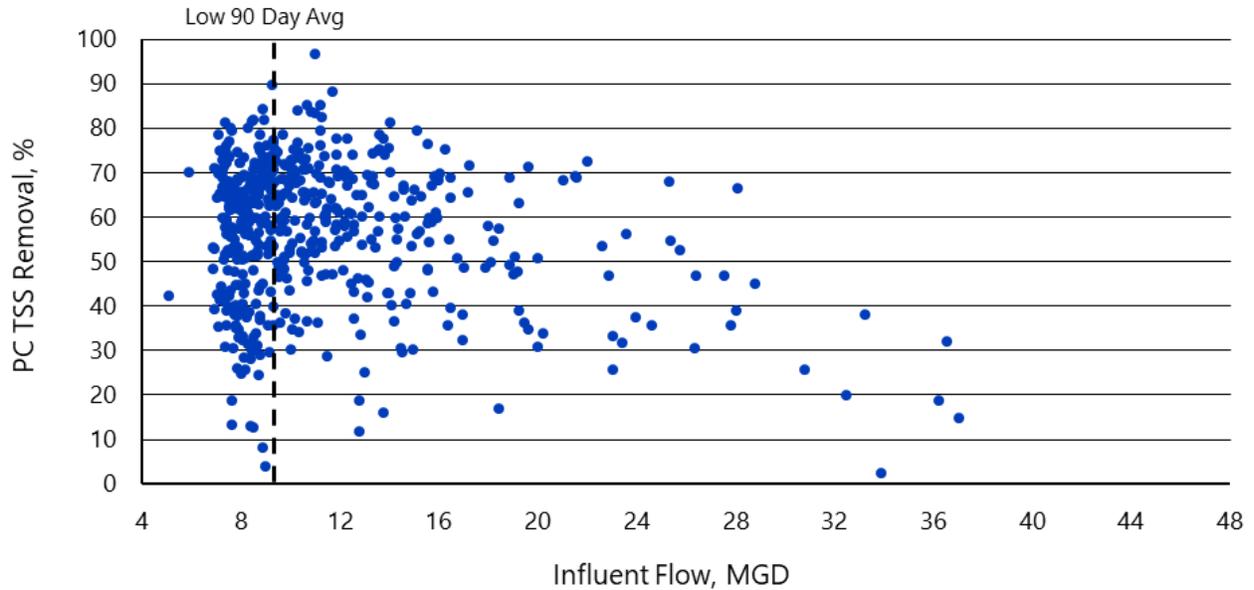
Xsc - slowly biodegradable (colloidal) COD; Xsp - slowly biodegradable particulate COD.

2.2 Primary Clarifier Performance

Historical primary clarifier data from January 1, 2019, to January 1, 2024, were analyzed to establish percent removal criteria for this planning-level assessment. The analysis revealed a significant range in TSS (Figure 2) and BOD₅ (Figure 3) removal performance. While the data indicates lower solids and carbon capture at higher surface overflow rates during wet weather flows, there is considerable variability even under 90-day average low-flow and low-load conditions. GWA staff noted that the age of the clarifiers and increased fats, oils, and grease (FOG) intake since 2017 have likely contributed to the inconsistent performance. However, these factors were not investigated in detail as part of this study.

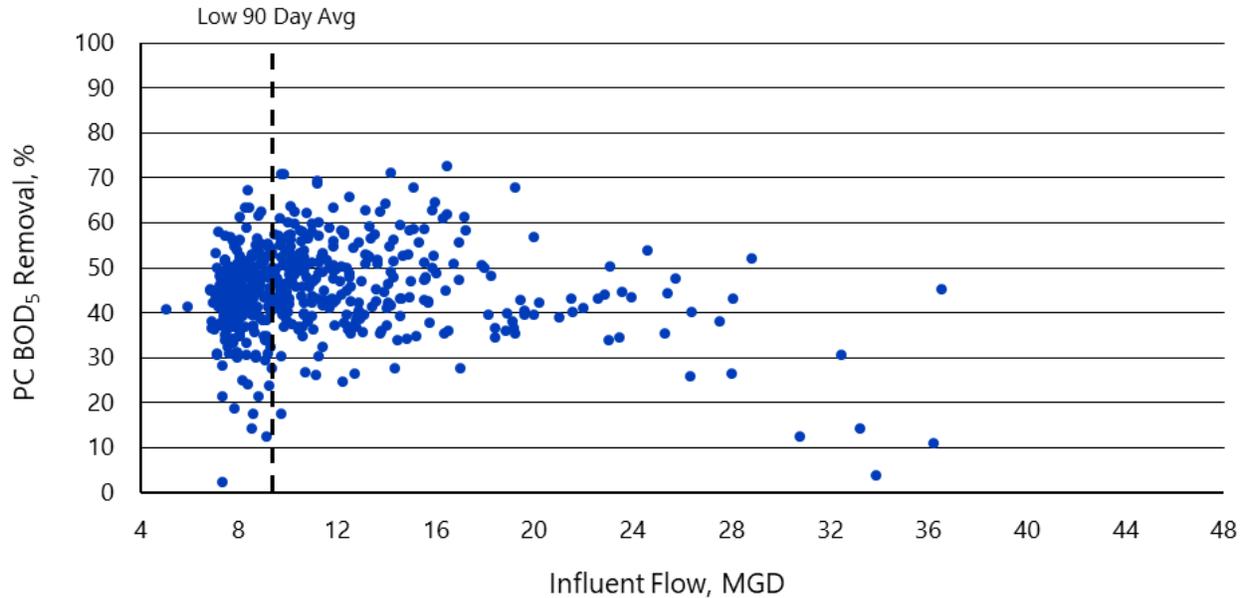
For this analysis, the following assumptions were adopted:

- 90-day average low flow and load condition:
 - » TSS and BOD₅ removal of 55 percent and 48 percent, respectively.
- For wet-weather maximum month condition:
 - » TSS and BOD₅ removal of 45 percent and 40 percent, respectively.



[GWA_Process Data_2019-2024.xlsx](#) (Memo Graphs)

Figure 2 Historical Primary Clarifier TSS Removal Performance as a Function of Influent Flow (2019 to 2024)



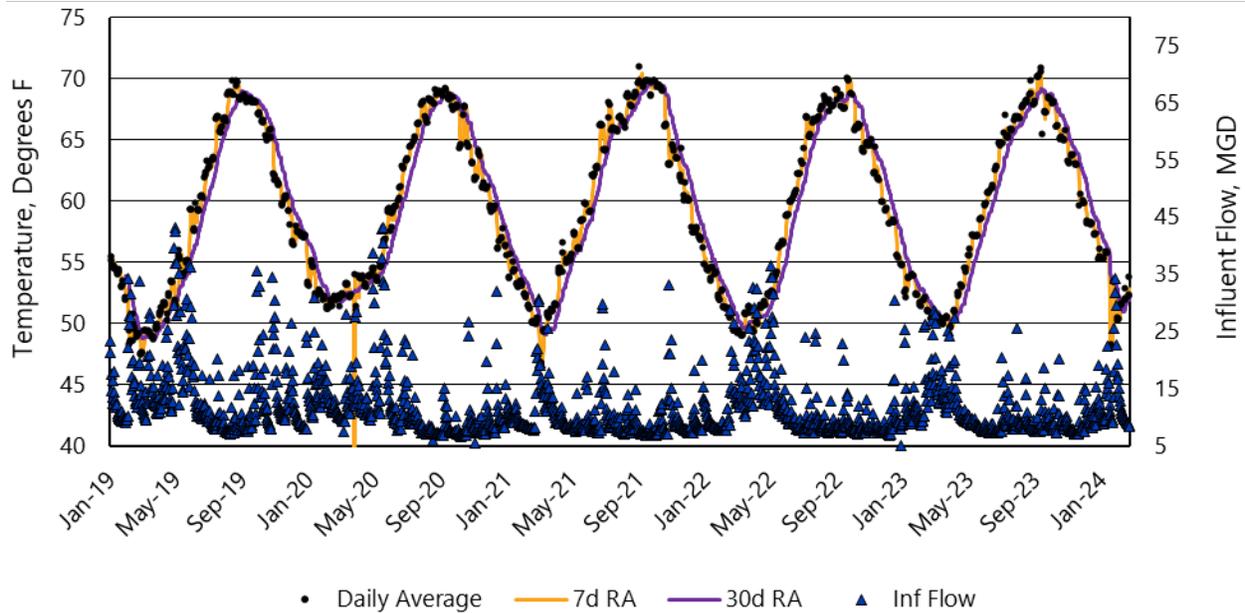
[GWA Process Data 2019-2024.xlsx](#) (Memo Graphs)

Figure 3 Historical Primary Clarifier BOD₅ Removal Performance as a Function of Influent Flow (2019 to 2024)

2.3 Wastewater Temperature

Figure 4 presents the historical wastewater temperature data recorded from January 1, 2019, to January 1, 2024. For steady-state modeling, the following two temperatures were assumed:

- 14.8 degrees Celsius (58.6 degrees Fahrenheit): This temperature represents the 90-day average low-flow and low-load period. It is a conservative planning-level assumption, reflecting shoulder season conditions transitioning into and out of average dry weather conditions at the facility.
- 10 degrees Celsius (50.0 degrees Fahrenheit): This temperature was assumed for the wet-weather, maximum-month condition. Historically, peak wet weather flows have coincided with lower winter and spring wastewater temperatures, making this a suitable assumption without introducing excessive safety margins to the analysis.



[GWA_Process Data 2019-2024.xlsx](#) (Memo Graphs)

Figure 4 Historical Wastewater Temperature and Influent Flow

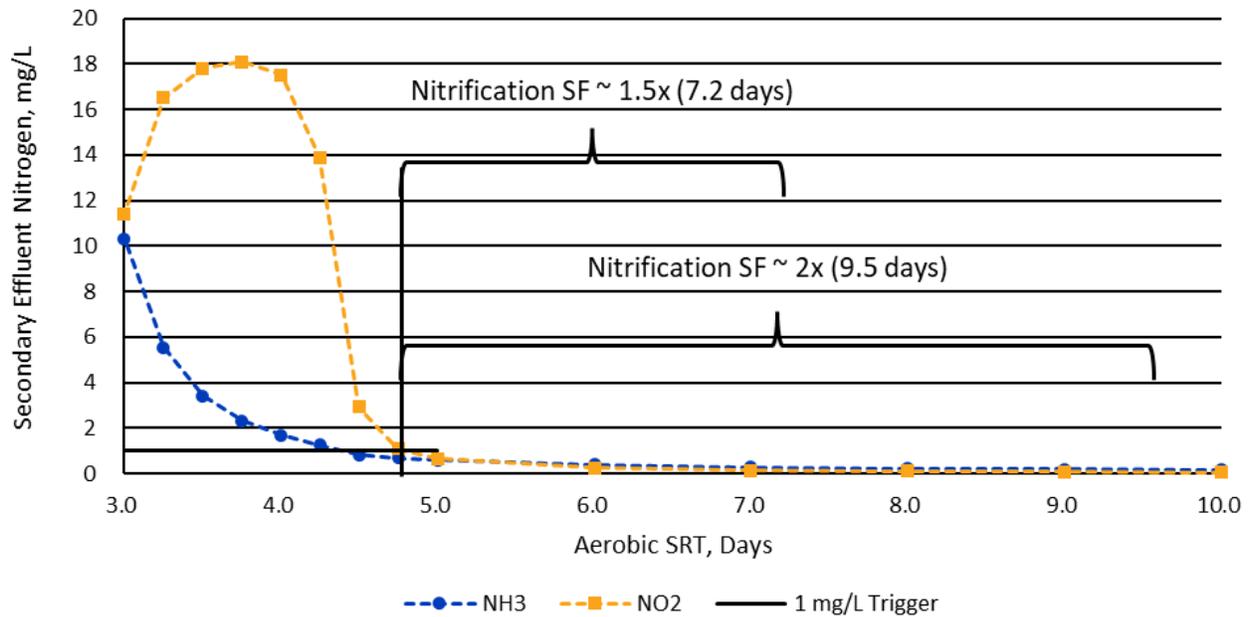
2.4 Aerobic Solids Retention Time

Using the steady-state model, incorporating the influent fractionation and wastewater design criteria described previously, a nitrification safety curve was developed for the alternatives analysis. The curve was based on achieving a secondary effluent ammonia (NH_3) concentration target of less than 1 mg/L at the annual average wastewater temperature of 14.8 degrees Celsius (Figure 5).

A typical BNR design would aim for a nitrification safety factor of approximately 1.5 to 2.0, depending on factors such as the influent diurnal loading profile, effluent permit averaging period, and facility operational control. For this planning-level study, the following assumptions were made for comparative analysis and basin sizing:

- **90-Day Average Low Flow and Load Conditions:** An aerobic solids retention time (aSRT) of 8.5 days was assumed at 14.8 degrees Celsius, which provides a nitrification safety factor of 1.8.
- **Wet Weather Maximum Month Conditions:** An aSRT of 9.7 days was adopted at 10.0 degrees Celsius, corresponding to a nitrification safety factor of approximately 1.5 after adjusting for the lower temperature.

These assumptions provide a conservative basis for evaluating the system's nitrification capacity under varying operational scenarios.



[Glenbard_Secondary Tmnt Modeling.xlsm](#) (Memo Graphs)

Figure 5 Simulated Nitrification Safety Factor Curve at 14.8 Degrees Celsius

2.5 Return Activated Sludge

For all conditions modeled in this study, a return activated sludge (RAS) flow rate of 50 percent of the raw influent flow was assumed.

2.6 Sidestream Treatment

During sensitivity analyses that assumed sidestream phosphorus sequestration, a target dewatering liquor concentration of 50 mg/L soluble phosphorus was adopted. This target aligns with the performance capabilities of most commercially available struvite-based technologies (e.g., MagPrex by CNP) and is also achievable using metal salt coagulants dosed prior to sludge dewatering.

2.7 Solids Handling

Although a detailed analysis of the existing solids handling systems was beyond the scope of this study, the following key assumptions were incorporated into the whole-plant BioWin model:

- **Sludge Thickening:** Primary sludge and WAS were co-thickened using a gravity belt thickener (GBT) to achieve approximately 3 percent total solids (TS).
- **Anaerobic Digestion:** Two primary digesters operate in parallel, with one secondary digester downstream.
- **Dewatering:** Dewatering is performed using a belt filter press, achieving cake solids concentrations of approximately 15-16 percent.

3.0 PROCESS MODELING RESULTS

The project team identified the nitrifying anaerobic/oxic (AO) and anaerobic/anoxic/oxic (A2O) configurations as the two conventional treatment alternatives for meeting the future effluent phosphorus limit. Two rounds of steady-state process modeling were conducted based on these configurations and the assumptions detailed in previous sections.

The first round of modeling focused on a comparative analysis, with four model scenarios run for each treatment configuration under future 90-day average low flow and load conditions:

- **Scenario 1:** No external carbon addition; internal carbon generation via primary sludge fermentation; no sidestream phosphorus sequestration; dissolved oxygen (DO) concentration of 2 mg/L.
- **Scenario 2:** External carbon addition (as MicroC 2000); DO concentration of 2 mg/L.
- **Scenario 3:** External carbon addition (MicroC 2000), sidestream phosphorus sequestration, and DO concentration of 2 mg/L.
- **Scenario 4:** Similar to Scenario 3 but operated at a reduced DO concentration of 0.7 mg/L.

Based on the results of the first round, an “Extended” AO configuration was selected for further evaluation. For clarity and as later described, the extended AO configuration simply assumes the same volume as the A2O configuration but dedicates all unaerated volume to extended anaerobic conditions until effluent total nitrogen limits are promulgated in the future. The second round of modeling explored this alternative under both future 90-day average low flow and load conditions and wet-weather flow and load conditions through three exploratory modeling exercises:

- **MicroC 2000 Dose-Response Curve (future 90-day average low flow and load):**
 - » Developed dose-response curves for MicroC 2000, assuming the facility also implements primary sludge fermentation and sidestream phosphorus sequestration.
- **MicroC 2000 Dose-Response Curve (future wet-weather maximum month):**
 - » Developed dose-response curves for MicroC 2000, assuming no primary sludge fermentation and no sidestream phosphorus sequestration as a worst-case scenario.
- **Aeration Basin Sizing:**
 - » Conducted an aeration basin sizing exercise for wet-weather maximum month conditions, balancing constructed basin volume with short-term operating conditions (e.g., peak mixed liquor concentrations, reduced aerobic hydraulic retention time (HRT), etc.).

The following sections present the key findings from these modeling efforts.

3.1 Anaerobic/Oxic Treatment Configuration

Table A.1 in Attachment A provides a detailed summary of the modeling results for the AO treatment configuration (Case 1A through 1D, which correlate with the four scenarios described above). Based on a target secondary effluent orthophosphate concentration of approximately 0.8 mg/L (initially acceptable for comparative analysis with the A2O process but later refined to a lower concentration), the process modeling yielded the following key findings:

- Stable and robust EBPR is unlikely with the assumed influent fractionation unless external carbon is added.

- Primary sludge fermentation offsets only a portion of the external carbon demand required to achieve effluent phosphorus concentrations below 1 mg/L. It is likely not cost effective to construct primary sludge fermentation facilities for such a marginal offset in carbon demand.
- While sidestream phosphorus sequestration does not eliminate the need for external carbon, it significantly reduces the demand. This reduction in external carbon addition (e.g., MicroC 2000) lowers mixed liquor suspended solids (MLSS) concentrations, potentially enabling smaller aeration basins at the same target aSRT.
- Operating at low DO concentrations reduces carbon demand but is insufficient to fully offset the need for external carbon.

The following aeration basin volumes are recommended for the 90-day average low flow and load condition:

- Anaerobic Volume: 1.15 million gallons (MG), approximately 25 percent of the total recommended aeration basin volume.
- Aerobic Volume: 3.46 MG, approximately 75 percent of the total aeration basin volume.
- Total Volume: 4.61 MG.

3.2 Anaerobic/Anoxic/Oxic Treatment Configuration

Table A.1 in Attachment A provides a detailed summary of the modeling results for the A2O treatment configuration (Case 2A through 2D). Based on the same target secondary effluent orthophosphate concentration of approximately 0.8 mg/L, the process modeling yielded the same findings as the AO process with the following additions/exceptions:

- Additional external carbon would be required to simultaneously meet a future effluent nitrate, total inorganic nitrogen (TIN), or total nitrogen (TN) limit. This was briefly evaluated but is not a near- or mid-term driver for the Authority at this time.

The following aeration basin volumes are recommended for the 90-day average low flow and load condition:

- Anaerobic Volume: 1.15 MG, approximately 20 percent of the total recommended aeration basin volume.
- Anoxic Volume: 1.15 MG, approximately 20 percent of the total recommended aeration basin volume.
- Aerobic Volume: 3.46 MG, approximately 60 percent of the total aeration basin volume.
- Total Volume: 5.76 MG.

3.3 Extended AO Treatment Configuration

Following discussions with GWA, the project team collaboratively selected an "extended AO" treatment configuration for further evaluation, including costing, site layouts, and additional modeling under future wet-weather maximum month conditions. This configuration addresses the infrastructure requirements for implementing EBPR in the coming years, with additional tankage volume allocated for in-line mixed liquor fermentation. If future effluent nitrogen limits require denitrification, a portion of the unaerated volume can be converted to anoxic volume, enabling a transition to the A2O configuration without significant reconfiguration.

While initial planning for this configuration assumed the aeration basin volumes outlined in the A2O subsection, including a combined unaerated volume of 2.3 MG dedicated to anaerobic conditions, the project team determined that additional modeling was needed. This further analysis was aimed at evaluating whether additional basin volume would be required to meet wet-weather maximum month conditions. The results of these analyses are detailed in the following sections.

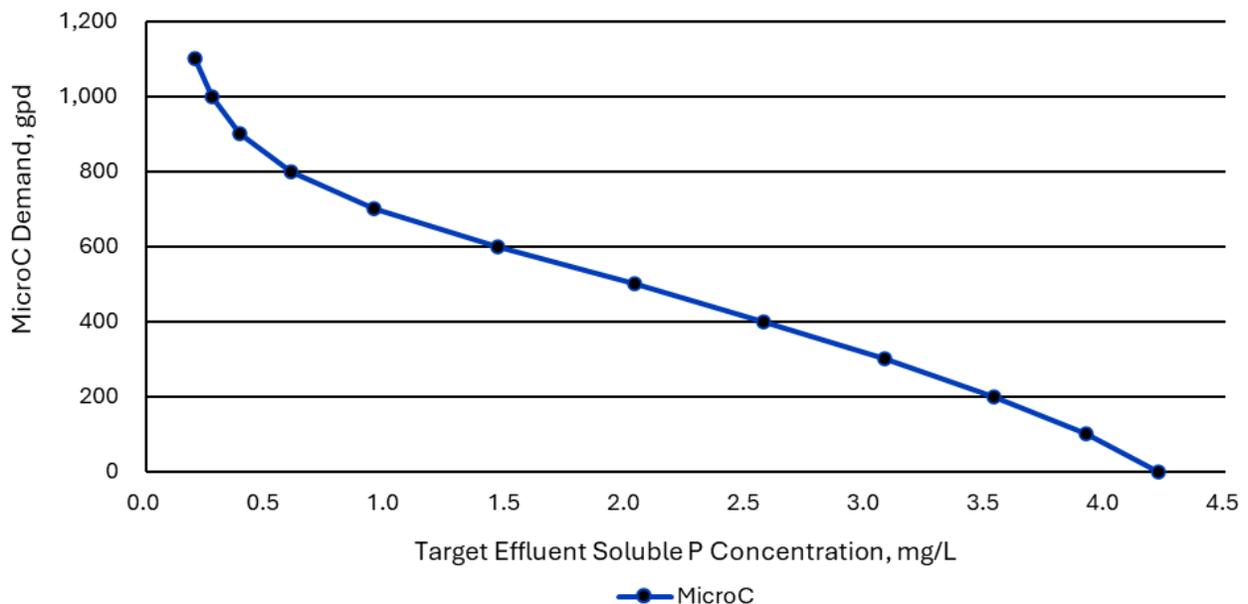
3.3.1 Sensitivity Analyses Assuming Extended AO Configuration

The following three sections summarize the results of sensitivity analyses conducted under the extended AO configuration described above. These results informed the comparative analyses detailed in the main body of the project report.

3.3.1.1 MicroC 2000 Dose Response Curve at Future 90-day Average Low

Figure 6 illustrates the dose-response curve for MicroC 2000 under 90-day average low-flow and load conditions. The analysis incorporates primary sludge fermentation and sidestream phosphorus sequestration within the solids handling processes. It is noteworthy that primary sludge fermentation reduced the modeled effluent orthophosphate concentration by less than 0.1 mg/L, indicating that effective EBPR requires substantial external carbon supplementation under the current influent fractionation determined through special sampling.

To meet a target effluent orthophosphate concentration of 0.25 mg/L (corresponding to an estimated final effluent total phosphorus concentration of 0.35 mg/L), approximately 1,000–1,100 gallons per day (gpd) of MicroC would be necessary in the mainstream treatment process. This carbon demand is projected to increase WAS production by an additional 5,000 pounds per day (ppd), which must be accounted for in solids handling operations.



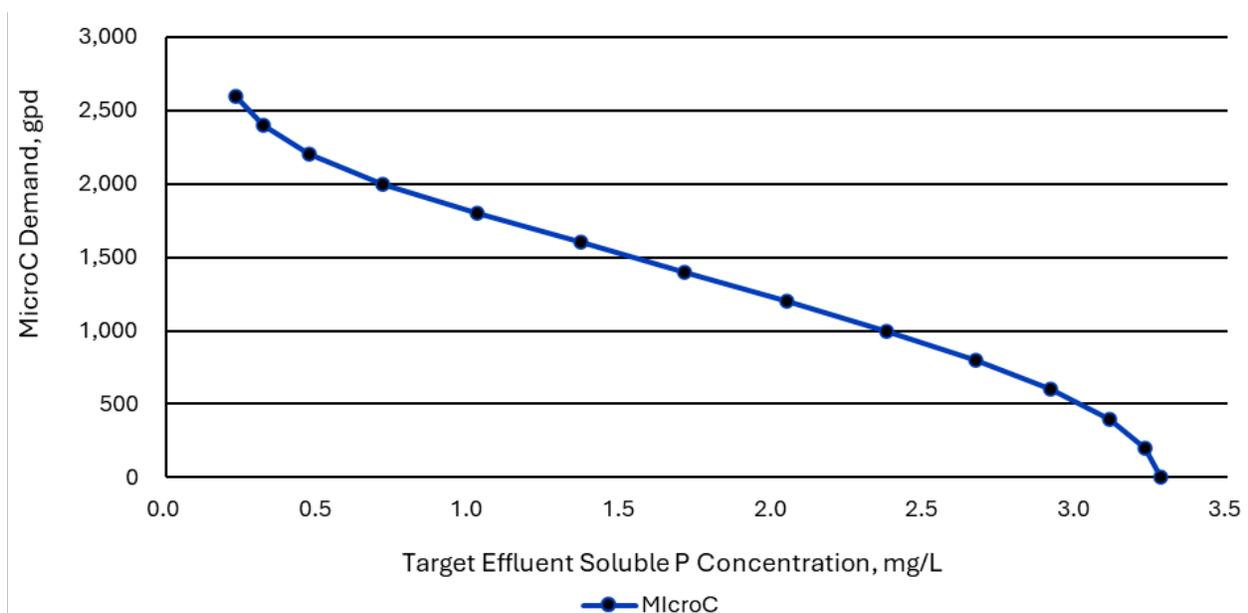
[Glenbard_Secondary Tmnt Modeling.xlsm](#) (Memo Graphs)

Figure 6 MicroC 2000 Dose Response Curve at Future 90-day Average Low Flow and Load Condition

3.3.1.2 MicroC 2000 Dose Response Curve at Wet Weather Maximum Month

Figure 7 depicts the dose-response curve for MicroC 2000 under projected future wet weather maximum month low-flow and load conditions. The analysis excludes primary sludge fermentation, as it demonstrated negligible impact in the 90-day average modeling scenarios. As a worst case, the analysis also assumed that sidestream phosphorus sequestration is not included assuming near-term capital cost savings and only focusing on liquid stream improvements.

To achieve a target effluent orthophosphate concentration of approximately 0.5 mg/L at max month conditions (corresponding to an estimated final effluent total phosphorus concentration of 0.65 mg/L), approximately 2,000 to 2,200 gpd of MicroC would be required in the mainstream treatment process. This carbon demand is expected to increase WAS production by an additional 8,700 to 9,600 ppd, necessitating adjustments or potential future improvements in solids handling operations.



[Glenbard_Secundary Tmnt Modeling.xlsm](#) (Memo Graphs)

Figure 7 MicroC 2000 Dose Response Curve at Future Wet Weather Maximum Month Flow and Load Condition

3.3.1.3 Sensitivity Analysis of Aeration Basin Volume at Future Wet-Weather Maximum Month

A sensitivity analysis was performed to verify that sufficient aeration basin volume is provided for both the 90-day average low-flow and wet weather maximum month flow and load conditions (Table 4). Following the development of the MicroC 2000 dose-response curve discussed earlier, the project team determined it prudent to plan for sidestream phosphorus sequestration in future facility improvements, which was included in the modeling analysis. Primary sludge fermentation was excluded.

In this analysis, the aerated basin volume was incrementally reduced until the MLSS concentration reached approximately 4,000 mg/L. The unaerated volume was proportionally adjusted to maintain a similar percentage of the total aeration basin volume as described for the 90-day average low-flow conditions. MicroC 2000 was dosed in the model to achieve a secondary effluent orthophosphate concentration of approximately 0.5 mg/L.

Based on this sensitivity analysis, the following aeration basin volumes are recommended for wet weather maximum month flow and load condition (i.e., Run 4):

- Anaerobic Volume: 3.47 MG (approximately 40 percent of the total aeration basin volume):
 - » If future nitrogen limits are implemented, a portion of this volume can be converted for anoxic conditions under an A2O configuration.
- Aerobic Volume: 5.2 MG (approximately 60 percent of the total aeration basin volume).
- Total Volume: 8.67 MG.

This total volume of 8.67 MG represents an increase of approximately 2.9 MG compared to the aeration basin volume required to treat the 90-day average low-flow and load conditions.

Table 4 BioWin Sensitivity Analysis Results at Future Wet Weather Maximum Month Condition.

Parameter	Units	Run 1	Run 2	Run 3	Run 4
Aerobic Volume	MG	6.40	6.00	5.60	5.20
Unaerated Volume	MG	4.27	4.00	3.73	3.47
Total Volume	MG	10.67	10.00	9.33	8.67
aSRT	days	9.70	9.70	9.70	9.70
Aerobic HRT	hours	5.61	5.30	4.91	4.55
anaSRT	days	3.25	3.23	3.23	3.24
Anaerobic HRT	hours	3.80	3.50	3.28	3.05
MLSS	mg/L	3,378	3,592	3,833	4,100
MicroC Dose	gpd	1,400	1,400	1,400	1,400
Effluent OP	mg/L	0.48	0.48	0.48	0.46
Effluent NH ₃	mg/L	0.63	0.63	0.64	0.64

Notes:

anaSRT - anaerobic SRT; OP - orthophosphate.

4.0 FINAL ASSUMED AERATION BASIN VOLUMES FOR FACILITY PLANNING

The final aeration basin volumes recommended for treating wet weather maximum month flow and load conditions in the "Extended AO" configuration (total volume of 8.67 MG) were incorporated into the main body of the project report for facility layout and cost analysis.

ATTACHMENT A DETAILED PROCESS MODELING RESULTS -
90-DAY AVERAGE LOW FLOWS AND
LOADS

Table A.1 Detailed Process Modeling Results at 90-Day Average Low Flows and Loads

Parameter	Units	Case 1A: AO Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 1B: AO Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 1C: AO Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 1D: AO Future 90d Avg Low w/ Carbon and P Seq. Low DO	Case 2A: A2O Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 2B: A2O Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 2C: A2O Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 2D: A2O Future 90d Avg Low w/ Carbon and P Seq. Low DO
GLENBARD COLLECTION SYSTEM									
Flow	mgd	10.37	10.37	10.37	10.37	10.37	10.37	10.37	10.37
COD	mg/L	387	387	387	387	387	387	387	387
	ppd	33,470	33,470	33,470	33,470	33,470	33,470	33,470	33,470
BOD	mg/L	158	158	158	158	158	158	158	158
	ppd	13,688	13,688	13,688	13,688	13,688	13,688	13,688	13,688
COD:BOD	Ratio	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45
TSS	mg/L	213	213	213	213	213	213	213	213
	ppd	18,381	18,381	18,381	18,381	18,381	18,381	18,381	18,381
VSS	mg/L	182	182	182	182	182	182	182	182
	ppd	15,700	15,700	15,700	15,700	15,700	15,700	15,700	15,700
VSS:TSS	Ratio	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
BOD:TSS	Ratio	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
TKN	mg/L	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8
	ppd	3,356	3,356	3,356	3,356	3,356	3,356	3,356	3,356
NH ₄	mg/L	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6
	ppd	2,215	2,215	2,215	2,215	2,215	2,215	2,215	2,215
TP	mg/L	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
	ppd	588	588	588	588	588	588	588	588
OP	mg/L	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	ppd	294	294	294	294	294	294	294	294

Parameter	Units	Case 1A: AO Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 1B: AO Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 1C: AO Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 1D: AO Future 90d Avg Low w/ Carbon and P Seq. Low DO	Case 2A: A2O Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 2B: A2O Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 2C: A2O Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 2D: A2O Future 90d Avg Low w/ Carbon and P Seq. Low DO
COD:TKN	Ratio	10	10	10	10	10	10	10	10
BOD:TKN	Ratio	4	4	4	4	4	4	4	4
COD:TP	Ratio	57	57	57	57	57	57	57	57
BOD:TP	Ratio	23	23	23	23	23	23	23	23
pH	S.U.	7.30	7.30	7.30	7.30	7.30	7.30	7.30	7.30
Alkalinity	mg/L CaCO ₃	300	300	300	300	300	300	300	300
Temperature	deg C	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
PRIMARY CLARIFIERS									
BOD Removal	%	47.93	48.03	47.99	48.00	47.92	48.03	48.00	47.99
TSS Removal	%	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00
Primary Effluent									
Flow	mgd	10.60	10.60	10.60	10.60	10.60	10.60	10.60	10.60
COD	mg/L	219.65	223.82	222.02	222.01	219.42	224.08	222.59	222.44
	ppd	19,425	19,787	19,630	19,629	19,404	19,812	19,680	19,666
BOD ₅	mg/L	84.39	85.65	85.16	85.18	84.26	85.59	85.22	85.17
	ppd	7,463	7,572	7,529	7,531	7,451	7,567	7,534	7,530
TSS	mg/L	102.79	106.84	105.45	105.40	102.61	106.90	105.88	105.67
	ppd	9,090	9,446	9,323	9,319	9,074	9,452	9,361	9,342
VSS	mg/L	86.76	88.80	88.01	87.98	86.61	88.88	88.30	88.16
	ppd	7,673	7,850	7,782	7,779	7,659	7,858	7,807	7,794
TKN	mg/L	38.36	38.68	37.83	37.86	38.18	38.54	37.93	37.85
	ppd	3,393	3,419	3,344	3,348	3,376	3,407	3,354	3,347

Parameter	Units	Case 1A: AO Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 1B: AO Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 1C: AO Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 1D: AO Future 90d Avg Low w/ Carbon and P Seq. Low DO	Case 2A: A2O Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 2B: A2O Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 2C: A2O Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 2D: A2O Future 90d Avg Low w/ Carbon and P Seq. Low DO
NH ₄	mg/L	28.93	28.97	28.22	28.26	28.77	28.81	28.29	28.22
	ppd	2,559	2,561	2,495	2,498	2,544	2,548	2,501	2,495
TP	mg/L	5.91	9.42	5.47	5.62	5.89	8.61	5.63	5.64
	ppd	523	833	484	497	521	761	498	499
OP	mg/L	4.23	7.28	3.53	3.68	4.22	6.51	3.68	3.70
	ppd	374	643	313	325	373	576	326	327
Flow	mgd	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
TSS	%	1.24	1.29	1.28	1.28	1.24	1.29	1.28	1.28
	ppd	11,109	11,548	11,396	11,391	11,090	11,554	11,443	11,420
AERATION BASINS									
Ratios (including External Carbon)									
COD:TKN	-	6	8	8	7	6	9	8	8
COD:TP	-	37	35	53	50	37	40	57	54
BOD:TKN	-	2	4	3	3	2	4	4	4
BOD:TP	-	14	17	24	23	14	20	27	25
Anaerobic Zone									
Volume	MG	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
	% of Total AB	25	25	25	25	20	20	20	18
HRT	Hours	2.60	2.60	2.60	2.6	2.60	2.60	2.60	2.60
anSRT	Days	2.73	2.80	2.83	2.83	2.73	2.80	2.81	2.81
OP	mg/L	4.15	21.40	9.56	10.25	4.15	24.90	13.34	14.43

Parameter	Units	Case 1A: AO Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 1B: AO Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 1C: AO Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 1D: AO Future 90d Avg Low w/ Carbon and P Seq. Low DO	Case 2A: A2O Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 2B: A2O Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 2C: A2O Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 2D: A2O Future 90d Avg Low w/ Carbon and P Seq. Low DO
Anoxic Zone									
Volume	MG	NA	NA	NA	NA	1.15	1.15	1.15	1.15
	% of Total AB	NA	NA	NA	NA	20	20	20	20
HRT	Hours	NA	NA	NA	NA	2.60	2.60	2.60	2.60
NO ₃ -N	mg/L	NA	NA	NA	NA	8.70	1.94	1.81	1.81
IMLR from Aerobic Zone	mgd	NA	NA	NA	NA	20.74	31.11	33.70	33.70
	% of Raw Inf	NA	NA	NA	NA	200	300	325	325
Aerobic Zone									
Volume	MG	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
HRT	Hours	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83
aSRT	Days	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50
tSRT	Days	11.30	11.30	11.30	11.30	14.20	14.20	14.20	14.20
MLSS	mg/L	1,908	3,232	2,651	2,644	1,838	3,226	2,799	2,728
MLVSS	mg/L	1,433	2,116	1,861	1,854	1,370	2,134	1,952	1,902
MLVSS:MLSS	Ratio	0.75	0.65	0.70	0.70	0.75	0.66	0.70	0.70
Loading Calcs (With External Carbon)									
F:M (total)	lb BOD/d/lb MLVSS	0.14	0.17	0.16	0.05	0.14	0.19	0.18	0.17
F:M (aerobic)	lb BOD/d/lb MLVSS	0.18	0.23	0.22	0.09	0.19	0.25	0.24	0.23
Organic Vol Load (total)	lb BOD/d/1000 ft ³	12.1	22.6	18.8	6.2	12.1	24.7	21.8	20.5

Parameter	Units	Case 1A: AO Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 1B: AO Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 1C: AO Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 1D: AO Future 90d Avg Low w/ Carbon and P Seq. Low DO	Case 2A: A2O Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 2B: A2O Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 2C: A2O Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 2D: A2O Future 90d Avg Low w/ Carbon and P Seq. Low DO
Organic Vol Load (aerobic)	lb BOD/d/1000 ft ³	16.1	30.1	25.1	10.5	16.1	33.0	29.1	27.3
NH4 Load (aerobic)	lb TKN/d/lb MLVSS	0.08	0.06	0.06	0.03	0.09	0.06	0.06	0.06
SECONDARY CLARIFIERS									
RAS (Pre WAS)	mgd	5.19	5.19	5.19	5.19	5.19	5.19	5.19	5.19
	mg/L	5,747	9,736	7,986	7,964	5,536	9,720	8,433	8,218
	% of Raw Inf	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
WAS	mgd	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
	mg/L	5,747	9,736	7,986	7,964	5,536	9,720	8,433	8,218
	ppd	6,505	10,970	9,018	8,980	6,247	10,952	9,509	9,260
Obs Yield (Exc. Ext. Carbon)	lb TSS/lb BOD	0.87	1.45	1.20	1.19	0.84	1.45	1.26	1.23
Obs Yield (W/ Ext. Carbon)	lb TSS/lb BOD	0.87	0.79	0.78	0.80	0.84	0.72	0.71	0.73
SECONDARY EFFLUENT (UPSTREAM OF FILTRATION)									
BOD	mg/L	2.73	3.91	3.48	3.51	2.63	3.92	3.59	3.54
TSS	mg/L	5.71	9.67	7.93	7.91	5.50	9.65	8.37	8.16
NH ₄ -N	mg/L	0.18	0.19	0.19	0.34	0.31	0.35	0.36	0.45
NO ₂ -N	mg/L	0.08	0.08	0.08	0.43	0.14	0.15	0.15	0.32
NO ₃ -N	mg/L	21.59	17.76	18.02	15.01	17.23	7.64	7.27	6.78
TIN	mg/L	21.85	18.02	18.28	15.78	17.68	8.14	7.78	7.55
TP (Pre-filtration)	mg/L	4.40	1.42	1.11	1.15	4.46	1.38	1.12	1.15

Parameter	Units	Case 1A: AO Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 1B: AO Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 1C: AO Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 1D: AO Future 90d Avg Low w/ Carbon and P Seq. Low DO	Case 2A: A2O Future 90d Avg Low No Add Ons DO = 2 mg/L	Case 2B: A2O Future 90d Avg Low w/ External Carbon DO = 2 mg/L	Case 2C: A2O Future 90d Avg Low w/ Carbon and P Seq. DO = 2 mg/L	Case 2D: A2O Future 90d Avg Low w/ Carbon and P Seq. Low DO
OP (Pre-filtration)	mg/L	4.29	0.79	0.77	0.80	4.35	0.81	0.77	0.80
pH	S.U.	6.66	6.71	6.72	6.74	6.71	6.84	6.82	6.82
Alkalinity	mg/L CaCO ₃	126	137	142	152	142	187	180	182
SLUDGE THICKENING & DEWATERING									
Gravity Belt Thickeners									
TS Flow	mgd	0.07	0.08	0.08	0.08	0.07	0.09	0.08	0.08
TS Load	ppd	16,739	21,399	19,391	19,365	16,476	21,383	19,890	19,639
TS %TS	%	3.0	3.0	3.0	2.9	2.9	2.9	3.0	2.9
TS %TVS	% of TS	81.0	74.5	77.6	77.6	80.9	74.9	77.2	77.3
Belt Filter Press									
Filtrate Flow	mgd	0.06	0.08	0.07	0.07	0.06	0.08	0.07	0.07
Filtrate TSS	mg/L	860	1,021	1,067	1,058	853	1,001	1,083	1,068
Filtrate NH3	mg/L	684	566	492	498	656	521	496	485
Filtrate TP	mg/L	144	559	31	53	141	431	53	55
LIQUID STREAM CHEMICAL FEEDS									
MicroC 2000									
Location	-	NA	Anaerobic	Anaerobic	Anaerobic	NA	Ana & Anx	Ana & Anx	Ana & Anx
Flow	GPD	0.00	990	635	580	0.00	1,200	925	800
COD Conc.	mg/L	1,096,505	1,096,505	1,096,505	1,096,505	1,096,505	1,096,505	1,096,505	1,096,505
	ppd	0	9,053	5,807	5,304	0	10,974	8,459	7,316
BOD Conc.	mg/L	767,134	767,134	767,134	767,134	767,134	767,134	767,134	767,134
	ppd	0	6,334	4,063	3,711	0	7,677	5,918	5,118

APPENDIX C

Supplemental Technical Memorandum Project Plans

December 24, 2024

Mr. Nidhan Singh
Illinois Environmental Protection Agency
Infrastructure Financial Assistance Section (IFAS)
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Subject: Glenbard 2018 Facility Plan Supplement

Mr. Singh

On behalf of the Glenbard Wastewater Authority (GWA), we submit for your review a supplement to the previously approved 2018 Facility Plan describing four (4) Capital Improvements Projects (CIP) for which GWA intends to pursue IEPA WPCLP loan funding.

The four projects include: Intermediate Clarifier and Intermediate Pump Station Rehabilitation, Final Clarifier Rehabilitation, Primary Sludge Direct Digester Feed, and Combined Sewerage Overflow Plant Improvements. The enclosed documentation provides the required information for Wastewater Project Planning Approval.

Please contact me (815)-444-4960, mgockowski@baxterwoodman.com if you have any questions or comments.

Sincerely,

BAXTER & WOODMAN, INC.
CONSULTING ENGINEERS



Mark Gockowski, PE

C: Matt Streicher, PE, Glenbard Wastewater Authority

TECHNICAL MEMORANDUM

DATE: December 23, 2024
TO: Illinois Environmental Protection Agency
FROM: Baxter & Woodman, Inc.
SUBJECT: Glenbard Wastewater Authority
Wastewater Facility Plan – Supplemental Memorandum

The purpose of this memorandum is to supplement the 2018 Wastewater Facility Plan (Project Plan) to meet all requirements of the Wastewater Project Planning Submittal Checklist, focusing specifically on the project implementation plan, as well as the necessary project planning documents and information not included in the Facility Plan. The implementation plan includes the anticipated construction schedule and financial repayment schedule for each non-BNR improvements project and a description of the user rate structure and dedicated source of revenue necessary for load repayment. The documents following this memo are compiled in accordance with the Project Planning Submittal Checklist.

The Authority plans on financing four (4) non-BNR improvements projects with low-interest loans secured through the IEPA Water Pollution Control Loan Program: Intermediate Pumping Station (IPS)/Intermediate Clarifier (IC) Rehabilitation, Final Clarifier Rehabilitation, Primary Sludge Direct Digester Feed, and Combined Sewerage Overflow Plant Improvements. Location maps for these improvement projects are included in Attachments A1-A4 of this memorandum.

Project #1 – IPS/IC Rehabilitation

1. Project Summary

The Intermediate Pumping Station/Intermediate Clarifier Rehabilitation project includes improvements to the IPS and IC components and structures that are necessary to maintain stable operation of the two-stage high-purity oxygen activated sludge system (TS-HPOAS).

The IPS improvements involve the replacement of (3) Archimedes screw pumps, as well as the replacement of the associated bearings, gearbox, and motors. In addition, replacement of aluminum covers, and regrouting of screw pumps would be integral to the scope of work. For the IC improvements, the clarifier mechanisms, draft tubes, and walkways will be replaced. In addition, the T-valves in the sludge draw off boxes will be replaced as well.

2. Basis of Design

The Intermediate Pumping Station Rehabilitation project consists of a full in-kind replacement of (3) Archimedes screw pumps that are currently installed and have exceeded their useful life. The design parameters for this rehabilitated pumping station are thus the same as the existing station:

Design Parameter	
Number of Pumps	3
Type	Archimedes Screw
Screw Diameter, Inches	84"
Manufacturer	Lakeside
Unit Capacity	18.0 MGD
Firm Capacity, MGD (Largest Out of Service)	36.0 MGD
Motor Horsepower, hp	125
Motor Control	Auto

Similarly, the Intermediate Clarifier Rehabilitation project consist of in-kind replacement of existing equipment that will maintain the same sedimentation capacity of the existing system.

Design Parameter	
Number of Clarifiers	2
Diameter, ft.	86
Side Water Depth, ft	12
Unit Surface Area, sq. ft.	5,809
Total Surface Area, sq. ft.	11,618
Total Weir Length, ft	540
Total Volume, ft ³	139,416
Overflow Rate, @ 16.0 MGD, gpd/sf	1,379
Weir Loading, @ 16.0 MGD, gpd/ft	29,647
Detention Time, hr	1.56

3. Inventory of Environmental Impacts

Construction of the IPS/IC Rehabilitation will be limited to the site of the existing treatment facility. Currently, the only anticipated environmental impacts are construction-related noise, dust, traffic, and soil displacement. These impacts are minor, temporary, and will be mitigated through best management practices through construction.

The Illinois Historical Preservation Agency (IHPA) and the Illinois Department of Natural Resources (IDNR) were consulted to determine any additional impacts as a result of constructing the proposed improvements.

- 1) Consultation by the IDNR was received on December 17, 2024. IDNR determined adverse effects are unlikely and consultation under 17 Ill. Admin Code Part 1075 and 1090 has been terminated.
- 2) Consultation by the IHPA for compliance with Section 106 of the National Historic Preservation Act of 1966 was received on December 19, 2024. IHPA determined that no historical properties are affected by the project.

All information pertaining to the IDNR and IHPA can be found in the IEPA Environmental Checklist material in Attachment D.

4. Probable Costs for the IPS/IC Rehabilitation

The preliminary opinion of probable costs for the IPS/IC Rehabilitation are summarized in the tables below. A detailed breakdown of costs is provided in Attachment B1.

Intermediate Clarifier/Intermediate Pumping Station Rehabilitation		
Description	2024 Total Probable Cost	2026 Project Year Total Probable Cost
General Conditions	\$274,500	\$288,667
Site Work	\$77,500	\$81,500
Intermediate Pumping Station	\$1,775,400	\$1,867,027
Intermediate Clarifiers	\$731,900	\$769,673
Construction Sub-Total	\$2,859,300	\$3,006,866
Contingency (30%)	\$858,000	\$903,000
Overhead, Profits, Bonds, and Insurance (15%)	\$429,000	\$452,000
Construction Cost with Contingency	\$4,146,300	\$4,361,866
Engineering, Legal, and Admin (13%)	\$540,000	\$568,000
PROBABLE PROJECT COST	\$4,686,300	\$4,929,866

5. Nutrient Removal and Energy Efficiency Components

The Glenbard Wastewater Authority's WWTF IPS/IC Rehabilitation does not include any nutrient removal or energy efficiency components. This scope of work entails direct replacement of existing equipment and restorative work to the existing structures.

6. Anticipated Construction Schedule

The Authority anticipates that construction of the IPS/IC Rehabilitation will commence in June 2026 and complete in March 2027. See below for a preliminary schedule:

IPS/IC Rehabilitation	
Task	Date
Project Planning Approval	March 31 st , 2025
Advertise for Bids	April, 2026
Begin Construction	June, 2026
Completion of Construction	March, 2027

7. Total Amount to be Borrowed

The Authority plans on financing the project with a low-interest loan secured through the IEPA Water Pollution Control Loan Program (WPCLP). The total amount to be borrowed is estimated to be \$5.1M for the IPS and IC improvements. The amount borrowed is anticipated to include construction cost, design and construction engineering costs, a 3% contingency added by the IEPA and construction period interest. A breakdown of the amount to be borrowed by the Authority for the IPS/IC Rehabilitation is provided in the table below.

IPS/IC Rehabilitation – Loan Amount	
Description	Probable Cost
Construction Sub-Total	\$3,006,866
Contingency (30%)	\$903,000
Overhead, Profits, Bonds, and Insurance (15%)	\$452,000
Construction Cost with Contingency	\$4,361,866
Engineering, Legal, and Admin (13%)	\$568,000
PROBABLE PROJECT COST	\$4,929,866
IEPA Contingency @ 3%	\$147,896
Construction Period Interest @ 1.5% rate	\$55,461
TOTAL ESTIMATED AMOUNT TO BE BORROWED	\$5,133,223

8. Loan Repayment Schedule

Based on the opinion of probable capital cost, the project schedule presented above, and an IEPA loan interest rate of 2.0 percent, a preliminary loan repayment schedule is presented in the table on the following page.

IPS/IC Rehabilitation – Loan Amount

Loan Principal at 1st Payment: \$5,133,223

Interest Rate: 2.000%

Loan Term (years): 20

Annual Payment: \$313,931

Year	Beginning Principal Balance	Principal Payment	Interest Payment	Total Payment	Ending Principal Balance	Payment No.
2027	\$ 5,133,223	\$ 211,267	\$ 102,664	\$ 313,931	\$ 4,921,956	1
2028	\$ 4,921,956	\$ 215,492	\$ 98,439	\$ 313,931	\$ 4,706,464	2
2029	\$ 4,706,464	\$ 219,802	\$ 94,129	\$ 313,931	\$ 4,486,663	3
2030	\$ 4,486,663	\$ 224,198	\$ 89,733	\$ 313,931	\$ 4,262,465	4
2031	\$ 4,262,465	\$ 228,682	\$ 85,249	\$ 313,931	\$ 4,033,783	5
2032	\$ 4,033,783	\$ 233,255	\$ 80,676	\$ 313,931	\$ 3,800,528	6
2033	\$ 3,800,528	\$ 237,921	\$ 76,011	\$ 313,931	\$ 3,562,607	7
2034	\$ 3,562,607	\$ 242,679	\$ 71,252	\$ 313,931	\$ 3,319,928	8
2035	\$ 3,319,928	\$ 247,533	\$ 66,399	\$ 313,931	\$ 3,072,396	9
2036	\$ 3,072,396	\$ 252,483	\$ 61,448	\$ 313,931	\$ 2,819,913	10
2037	\$ 2,819,913	\$ 257,533	\$ 56,398	\$ 313,931	\$ 2,562,380	11
2038	\$ 2,562,380	\$ 262,683	\$ 51,248	\$ 313,931	\$ 2,299,696	12
2039	\$ 2,299,696	\$ 267,937	\$ 45,994	\$ 313,931	\$ 2,031,759	13
2040	\$ 2,031,759	\$ 273,296	\$ 40,635	\$ 313,931	\$ 1,758,463	14
2041	\$ 1,758,463	\$ 278,762	\$ 35,169	\$ 313,931	\$ 1,479,701	15
2042	\$ 1,479,701	\$ 284,337	\$ 29,594	\$ 313,931	\$ 1,195,364	16
2043	\$ 1,195,364	\$ 290,024	\$ 23,907	\$ 313,931	\$ 905,341	17
2044	\$ 905,341	\$ 295,824	\$ 18,107	\$ 313,931	\$ 609,516	18
2045	\$ 609,516	\$ 301,741	\$ 12,190	\$ 313,931	\$ 307,776	19
2046	\$ 307,776	\$ 307,776	\$ 6,156	\$ 313,931	\$ (0)	20

Project #2 – Final Clarifier Rehabilitation

1. Project Summary

The Final Clarifier Rehabilitation includes replacement of (4) existing clarifier mechanisms, drives, walkways, and gearboxes. In addition, this project will include the blasting and coating of the bottom of the existing effluent launders, and a full rehabilitation/replacement of the WAS pumping station, including four (4) WAS pumps and two (2) Thickened Sludge pumps.

2. Basis of Design

The Final Clarifier Rehabilitation project consists of an in-kind replacement of the (4) 135' diameter final clarifiers that are already installed and have exceeded their useful life. The design parameters for the rehabilitated final clarifiers are thus the same as the existing clarifiers:

Design Parameter	
Number of Clarifiers	4
Diameter, ft.	135
Side Water Depth, ft	14
Unit Surface Area, sq. ft.	14,313
Total Surface Area, sq. ft.	57,254
Total Weir Length, ft	1,696
Total Volume, ft ³	801,556
Overflow Rate, @ 47.0 MGD, gpd/sf	821
Weir Loading, @ 47.0 MGD, gpd/LF	27,712
Detention Time, hr	3.1

3. Inventory of Environmental Impacts

Construction of the Final Clarifier Rehabilitation will be limited to the site of the existing treatment facility. Currently, the only anticipated environmental impacts are construction-related noise, dust, traffic, and soil displacement. These impacts are minor, temporary, and will be mitigated through best management practices through construction.

The Illinois Historical Preservation Agency (IHPA) and the Illinois Department of Natural Resources (IDNR) were consulted to determine any additional impacts as a result of constructing the proposed improvements.

- 1) Consultation by the IDNR was received on December 17, 2024. IDNR determined adverse effects are unlikely and consultation under 17 Ill. Admin Code Part 1075 and 1090 has been terminated.
- 2) Consultation by the IHPA for compliance with Section 106 of the National Historic Preservation Act of 1966 was received on December 19, 2024. IHPA determined that no historical properties are affected by the project.

All information pertaining to the IDNR and IHPA can be found in the IEPA Environmental Checklist material in Attachment D.

4. Probable Costs for the Final Clarifier Rehabilitation

The preliminary opinion of probable costs for the Final Clarifier Rehabilitation are summarized in the tables below. A detailed breakdown of costs is provided in Attachment B2.

Final Clarifier Rehabilitation		
Description	2024 Total Probable Cost	2026 Project Year Total Probable Cost
General Conditions	\$304,000	\$319,687
Site Work	\$55,500	\$58,364
Final Clarifiers	\$2,678,050	\$2,816,241
Sludge Pumping	\$649,000	\$682,489
Sub-Total	\$3,686,550	\$3,876,781
Electrical (15%)	\$550,000	\$578,381
Instrumentation (10%)	\$370,000	\$389,093
Construction Sub-Total	\$4,606,550	\$4,844,255
Contingency (30%)	\$1,380,000	\$1,451,210
Overhead, Profits, Bonds, and Insurance (15%)	\$690,000	\$725,605
Construction Cost with Contingency	\$6,676,550	\$7,021,070
Engineering, Legal, and Admin (13%)	\$870,000	\$912,739
PROBABLE PROJECT COST	\$7,546,550	\$7,933,809

5. Nutrient Removal and Energy Efficiency Components

The Glenbard Wastewater Authority's WWTF Final Clarifier Rehabilitation does not include any nutrient removal or energy efficiency components. This scope of work entails direct replacement of existing equipment and restorative work to the existing structures.

6. Anticipated Construction Schedule

The Authority anticipates that construction of the Final Clarifier Rehabilitation will commence in June 2026 and complete in March 2027. See below for a preliminary schedule:

Final Clarifier Rehabilitation	
Task	Date
Project Planning Approval	March 31 st , 2025
Advertise for Bids	February, 2026
Begin Construction	May, 2026
Completion of Construction	May, 2027

7. Total Amount to be Borrowed

The Authority plans on financing the project with a low-interest loan secured through the IEPA WPCLP. The total amount to be borrowed is estimated to be \$8.3M. The amount borrowed is anticipated to include construction cost, design and construction engineering costs, a 3% contingency added by the IEPA and construction period interest. A breakdown of the amount to be borrowed by the Authority for the Final Clarifier Rehabilitation is provided in the table below.

Final Clarifier Rehabilitation	
Description	2026 Project Year Total Probable Cost
Construction Sub-Total	\$4,844,255
Contingency (30%)	\$1,451,210
Overhead, Profits, Bonds, and Insurance (15%)	\$725,605
Construction Cost with Contingency	\$7,021,070
Engineering, Legal, and Admin (13%)	\$912,739
PROBABLE PROJECT COST	\$7,933,809
IEPA Contingency @ 3%	\$238,014
Construction Period Interest @ 1.5%	\$119,007
TOTAL ESTIMATED AMOUNT TO BE BORROWED	\$8,290,830

8. Loan Repayment Schedule

Based on the opinion of probable capital cost, the project schedule presented above, and an IEPA loan interest rate of 2.0 percent, a preliminary loan repayment schedule is presented in the table on the following page.

Final Clarifier Rehabilitation - Loan Amount

Loan Principal at 1st Payment: \$8,290,830

Interest Rate: 2.000%

Loan Term (years): 20

Annual Payment: \$507,040

Year	Beginning Principal Balance	Principal Payment	Interest Payment	Total Payment	Ending Principal Balance	Payment No.
2027	\$ 8,290,830	\$ 341,223	\$ 165,817	\$ 507,040	\$ 7,949,607	1
2028	\$ 7,949,607	\$ 348,048	\$ 158,992	\$ 507,040	\$ 7,601,559	2
2029	\$ 7,601,559	\$ 355,009	\$ 152,031	\$ 507,040	\$ 7,246,550	3
2030	\$ 7,246,550	\$ 362,109	\$ 144,931	\$ 507,040	\$ 6,884,441	4
2031	\$ 6,884,441	\$ 369,351	\$ 137,689	\$ 507,040	\$ 6,515,090	5
2032	\$ 6,515,090	\$ 376,738	\$ 130,302	\$ 507,040	\$ 6,138,352	6
2033	\$ 6,138,352	\$ 384,273	\$ 122,767	\$ 507,040	\$ 5,754,079	7
2034	\$ 5,754,079	\$ 391,958	\$ 115,082	\$ 507,040	\$ 5,362,121	8
2035	\$ 5,362,121	\$ 399,798	\$ 107,242	\$ 507,040	\$ 4,962,323	9
2036	\$ 4,962,323	\$ 407,793	\$ 99,246	\$ 507,040	\$ 4,554,529	10
2037	\$ 4,554,529	\$ 415,949	\$ 91,091	\$ 507,040	\$ 4,138,580	11
2038	\$ 4,138,580	\$ 424,268	\$ 82,772	\$ 507,040	\$ 3,714,312	12
2039	\$ 3,714,312	\$ 432,754	\$ 74,286	\$ 507,040	\$ 3,281,558	13
2040	\$ 3,281,558	\$ 441,409	\$ 65,631	\$ 507,040	\$ 2,840,149	14
2041	\$ 2,840,149	\$ 450,237	\$ 56,803	\$ 507,040	\$ 2,389,912	15
2042	\$ 2,389,912	\$ 459,242	\$ 47,798	\$ 507,040	\$ 1,930,671	16
2043	\$ 1,930,671	\$ 468,427	\$ 38,613	\$ 507,040	\$ 1,462,244	17
2044	\$ 1,462,244	\$ 477,795	\$ 29,245	\$ 507,040	\$ 984,449	18
2045	\$ 984,449	\$ 487,351	\$ 19,689	\$ 507,040	\$ 497,098	19
2046	\$ 497,098	\$ 497,098	\$ 9,942	\$ 507,040	\$ (0)	20

Project #3 – Combined Sewerage Overflow Facility Rehabilitation

1. Project Summary

The Authority’s Combined Sewerage Overflow (CSO) Facility is a wet weather treatment facility located at 625 Hill Avenue in Lombard, separate from the Authority’s main WWTF for complete treatment. The CSO Facility Rehabilitation Project will consist of a replacement of the existing mechanical screen with a finer mechanical bar screen, replacement of (4) raw sewage pumps and motors, replacement of (2) existing aerated grit blowers, replacement of (2) CSO clarifier mechanisms, and upgrades to the chlorine disinfection process.

2. Basis of Design

The CSO Facility Rehabilitation has basis of design implications that can be broken down through the following unit processes:

- Mechanical Bar Screens
- Raw Sewage Pumping
- Grit Removal
- Excess Flow Clarification
- Effluent Disinfection

In addition to process related improvements, the CSO Facility Rehabilitation will include the construction of a new 2,500 SF storage structure to house spare process equipment and maintenance equipment.

Mechanical Bar Screens

The mechanical bar screen replacement entails removal of the existing traveling rake mechanical bar screen a new mechanical bar screen with finer spacing to protect downstream equipment. The new bar screen will be installed in the existing 15’ wide channel and designed to maintain the existing 58 MGD capacity of the existing unit. Additional hydraulic evaluation will be conducted during design to confirm the influent structure is adequate to handle the additional head loss from the finer screen. The design parameters for the new bar screen arrangement are shown in the table below:

Mechanical Bar Screen Replacement	
Design Parameter:	
Number of Screens	2 (1 existing manual, 1 new mechanical)
Type	Bar
Screen width, feet	15
Firm Capacity (One out of service), MGD	58
Unit Capacity, MGD	58

Raw Sewage Pumping

The raw sewage pumping replacement entails an in-kind replacement of the (4) existing centrifugal raw sewage pumps. Although installing VFDs with the pumps may allow for energy cost savings, the

potential upside of VFDs would need to be evaluated further due to the minimal run time of the CSO raw sewage pumps over the course of the year. For the purposes of this evaluation, VFDs are not included in the capital cost or the basis of design. The design parameters for the in-kind raw pumping station replacement are shown in the table below:

Influent Pumps Design Criteria	
Design Parameter:	
Number of Pumps	4
Type	Centrifugal
Capacity Per Pump	19.3 MGD at 33 feet TDH
Firm Capacity (One out of service), MGD	58 MGD at 33 feet TDH

Grit Removal

The grit removal rehabilitation entails in-kind replacement of (2) aerated grit blowers, (2) aerated grit tanks and classifiers, and associated piping, fittings and appurtenances that have exceeded their useful life. The design parameters for the in-kind aerated grit removal tank and blower replacement are shown in the table below:

Aerated Grit Removal Design Criteria	
Design Parameter:	
Number of Grit Tanks	2
Design	Aerated
Peak Flow, MGD	29
Tank length, ft.	64
Tank width, ft.	9.5
Side Water Depth, ft.	11.92
Volume (Each), gallons	54,200
Total Volume, gallons	108,400
Detention Time, minutes	2.69

Excess Flow Clarification

The excess flow clarifier rehabilitation entails in-kind replacement of the clarifier mechanisms, bridges, and associated components that have exceeded their useful life. The concrete clarifier structures are in good condition overall and would be kept in service as part of this replacement. The design parameters for the in-kind excess flow clarifier replacement are shown in the table below:

Excess Flow Clarifier Design Criteria	
Design Parameter:	
Design Flow	58.0 MGD
Number of Clarifiers	2
Diameter, ft.	145
Sidewater Depth, ft.	10
Surface Area, sf/clarifier	16,513
Total Surface Area, sf	33,026
Surface Loading Rate, gallons/sf	1,756
Weir Length – Each, lin. ft.	431
Weir Length – Total, lin. ft.	862
Weir Loading Rate, gpd/ft	67,285

Effluent Disinfection

The effluent disinfection rehabilitation entails an upgrade to the Authority’s existing chlorination (sodium hypochlorite) and dechlorination (sodium thiosulfate) chemical dosing systems to allow for more robust and reliable operation. This includes implementing instrumentation upgrades like chlorine residual analyzers, as well as ORP probes to indicate base chlorine demand due to influent solids and organics. The existing sodium hypochlorite and thiosulfate feed pump skids, chemical containment structure, chemical storage tanks, and chemical feed storage tanks would be replaced as part of this upgrade.

3. Inventory of Environmental Impacts

Construction of the CSO Facility Rehabilitation will be limited to the site of the existing CSO treatment facility. Currently, the only anticipated environmental impacts are construction-related noise, dust, traffic, and soil displacement. These impacts are minor, temporary, and will be mitigated through best management practices through construction.

The Illinois Historical Preservation Agency (IHPA) and the Illinois Department of Natural Resources (IDNR) were consulted to determine any additional impacts as a result of constructing the proposed improvements.

- 1) Consultation by the IDNR was received on December 17, 2024. IDNR determined adverse effects are unlikely and consultation under 17 Ill. Admin Code Part 1075 and 1090 has been terminated.
- 2) Consultation by the IHPA for compliance with Section 106 of the National Historic Preservation Act of 1966 was received on December 19, 2024. IHPA determined that no historical properties are affected by the project.

All information pertaining to the IDNR and IHPA can be found in the IEPA Environmental Checklist material in Attachment D.

4. Probable Costs for the CSO Facility Rehabilitation

The preliminary opinion of probable costs for the CSO Facility Rehabilitation are summarized in the table below. A detailed breakdown of costs is provided in Attachment B3.

CSO Facility Rehabilitation		
Description	2024 Total Probable Cost	2028 Project Year Total Probable Cost
General Conditions	\$747,000	\$847,127
Site Work	\$362,000	\$410,522
Raw Sewage Screening	\$2,188,000	\$2,481,277
Aerated Grit Upgrades	\$1,599,500	\$1,813,895
CSO Clarifiers	\$1,080,000	\$1,224,762
Chlorine Disinfection	\$446,000	\$505,781
Storage Building	\$312,500	\$354,387
Sub-Total	\$6,735,000	\$7,448,115
Electrical (15%)	\$1,010,000	\$1,116,941
Instrumentation (10%)	\$670,000	\$740,941
Construction Sub-Total	\$8,415,000	\$9,305,997
Contingency (30%)	\$2,520,000	\$2,786,823
Overhead, Profits, Bonds, and Insurance (15%)	\$1,260,000	\$1,393,411
Construction Cost with Contingency	\$12,195,000	\$13,486,231
Engineering, Legal, and Admin (13%)	\$1,585,350	\$1,753,210
PROBABLE PROJECT COST	\$13,780,350	\$15,239,441

5. Nutrient Removal and Energy Efficiency Components

There is no nutrient removal component associated with the CSO Facility Improvements. Although there is some potential to reduce energy usage from the chemical feed pumps by implementing more robust chlorine residual and ORP instrumentation, the energy savings from these measures would be minor due to the small motor sizes of the chemical feed pumps, and the infrequent operation of the excess flow facility over the course of the year.

6. Anticipated Construction Schedule

The Authority anticipates that construction of the Final Clarifier Rehabilitation will commence in June 2028 and complete in June 2029. See below for a preliminary schedule:

CSO Facility Rehabilitation	
Task	Date
Project Planning Approval	March 31 st , 2025
Advertise for Bids	March, 2028
Begin Construction	June, 2028
Completion of Construction	June, 2029

7. Total Amount to be Borrowed

The Authority plans on financing the project with a low-interest loan secured through the IEPA WPCLP. The total amount to be borrowed is estimated to be \$15.9M. The amount borrowed is anticipated to include construction cost, design, and construction engineering costs, a 3% contingency added by the IEPA and construction period interest. A breakdown of the amount to be borrowed by the Authority for the CSO Facility Rehabilitation is provided in the table below.

CSO Facility Rehabilitation	
Description	2028 Project Year Total Probable Cost
Construction Sub-Total	\$9,305,997
Contingency (30%)	\$2,786,823
Overhead, Profits, Bonds, and Insurance (15%)	\$1,393,411
Construction Cost with Contingency	\$13,486,231
Engineering, Legal, and Admin (13%)	\$1,753,210
PROBABLE PROJECT COST	\$15,239,441
IEPA Contingency @ 3%	\$457,183
Construction Period Interest @ 1.5%	\$228,592
TOTAL ESTIMATED AMOUNT TO BE BORROWED	\$15,925,216

8. Loan Repayment Schedule

Based on the opinion of probable capital cost, the project schedule presented above, and an IEPA loan interest rate of 2.0 percent, a preliminary loan repayment schedule is presented in the table on the following page.

CSO Facility Rehabilitation – Loan Amount

Loan Principal at 1st Payment: \$15,925,216

Interest Rate: 2.000%

Loan Term (years): 20

Annual Payment: \$973,934

Year	Beginning Principal Balance	Principal Payment	Interest Payment	Total Payment	Ending Principal Balance	Payment No.
2028	\$ 15,925,216	\$ 655,430	\$ 318,504	\$ 973,934	\$ 15,269,786	1
2029	\$ 15,269,786	\$ 668,538	\$ 305,396	\$ 973,934	\$ 14,601,248	2
2030	\$ 14,601,248	\$ 681,909	\$ 292,025	\$ 973,934	\$ 13,919,339	3
2031	\$ 13,919,339	\$ 695,547	\$ 278,387	\$ 973,934	\$ 13,223,792	4
2032	\$ 13,223,792	\$ 709,458	\$ 264,476	\$ 973,934	\$ 12,514,334	5
2033	\$ 12,514,334	\$ 723,647	\$ 250,287	\$ 973,934	\$ 11,790,687	6
2034	\$ 11,790,687	\$ 738,120	\$ 235,814	\$ 973,934	\$ 11,052,566	7
2035	\$ 11,052,566	\$ 752,883	\$ 221,051	\$ 973,934	\$ 10,299,684	8
2036	\$ 10,299,684	\$ 767,940	\$ 205,994	\$ 973,934	\$ 9,531,744	9
2037	\$ 9,531,744	\$ 783,299	\$ 190,635	\$ 973,934	\$ 8,748,444	10
2038	\$ 8,748,444	\$ 798,965	\$ 174,969	\$ 973,934	\$ 7,949,479	11
2039	\$ 7,949,479	\$ 814,944	\$ 158,990	\$ 973,934	\$ 7,134,535	12
2040	\$ 7,134,535	\$ 831,243	\$ 142,691	\$ 973,934	\$ 6,303,292	13
2041	\$ 6,303,292	\$ 847,868	\$ 126,066	\$ 973,934	\$ 5,455,424	14
2042	\$ 5,455,424	\$ 864,825	\$ 109,108	\$ 973,934	\$ 4,590,598	15
2043	\$ 4,590,598	\$ 882,122	\$ 91,812	\$ 973,934	\$ 3,708,476	16
2044	\$ 3,708,476	\$ 899,764	\$ 74,170	\$ 973,934	\$ 2,808,712	17
2045	\$ 2,808,712	\$ 917,760	\$ 56,174	\$ 973,934	\$ 1,890,952	18
2046	\$ 1,890,952	\$ 936,115	\$ 37,819	\$ 973,934	\$ 954,837	19
2047	\$ 954,837	\$ 954,837	\$ 19,097	\$ 973,934	\$ (0)	20

Project #4 – Primary Sludge Direct Digester Feed

1. Project Summary

Currently, primary sludge at the Authority’s WWTF is pumped by (2) progressive cavity pumps from the primary clarifiers to a gravity thickener. It is in the gravity thickener that primary sludge co-settles with WAS from the biological tanks before being pumped to (2) anaerobic digesters.

The Primary Sludge Direct Digester Feed project consists of a re-routing of the primary sludge force main to send primary settled sludge from the primary clarifiers directly to the anaerobic digesters, bypassing the gravity thickener entirely. In addition, Anaerobic Digester #1 will be cleaned of its contents prior to connection with the primary sludge force main as part of this project.

2. Basis of Design

The Primary Sludge Direct Digester Feed project consists of re-routing the primary sludge force main discharge directly to the first stage anaerobic digesters. Currently, primary sludge is discharged to a gravity thickener where the sludge co-thickens with WAS from the TS-HPOAS system before being pumped once again to the anaerobic digesters. This co-thickening of primary sludge with WAS can create septic conditions, resulting in nuisance odors. Separating the primary sludge and TS-HPOAS WAS streams in the solids handling process will eliminate the need for co-thickening, as well as reduce the chance of nuisance odors being produced. This project will not replace the progressive cavity pumps or impact the operating parameters of the primary clarifiers or anaerobic digesters. The design parameters for primary sludge pumping equipment are thus the same as for the existing process:

Primary Sludge Pumping Design Criteria	
Design Parameter:	
Number of Pumps	2
Type	Progressive Cavity
Capacity Per Pump	300 gpm at 125 feet TDH

3. Inventory of Environmental Impacts

The Illinois Historical Preservation Agency (IHPA) and the Illinois Department of Natural Resources (IDNR) were consulted to determine any additional impacts as a result of constructing the proposed improvements.

- 1) Consultation by the IDNR was received on December 17, 2024. IDNR determined adverse effects are unlikely and consultation under 17 Ill. Admin Code Part 1075 and 1090 has been terminated.
- 2) Consultation by the IHPA for compliance with Section 106 of the National Historic Preservation Act of 1966 was received on December 19, 2024. IHPA determined that no historical properties are affected by the project.

All information pertaining to the IDNR and IHPA can be found in the IEPA Environmental Checklist material in Attachment D.

4. Probable Costs for the Primary Sludge Direct Digester Feed

The preliminary opinion of probable costs for the Primary Sludge Direct Digester Feed are summarized in the table below. A detailed breakdown of costs is provided in Attachment B4.

Primary Sludge Direct Digester Feed		
Description	2024 Total Probable Cost	2026 Project Year Total Probable Cost
General Conditions	\$107,000	\$112,522
Site Work	\$16,750	\$17,614
Sludge Piping	\$350,000	\$368,063
Sub-Total	\$473,750	\$498,200
Contingency (15%)	\$70,000	\$73,613
Overhead, Profits, Bonds, and Insurance (15%)	\$70,000	\$73,613
Construction Cost with Contingency	\$613,750	\$645,425
Engineering, Legal, and Admin (13%)	\$80,000	\$84,129
PROBABLE PROJECT COST	\$693,750	\$729,554

5. Nutrient Removal and Energy Efficiency Components

There is no nutrient removal or energy efficiency component associated with the Primary Sludge Direct Digester Feed project. This project entails only re-routing of the primary sludge force main, site work, and anaerobic digester cleaning, and does nothing to improve energy efficiency or promote nutrient removal in the liquid treatment process.

6. Anticipated Construction Schedule

The Authority anticipates that construction of the Primary Sludge Direct Digester Feed project will commence in June 2026 and complete in December 2026. See below for a preliminary schedule:

Primary Sludge Direct Digester Feed	
Task	Date
Project Planning Approval	March 31 st , 2025
Advertise for Bids	March, 2026
Begin Construction	June, 2026
Completion of Construction	December, 2026

7. Total Amount to be Borrowed

The Authority plans on financing the project with a low-interest loan secured through the IEPA WPCLP. The total amount to be borrowed is estimated to be \$757k. The amount borrowed is anticipated to include construction cost, design, and construction engineering costs, a 3% contingency added by the IEPA and construction period interest. A breakdown of the amount to be

borrowed by the Authority for the Primary Sludge Direct Digester Feed project is provided in the table below.

Primary Sludge Direct Digester Feed	
Description	2026 Project Year Total Probable Cost
Construction Sub-Total	\$498,200
Contingency (15%)	\$73,613
Overhead, Profits, Bonds, and Insurance (15%)	\$73,613
Construction Cost with Contingency	\$645,425
Engineering, Legal, and Admin (13%)	\$84,129
PROBABLE PROJECT COST	\$729,554
IEPA Contingency @ 3%	\$21,887
Construction Period Interest @ 1.5%	\$5,472
TOTAL ESTIMATED AMOUNT TO BE BORROWED	\$756,913

8. Loan Repayment Schedule

Based on the opinion of probable capital cost, the project schedule presented above, and an IEPA loan interest rate of 2.0 percent, a preliminary loan repayment schedule is presented in the table on the following page.

Primary Sludge Direct Digester Feed – Loan Amount

Loan Principal at 1st Payment: \$756,913

Interest Rate: 2.000%

Loan Term (years): 20

Annual Payment: \$46,920

Year	Beginning Principal Balance	Principal Payment	Interest Payment	Total Payment	Ending Principal Balance	Payment No.
2028	\$ 756,913	\$ 31,152	\$ 15,138	\$ 46,290	\$ 725,761	1
2029	\$ 725,761	\$ 31,775	\$ 14,515	\$ 46,290	\$ 693,986	2
2030	\$ 693,986	\$ 32,411	\$ 13,880	\$ 46,290	\$ 661,575	3
2031	\$ 661,575	\$ 33,059	\$ 13,232	\$ 46,290	\$ 628,516	4
2032	\$ 628,516	\$ 33,720	\$ 12,570	\$ 46,290	\$ 594,796	5
2033	\$ 594,796	\$ 34,394	\$ 11,896	\$ 46,290	\$ 560,402	6
2034	\$ 560,402	\$ 35,082	\$ 11,208	\$ 46,290	\$ 525,320	7
2035	\$ 525,320	\$ 35,784	\$ 10,506	\$ 46,290	\$ 489,536	8
2036	\$ 489,536	\$ 36,500	\$ 9,791	\$ 46,290	\$ 453,036	9
2037	\$ 453,036	\$ 37,230	\$ 9,061	\$ 46,290	\$ 415,807	10
2038	\$ 415,807	\$ 37,974	\$ 8,316	\$ 46,290	\$ 377,833	11
2039	\$ 377,833	\$ 38,734	\$ 7,557	\$ 46,290	\$ 339,099	12
2040	\$ 339,099	\$ 39,508	\$ 6,782	\$ 46,290	\$ 299,591	13
2041	\$ 299,591	\$ 40,299	\$ 5,992	\$ 46,290	\$ 259,292	14
2042	\$ 259,292	\$ 41,104	\$ 5,186	\$ 46,290	\$ 218,188	15
2043	\$ 218,188	\$ 41,927	\$ 4,364	\$ 46,290	\$ 176,261	16
2044	\$ 176,261	\$ 42,765	\$ 3,525	\$ 46,290	\$ 133,496	17
2045	\$ 133,496	\$ 43,620	\$ 2,670	\$ 46,290	\$ 89,875	18
2046	\$ 89,875	\$ 44,493	\$ 1,798	\$ 46,290	\$ 45,383	19
2047	\$ 45,383	\$ 45,383	\$ 908	\$ 46,290	\$ (0)	20

Implementation Plan

See the table below for summarized capital costs and implementation schedule for the projects seeking SRF funding, listed in chronological order of construction start date.

Project	Capital Cost (Million \$)	Construction Start Date	Project Completion Date
Final Clarifier Rehabilitation	\$8.3	May 2026	May 2027
IPS/IC Rehabilitation	\$5.1	June 2026	March 2027
Primary Sludge Direct Digester Feed	\$0.76	June 2026	December 2026
CSO Facility Rehabilitation	\$15.9	June 2028	June 2029

Residential Rate Structure & Dedicated Source of Revenue

As part of the IEPA low-interest loan project planning documentation, the existing user charge and O, M, and R Certification sheet is required to be filled out and submitted. This form was not completed for this application as it does not fit with the operation of the Glenbard Wastewater Authority, and the form format is not applicable.

As stated previously, the Glenbard Wastewater Authority serves two separate municipalities, the Village of Lombard and the Village of Glen Ellyn. The Authority does not bill users directly or set user rates, but rather collects funds from each Village relative to the flow received from each, calculated on a semi-annual basis. The Villages in turn set user rates and bill users directly.

Usage fees for each Village are determined annually through a budgeting process. Each year, the Authority develops a budget that identifies the operational and maintenance costs associated with running the facilities and performing upgrades. The two communities are responsible for contributing the necessary amount of money to fund the Authority's annual budget. Influent flows to the plant are reviewed as part of this process, and the overall contributions per Village are determined based on usage. Based on the Authority's 2023 Fiscal Year Budget, the Village of Glen Ellyn contributes 45% of the Authority's Capital Fund Contribution, and the Village of Lombard contributes the remaining 55%.

The Authority itself does not have a rate structure that it sets for direct users, as this is the responsibility of each Village. The approach for previous Facility Plan submittals, with the consultation of Illinois EPA, was to submit an ordinance from each Village that (1) approves the loan, (2) commits to setting rates and making payments sufficient to cover its share of debt service, and (3) confirms that public notice of the opportunity for a referendum was given (No. 3 only applies to Lombard, as it is a non-home rule municipality). This information has been provided as Attachment C.

Dedicated Source of Revenue

The Glenbard Wastewater Authority's current rate structure and revenue jointly funded by the Village of Glen Ellyn and the Village of Lombard are sufficient to service the debt associated with the Intermediate Pumping Station/Intermediate Clarifier Rehabilitation, Final Clarifier Rehabilitation, Combined Sewerage Overflow Facility Rehabilitation, and Primary Sludge Direct Digester Feed project. The total estimated loan amounts for these projects are \$5.1M, \$8.3M, \$15.9M, and \$756k, respectively. These amounts include 15% construction sub-total contingency, 15% contractor overhead and profit, 13% total design engineering, 3% IEPA recommended contingency, and 1.5% construction period interest.

IEPA Construction Permit Status

It is anticipated that after the Project Planning Submittal is approved, and the design for each project is completed that the application for the project will be submitted to obtain the IEPA Construction Permit. Each project will be submitted in accordance with the project schedule.

Local Newspaper Information

The Daily Herald
1000 W Albion Avenue
Schaumburg, IL 60193

IEPA Environmental Checklist

All information pertaining to the IDNR and IHPA can be found in the IEPA Environmental Checklist material in Attachment D.

Inter-Governmental and/or Service Agreements

GWA has several intergovernmental agreements that are applicable to their service area. Attachment E identifies the following:

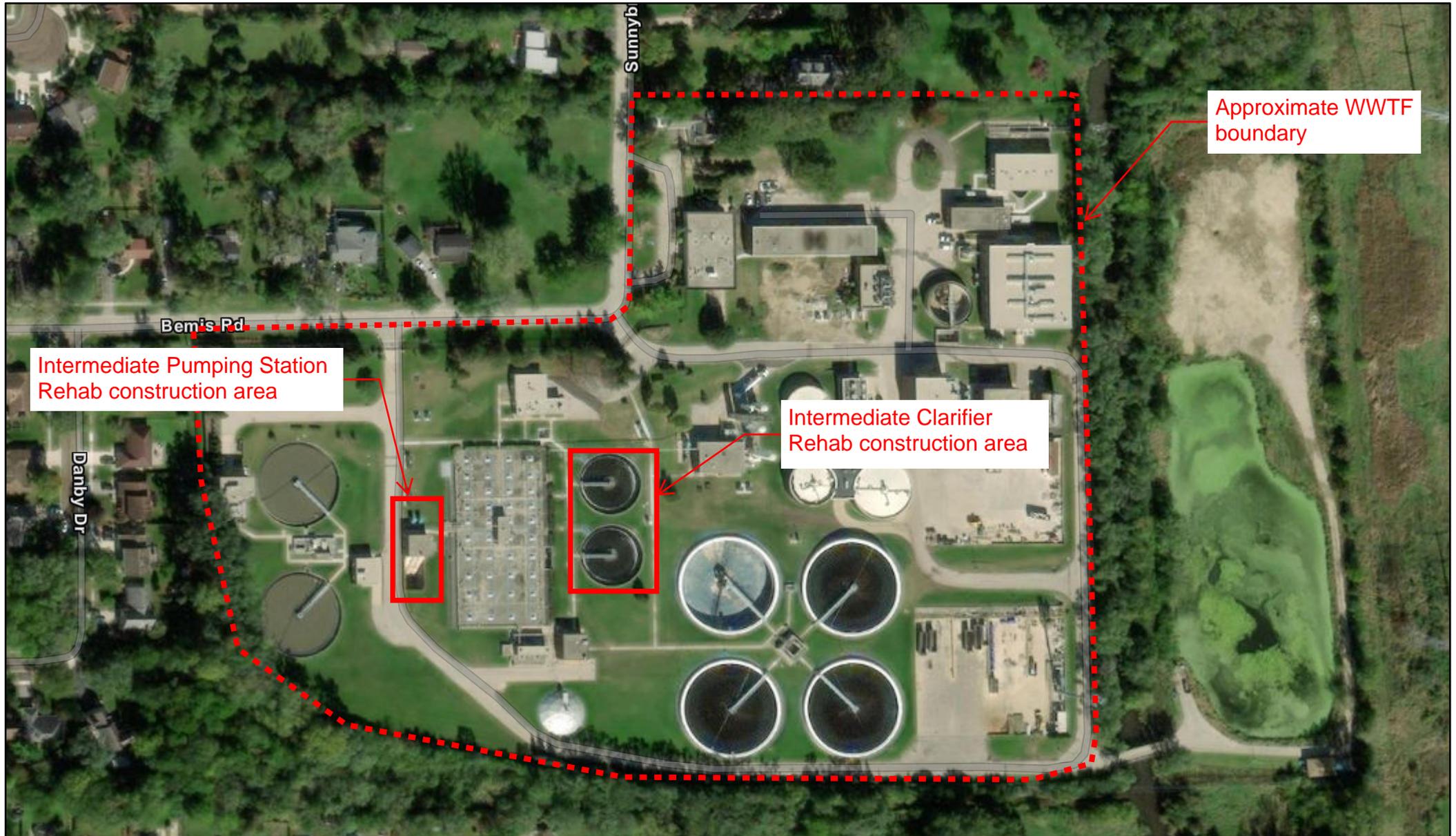
- The IGA between the Villages of Glen Ellyn and Lombard that created the Authority.
- The IGA between the Village of Glen Ellyn and Illinois American Water.
- The IGA between the Village of Glen Ellyn and DuPage County.

Funding Nomination Forms

All four funding nomination forms can be found in Attachment F.

ATTACHMENT A - PROJECT LOCATION MAPS

Attachment A1: Glenbard WWTF - IPS/IC Rehabilitation



Approximate WWTF boundary

Intermediate Pumping Station Rehab construction area

Intermediate Clarifier Rehab construction area

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Municipal Boundary

World Imagery

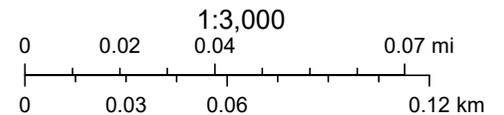
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High Resolution 60cm Imagery

High Resolution 30cm Imagery

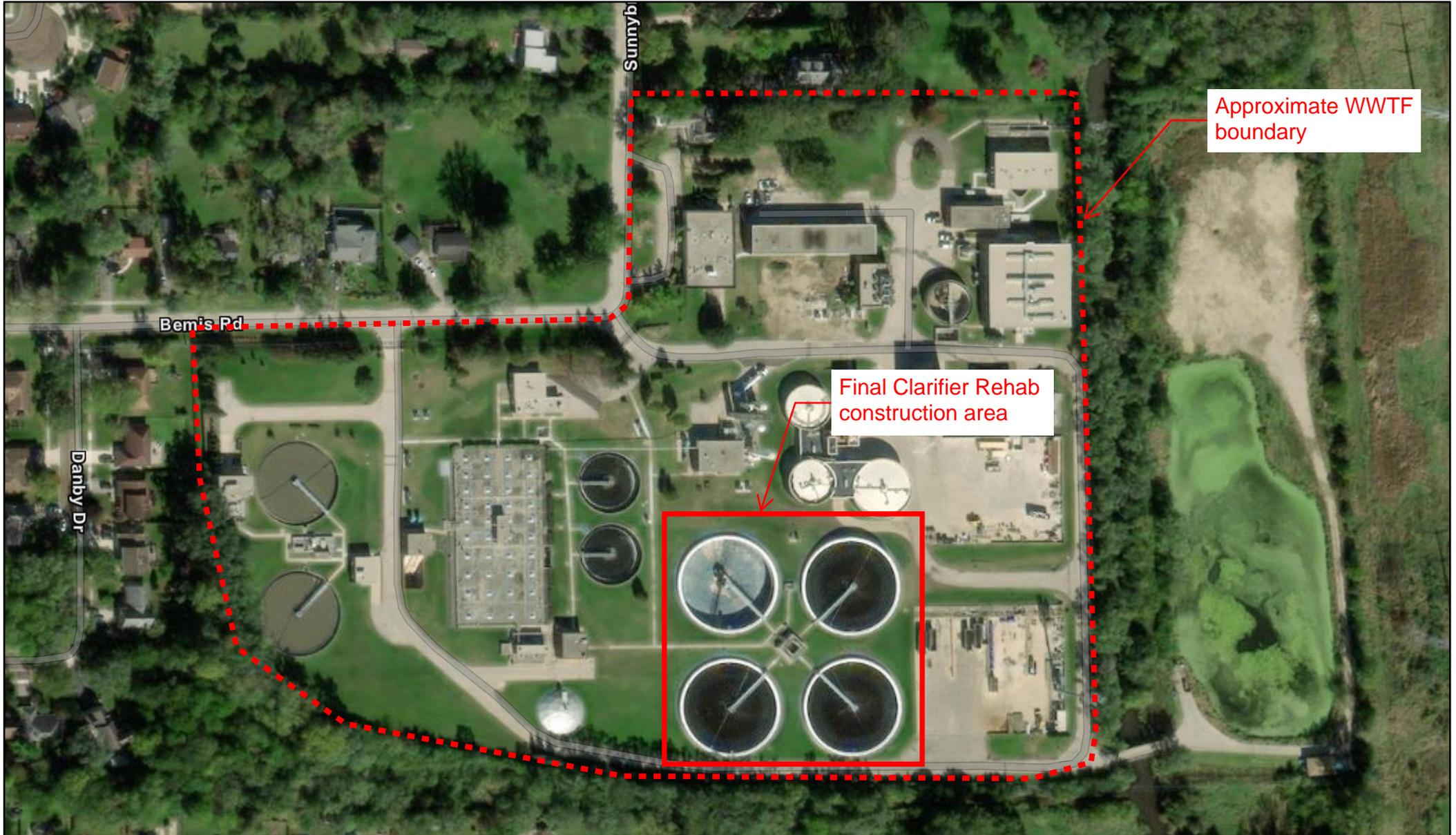
Citations

60cm Resolution Metadata



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Attachment A2: Glenbard WWTF - Final Clarifier Rehabilitation



Approximate WWTF boundary

Final Clarifier Rehab construction area

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Municipal Boundary

World Imagery

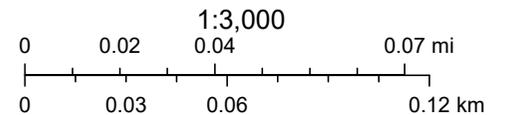
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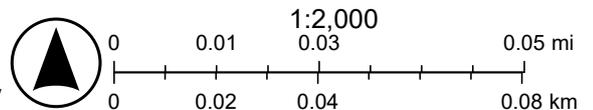
Attachment A3: CSO Facility Rehabilitation



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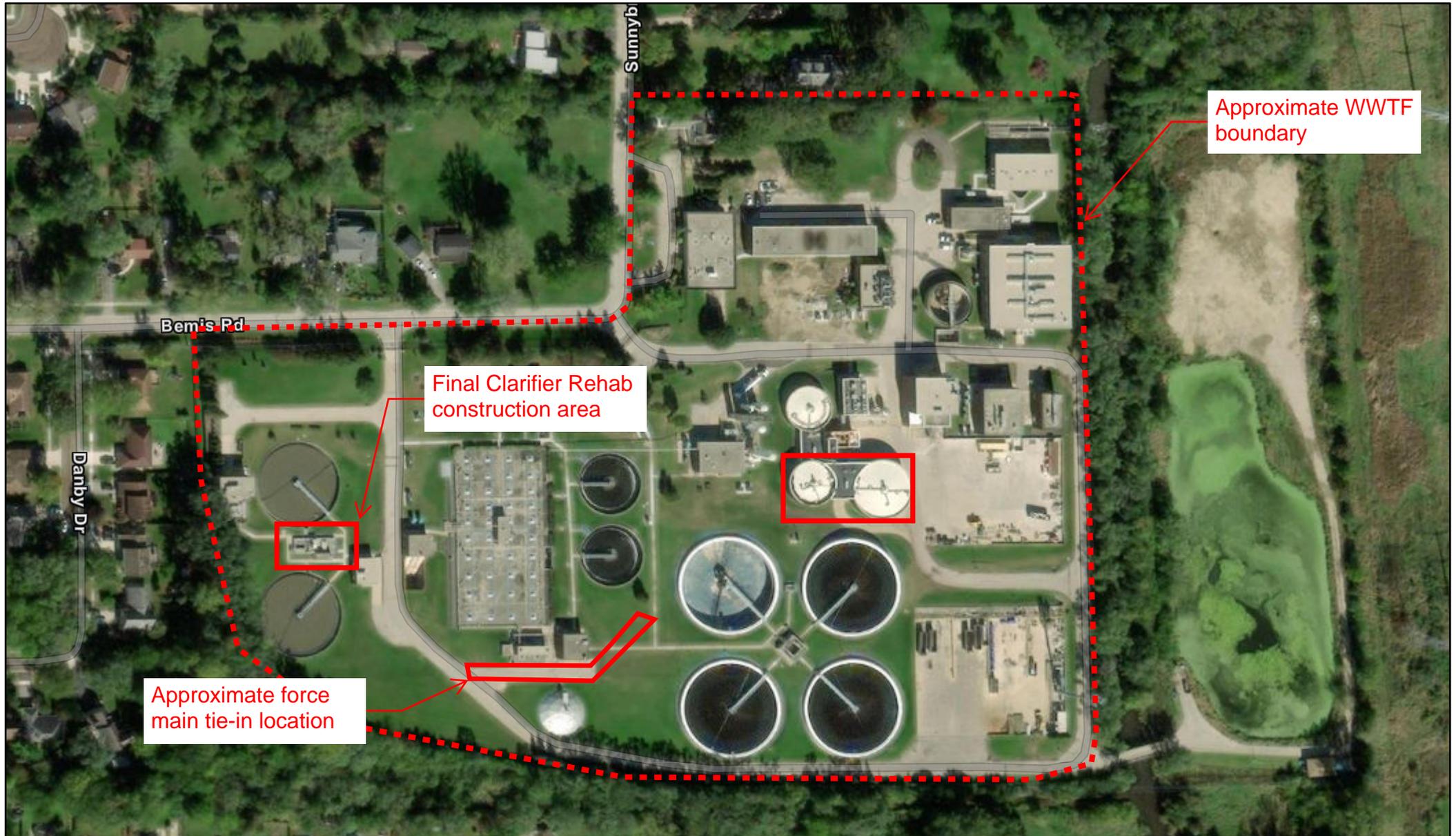
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- Municipal Boundary
- World Imagery
- Low Resolution 15m Imagery

- High Resolution 60cm Imagery
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- Citations
- 60cm Resolution Metadata



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Attachment A4: Glenbard WWTF - Primary Sludge Direct Digester Feed



Approximate WWTF boundary

Final Clarifier Rehab construction area

Approximate force main tie-in location

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Municipal Boundary

World Imagery

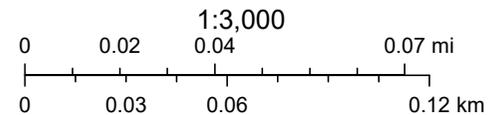
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ATTACHMENT B - ENGINEER'S OPINIONS OF PROBABLE COST

Intermediate Clarifier/Intermediate Pumping Station Rehabilitation

Description	2024 Probable Cost	2026 Probable Cost
Summary		
GENERAL CONDITIONS		\$274,500
SITE WORK		\$77,500
INTERMEDIATE PUMPING STATION		\$1,775,400
INTERMEDIATE CLARIFIERS		\$731,900
Construction Sub-Total		\$2,859,300
Contingency	30%	\$858,000
Overhead, Profit, Bonds, and Insurance	15%	\$429,000
Construction Cost with Contingency		\$4,146,300
Engineering, Legal, and Admin	13%	\$540,000
		\$4,686,300
PROBABLE PROJECT		\$4,929,866

Description	Quantity	Unit	Unit Price	Total Probable Cost
GENERAL CONDITIONS				
Dumpsters	9	Mo.	\$500	\$4,500
Job Trailer	9	Mo.	\$1,000	\$9,000
Eng Trailer	9	Mo.	\$1,000	\$9,000
Mobilization/Demobilization	1	Lump Sum	\$10,000	\$10,000
Supervision	9	Mo.	\$24,000	\$216,000
Surveying	1	Lump Sum	\$16,000	\$16,000
Record Drawing	1	Lump Sum	\$10,000	\$10,000
TOTAL GENERAL CONDITIONS:				\$274,500
SITE WORK				
Paving Removal & Replacement (Full Depth)	200	Sq. Yd.	\$100	\$20,000
Sidewalk	400	Sq. Ft.	\$50	\$20,000
Silt Fence & SE/SC Control	1	Lump Sum	\$15,000	\$15,000
Restoration	1	Lump Sum	\$22,500	\$22,500
TOTAL SITE WORK:				\$77,500
INTERMEDIATE CLARIFIERS				
Demo Existing Mechanisms	2	Each	\$35,000	\$70,000
Process				\$0
Mechanisms (86-ft)	2	Each	\$175,000	\$350,000
Mechanism Installation	2	Each	\$70,950	\$141,900
Walkways	2	Each	\$40,000	\$80,000
T-Valves	6	Each	\$15,000	\$90,000
TOTAL INTERMEDIATE CLARIFIERS:				\$731,900
INTERMEDIATE PUMPING STATION				
Demo Existing Equipment	1	Each	\$150,000	\$150,000
Process				
Intermediate Screw Pump	3	Each	\$300,000	\$900,000
Mechanism Installation	3	Each	\$75,000	\$225,000
Pump Lower Bearing	3	Each	\$40,000	\$120,000
Pump Upper Bearing	3	Each	\$40,000	\$120,000
Aluminum Covers	1200	Sq. Ft.	\$150	\$180,000
Cover Installation	1	Lump Sum	\$50,000	\$50,000
Concrete				
Grout	16	Sq. Ft.	\$1,000	\$16,000
Installation	1	Lump Sum	\$14,400	\$14,400
TOTAL INTERMEDIATE PUMPING STATION:				\$1,775,400

B&W Final Clarifier Rehabilitation 2024

Description	2024 Probable Cost	2026 Probable Cost
SUMMARY		
GENERAL CONDITIONS	\$304,000	\$319,687
SITE WORK	\$55,500	\$58,364
FINAL CLARIFIERS	\$2,678,050	\$2,816,241
SLUDGE PUMPING	\$649,000	\$682,489
Sub-Total	\$3,686,550	\$3,876,781
Electrical	15%	\$550,000
Instrumentation	10%	\$370,000
Construction Sub-Total	\$4,606,550	\$4,844,255
Contingency	30%	\$1,380,000
Overhead, Profit, Bonds, and Insurance	15%	\$690,000
Construction Cost with Contingency	\$6,676,550	\$7,021,069
Engineering, Legal, and Admin	13%	\$870,000
PROBABLE PROJECT	\$7,546,550	\$7,940,000

Description	Quantity	Unit	Unit Price	Total Probable Cost
GENERAL CONDITIONS				
Mobilization/Demobilization	1	Lump Sum	\$50,000	\$50,000
Supervision	14	Mo.	\$16,000	\$224,000
Surveying	1	Lump Sum	\$15,000	\$15,000
Record Drawing	1	Lump Sum	\$15,000	\$15,000
TOTAL GENERAL CONDITIONS:				\$304,000
SITE WORK				
Paving Removal & Replacement (Full Depth)	100	Sq. Yd.	\$175	\$17,500
Sidewalk	200	Sq. Ft.	\$40	\$8,000
Silt Fence & SE/SC Control	1	Lump Sum	\$10,000	\$10,000
Restoration	1	Lump Sum	\$20,000	\$20,000
TOTAL SITE WORK:				\$55,500
FINAL CLARIFIERS				
Demo Existing Mechanisms	1	Lump Sum	\$100,000	\$100,000
Process				
Mechanisms (135-ft)	4	Each	\$375,000	\$1,500,000
Mechanism Installation	4	Each	\$85,000	\$340,000
Walkways	4	Each	\$50,000	\$200,000
Aluminum Cover (Lauder)	0	Sq. Ft.	\$65	\$0
Cover Installation	0	Lump Sum	\$176,800	\$0
Concrete				
Blast & Coat Concrete	10761	Sq. Ft.	\$50	\$538,050
Electrical				
Conduit, Wiring, Labor	0	Lump Sum	\$40,000	\$0
MCC Sections	0	Each	\$20,000	\$0
Exterior Lighting	0	Each	\$2,000	\$0
Controls / SCADA Integration	0	Lump Sum	\$30,000	\$0
TOTAL PRIMARY CLARIFIERS:				\$2,678,050
SLUDGE PUMPING				
Demo Existing Equipment	1	Each	\$75,000	\$75,000
Process				
Nitro WAS Pumps	4	Each	\$48,000	\$192,000
Thickened Sludge Pump	4	Each	\$48,000	\$192,000
Mag Meter - 4"	4	Each	\$7,500	\$30,000
Ductile Iron Piping - 24"	200	Lin. Ft.	\$500	\$100,000
Ductile Iron Piping Fittings	20	Each	\$3,000	\$60,000
Electrical				
Conduit, Wiring, Labor	0	Lump Sum	\$50,000	\$0
Electrical Connections	0	Each	\$2,500	\$0
MCC Sections	0	Each	\$20,000	\$0
Controls / SCADA Integration	0	Lump Sum	\$60,000	\$0
TOTAL SLUDGE PUMPING				\$649,000

B&W - CSO Facility Capital Project 2024

Description			2024 Probable Cost	2028 Probable Cost
SUMMARY				
GENERAL CONDITIONS			\$747,000	\$847,127
SITE WORK			\$362,000	\$410,522
RAW SEWAGE SCREENING			\$2,188,000	\$2,481,277
GRIT TANKS UPGRADES			\$1,599,500	\$1,813,895
CSO CLARIFIERS			\$1,080,000	\$1,224,762
CHLORINE DISINFECTION			\$446,000	\$505,781
STORAGE BUILDING			\$312,500	\$354,387
Sub-total			\$6,735,000	\$7,448,115
	Electrical	15%	\$1,010,000	\$1,116,941
	Instrumentation	10%	\$670,000	\$740,941
	Construction Sub-Total		\$8,415,000	\$9,305,997
	Contingency	30%	\$2,520,000	\$2,786,823
	Overhead, Bonds, Profit, and Insurance	15%	\$1,260,000	\$1,393,411
	Construction Cost with Contingency		\$12,195,000	\$13,486,231
	Engineering, Legal, & Admin	13%	\$1,585,350	\$1,753,210
			\$13,780,350	\$15,239,441
PROBABLE PROJECT			\$13,780,350	\$15,239,441
Description	Quantity	Unit	Unit Price	Total Probable Cost
GENERAL CONDITIONS				
Mobilization/Demobilization	1	Lump Sum	\$50,000	\$50,000
Supervision	18	Mo.	\$24,000	\$432,000
Record Drawing	1	Lump Sum	\$15,000	\$15,000
Phasing/Bypass Pumping	1	Lump Sum	\$250,000	\$250,000
			TOTAL GENERAL	\$747,000
SITE WORK				
Paving Removal & Replacement (Full Depth)	1600	Sq. Yd.	\$175	\$280,000
Sidewalk	1000	Sq. Ft.	\$40	\$40,000
Silt Fence & SE/SC Control	1	Lump Sum	\$24,000	\$24,000
Restoration	1	Lump Sum	\$18,000	\$18,000
			TOTAL SITE WORK:	\$362,000
RAW SEWAGE SCREENING				
Demo Existing Screens	1	Lump Sum	\$50,000	\$50,000
Concrete				
Cast in Screens	8	CY	\$1,250	\$10,000
Grout Slab	1	Lump Sum	\$8,000	\$8,000
Process				
New Bar Screen	1	Each	\$1,000,000	\$1,000,000
Mechanism Installation	1	Lump Sum	\$250,000	\$250,000
Walkways	1	Each	\$50,000	\$50,000
Raw Pumps	4	Each	\$125,000	\$500,000
Piping/Valving	1	LS	\$250,000	\$250,000
Electrical				
Conduit, Wiring, Labor	0	Lump Sum	\$15,000	\$15,000
MCC Sections	0	Each	\$20,000	\$40,000
Controls / SCADA Integration	0	Lump Sum	\$15,000	\$15,000
			TOTAL RAW SEWAGE SCREENING:	\$2,188,000
GRIT TANKS UPGRADES				
Demo Existing Equipment	1	Lump Sum	\$8,000	\$8,000
Concrete				
Pad	1	Lump Sum	\$2,500	\$2,500
Process				
Blowers	2	Each	\$35,000	\$70,000
Blower Installation	1	Lump Sum	\$10,000	\$10,000
Air Header Piping	20	Lin. Ft.	\$350	\$7,000
Air Header Fittings	4	Each	\$500	\$2,000
Grit Tanks	2	Each	\$375,000	\$750,000
Grit Classifiers	2	Each	\$375,000	\$750,000
Electrical				
Conduit, Wiring, Labor	0	Lump Sum	\$7,500	\$0
MCC Sections	0	Each	\$20,000	\$0
Controls / SCADA Integration	0	Lump Sum	\$20,000	\$0
			TOTAL GRIT TANKS UPGRADES	\$1,599,500
CSO CLARIFIERS				
Containment	0	Lump Sum	\$10,000	\$0
Mechanisms	2	Each	\$450,000	\$900,000
Mechanism Installation	2	Each	\$90,000	\$180,000
Mechanisms Paint and Blast	0	Each	\$75,000	\$0
			TOTAL CSO CLARIFIERS:	\$1,080,000
CHLORINE DISINFECTION				
Demolition of Existing Equipment	1	Lump Sum	\$50,000	\$50,000

Concrete				
Concrete Containment Wall & Pad	8	CY	\$1,250	\$10,000
Chemical Feed Storage Tank	6	Each	\$15,000	\$90,000
Chemical Feed System	2	Each	\$75,000	\$150,000
Chemical Feed Piping	2	Lump Sum	\$50,000	\$100,000
Chlorine Analyzer	4	Each	\$7,500	\$30,000
ORP Prob	4	Each	\$4,000	\$16,000
Electrical				
Conduit, Wiring, Labor	0	Lump Sum	\$50,000	\$0
MCC Sections	0	Each	\$20,000	\$0
Controls / SCADA Integration	0	Lump Sum	\$35,000	\$0
TOTAL CSO DISINFECTION				\$446,000
STORAGE BUILDING				
New Building	2500	SF	\$125	\$312,500
TOTAL STORAGE BUILDING				\$312,500

B&W Primary Sludge Direct Feed

Description		2024 Probable Cost		
SUMMARY				
GENERAL CONDITIONS		\$107,000		
SITE WORK		\$16,750		
SLUDGE PIPING		\$350,000		
Sub-Total		\$473,750		
Contingency		15%	\$70,000	
Overhead, Profit, Bonds, and Insurance		15%	\$70,000	
Construction Cost with Contingency		\$613,750		
Engineering, Legal, and Admin		13%	\$80,000	
PROBABLE PROJECT				\$693,750
Description	Quantity	Unit	Unit Price	Total Probable Cost
GENERAL CONDITIONS				
Mobilization/Demobilization	1	Lump Sum	\$25,000	\$25,000
Supervision	4.5	Mo.	\$16,000	\$72,000
Surveying	0	Lump Sum	\$10,000	\$0
Record Drawing	1	Lump Sum	\$10,000	\$10,000
MOVED OH&P AND BONDS AND INSURANCE TO A SEPARATE MULTIPLIER				
TOTAL GENERAL CONDITIONS:				\$107,000
SITE WORK				
Paving Removal & Replacement (Full Depth)	10	Sq. Yd.	\$175	\$1,750
Sidewalk	50	Sq. Ft.	\$40	\$2,000
Silt Fence & SE/SC Control	1	Lump Sum	\$5,000	\$5,000
Restoration	1	Lump Sum	\$8,000	\$8,000
TOTAL SITE WORK:				\$16,750
SLUDGE PIPING				
8" DIP Sludge Piping	200	LF	\$350	\$70,000
8" Sludge Valves	8	Each	\$10,000	\$80,000
Digester Cleaning	1	Lump Sum	\$200,000	\$200,000
TOTAL PRIMARY CLARIFIERS:				\$350,000

ATTACHMENT C - RATE STRUCTURE AND DEDICATED SOURCE OF REVENUE

Village of Glen Ellyn

Ordinance No. 6427

**An Ordinance Confirming and Supporting A Loan to
Glenbard Wastewater Authority from the IEPA Water Pollution Control Loan Program
for the 2016 Facilities Improvement Project**

Adopted by the
President and the Board of Trustees
of the Village of Glen Ellyn
DuPage County, Illinois
this 23rd day of July, 2016

Published in pamphlet form by the authority of
the President and Board of Trustees of the
Village of Glen Ellyn, DuPage County, Illinois,
this 26th day of July, 2016.

Ordinance No. 6427

**An Ordinance Confirming and Supporting A Loan to
Glenbard Wastewater Authority from the IEPA Water Pollution Control Loan Program
for the 2016 Facilities Improvement Project**

WHEREAS, the Village of Glen Ellyn and Village of Lombard, in accordance with authority conferred by the Illinois Constitution and the Illinois Intergovernmental Cooperation Act, entered into an Intergovernmental Agreement (“IGA”), which was duly amended and restated as of April 17, 2014, that created the Glenbard Wastewater Authority (the “Authority”) for the purpose of providing wastewater treatment for inhabitants of the Villages and other areas; and

WHEREAS, the Executive Oversight Committee (“EOC”) of the Authority, as authorized by Section II.C.ix of the IGA, has adopted a Resolution approving a loan not to exceed \$16,725,000 to the Authority from the Water Pollution Control Loan Program (the “Loan”) administered by the Illinois Environmental Protection Agency (the “IEPA”) for the purpose of funding comprehensive repair and renovation of the Authority’s main treatment facility at 21 W551 Bemis Road (“2016 Facilities Improvement Project”); and

WHEREAS, Section II.C.ix of the IGA gives the corporate authorities of either Village the right to negate the EOC’s approval of the Loan; and

WHEREAS, the corporate authorities of the Village of Glen Ellyn find that the 2016 Facilities Improvement Project is necessary for the health, safety and welfare of Village residents, and desire to take such actions as are necessary and appropriate to support and ratify the Loan.

NOW, THEREFORE, BE IT ORDAINED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF GLEN ELLYN, DU PAGE COUNTY, ILLINOIS, IN THE EXERCISE OF ITS HOME RULE POWERS, as follows:

SECTION 1. The recitals in the foregoing preambles are true and correct, and are incorporated into this Ordinance as though fully set forth in this Section 1.

SECTION 2. The corporate authorities of the Village of Glen Ellyn have no objection to the Loan and will not exercise any authority to negate the approval of the Loan by the EOC.

SECTION 3. The Village of Glen Ellyn hereby pledges to the IEPA and the Authority that it will, in accordance with its obligations under the IGA, impose rates and collect and pay over to the Authority wastewater charges as are necessary to pay its proportionate share of the Authority's Loan obligations, other loan obligations, operating expenses and reserves.

SECTION 4. The Village of Glen Ellyn will not adopt any resolutions or ordinances which provide for any substantive or material change in the scope or intent of this Ordinance, including, but not limited to interest rate, preference or priority of any obligation over the Loan, or parity of any other loan obligation with the Loan, or otherwise alter or impair the obligation of the Authority or of this Village to assist the Authority in its proportional obligation to pay Loan principal and interest without the written consent of the IEPA.

SECTION 5. In the event that the Authority fails to make Loan principal and interest payments to the IEPA, the Village of Glen Ellyn pledges to make such payments, but only from revenues from its wastewater charges, and only to the extent of its proportional financial obligation for Authority operations and debts under the IGA.

SECTION 6. By pledge of its wastewater revenues to guarantee payment of its proportional share of Loan principal and interest, the Village of Glen Ellyn is, in effect, issuing its revenue bond. This obligation shall be junior to any other revenue bonds previously made and outstanding. The principal amount of the Loan amount is not to exceed \$16,725,000, and must be fully amortized within 20 years. The interest rate for the Loan shall not exceed the maximum rate authorized by the Illinois Bond Authorization Act as amended at the time of issuance of the Loan funds (30 ILCS 305/2), and is expected to be approximately 1.86%. It is expected that revenues of the Authority will be adequate to fully pay Loan principal and interest. The Loan shall not be a general obligation of the Village of Glen Ellyn and does not constitute an indebtedness of the Village of Glen Ellyn within the meaning of any constitutional or statutory limitation.

SECTION 7. If any section, clause or provision of this Ordinance is held invalid by a court of competent jurisdiction, such invalidity shall not affect the validity of any other section, clause or provision of this Ordinance.

SECTION 8. All ordinances or resolutions of the Village of Glen Ellyn, or parts thereof, in conflict with provisions of this Ordinance are, to the extent of such conflict, hereby repealed.

SECTION 9. This Ordinance shall be in full force and effect after is passage, approval and publication in pamphlet form as provided by law.

PASSED this 25th day of July, 2016

AYES: President Poter/Troster O'Shea and Trustees Clark, Elliott, Kenwood, Jadesic and Senak.

NAYS: 0

ABSENT: 0

APPROVED this 25th day of July, 2016



Village President

ATTEST:

Catherine Quinn
Village Clerk

Published in pamphlet form on the 26th day of July, 2016



CERTIFICATION

I, Catherine Galvin, duly elected Village Clerk of the Village of Glen Ellyn, Illinois, do hereby certify that the attached is a true and correct copy of Ordinance No. 6427, passed by the Board of Trustees of the Village of Glen Ellyn, Illinois, at the Regular Board Meeting of said Board held on the 25th day of July 2014, and that the same was signed and approved by the President of said Village on the 25th day of July 2014.

I do further certify that the original, of which the attached is a true and correct copy, is entrusted to me as Village Clerk of said Village for safekeeping and that I am the lawful custodian and keeper of the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of the Village of Glen Ellyn, Illinois, this 25th day of July, 2014.

Catherine Galvin

Village Clerk

CORPORATE SEAL



AN ORDINANCE APPROVING AN AGREEMENT

WHEREAS, the Village Board has considered a certain Agreement for operational and financial arrangements for the Glenbard Wastewater Treatment Plant with Citizens Utilities Company of Illinois, and

WHEREAS, the Village Board has determined that the Agreement is in the best interests of the Village of Glen Ellyn, NOW, THEREFORE, BE IT ORDAINED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF GLEN ELLYN, DU PAGE COUNTY, ILLINOIS:

SECTION ONE: That an agreement for operational and financial arrangements for the Glenbard Wastewater Treatment Plant with Citizens Utilities Company of Illinois be and it is hereby approved. A true and correct copy of said Agreement is attached hereto and made a part of this ordinance.

SECTION TWO: The President and Village Clerk are hereby authorized to execute said Agreement for and on behalf of the Village of Glen Ellyn.

SECTION THREE: This ordinance shall be in full force and effect from and after its passage and approval in the manner provided by law.

AYES: 5

NAYS: 0

Voted PRESENT 1

ABSENT: 0

PASSED AND APPROVED this 27th day of February, 1978



Village President

ATTEST:

**AGREEMENT
BETWEEN THE VILLAGE OF GLEN ELLYN
AND CITIZENS UTILITIES COMPANY OF ILLINOIS**

WHEREAS, the Village of Glen Ellyn, Illinois has been designated as the Lead Agency for Sub-region IVB of the DuPage County Regionalization area; and

WHEREAS, Sub-region IVB of the DuPage County Regionalization area encompasses a portion of the sanitary sewer system presently serviced by Citizens Utilities Company of Illinois; and

WHEREAS, the Villages of Glen Ellyn and Lombard have executed an agreement establishing the Glenbard Wastewater Authority which shall be responsible for the wastewater treatment for Sub-region IVB of DuPage County Regionalization area; and

WHEREAS, the Agreement between the Village of Glen Ellyn and the Village of Lombard designates Glen Ellyn as the Operating Agency for the Glenbard Wastewater Authority; and

WHEREAS, the Agreement between the Village of Glen Ellyn and the Village of Lombard establishes the authority of the Village of Glen Ellyn to enter into agreements with other agencies contributing wastewater flow to the Glenbard Wastewater Authority;

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the Village of Glen Ellyn and Citizens Utilities Company of Illinois agree as follows:

SECTION ONE

DEFINITIONS

1. "Wastewater Treatment Facilities" shall be defined as the interceptor line from the Glen Ellyn Heights (DuPage County) sanitary sewer collection system on the North to Glenbard Wastewater Plant, and from Valley View and Butterfield Subdivisions on the South to the Glenbard Wastewater Plant, and the Glenbard Wastewater Plant. It shall not include the sewer collection system

2. "Operating Agency" shall be defined as the Village of Glen Ellyn. The authority of the Operating Agency shall be defined as detailed in the Agreement between the Villages of Glen Ellyn and Lombard, subject to the restrictions and limitations of Federal, State and Local regulations.

3. "Participating Agencies" shall be defined as private or public agencies contributing wastewater to the Glenbard Plant for treatment.

4. "Debt Service Average Cost" shall be defined as the sum of 1/20th of the total principal and interest provided by the Villages of Glen Ellyn and Lombard for capital used to fund (i) the Glenbard Plant expansion and (ii) South regional interceptor construction. For the purposes of this definition, any funds provided from the Villages from cash on hand shall be included in the computation of Debt Service Average Cost and shall be capitalized at the same annual interest cost as determined by the sale of bonds for the purposes intended and specified within this agreement.

5. "Overhead Fees" shall be defined as those costs for services and materials related to the operation of the Glenbard Plant by the Operating Agency and not directly charged to the Glenbard Authority specifically. Overhead charges will be initially developed on the following basis. The sum of:

- (i) An allocation of cost from the Operating Agency Department of Management Services based on the proportion of Department of Management Services budget which is equivalent to the ratio of Glenbard Wastewater Authority Budget Expenditures to total Village of Glen Ellyn Operating Fund Budget Expenditures.
- (ii) An allocation of cost from the Operating Agency's Department of Public Works Administration Division based on the proportion of the Department of Public Works Administration Division which is equivalent to the 50% of the ratio of Glenbard Wastewater Authority Budget Expenditures to total Department Expenditures of the Public Works Budget Expenditures.

It should be understood that the method of allocating Overhead Fees described above may require modification of this allocation of Overhead Fees upon mutual consent of both parties to this Agreement.

6. "Operating Expenses" shall be defined as those expenses relating to the operation and maintenance of the Glenbard Wastewater Plant, the South Regional Interceptor and the North Regional Interceptor.

7. "Bond Ordinance" shall be defined as the Ordinance approved by the Village of Glen Ellyn Board of Trustees authorizing the issuance and sale of Bonds necessary to fund the sum of Glen Ellyn, Citizens Utilities/and DuPage County portions of the capital requirements for expansion of the Glenbard Wastewater Treatment Facilities.  Company of Illinois

8. "Annual Bond and Interest Reserve Requirements" shall be defined as those funds required by the Bond Ordinances to be placed in a reserve account on an annual basis for purposes of securing principal and interest payments.

9. "Annual Depreciation Reserve Requirement" shall be defined as those funds required by either the Bond Ordinance or EPA regulations (whichever requires the greater amount) to be placed in a reserve account.

10. "Period of Construction" shall be defined as that period of time commencing the 1st day of the month in which construction contracts for the Glenbard Plant Expansion and South Regional Interceptor are executed and ending the last day of the month in which the Glenbard Plant begins to receive normal wastewater flow from the Citizens Utilities Company of Illinois.

11. "Funds necessary for construction" shall be defined as construction costs, engineering fees, land costs, legal fees and costs directly related to issuance of bonds.

SECTION TWO

1. The Village of Glen Ellyn, as Lead Agency, shall have prepared engineering plans and specification, obtain easements (except as described in Section Fifteen of this Agreement), let contracts and perform other activities related to the construction of the South Regional Interceptor, South Regional Interceptors and expansion of the Glenbard Plant as defined by the Glenbard Wastewater Facilities Plan, prepared by Walter E. Deuchler and Associates and approved by the Illinois EPA.

SECTION THREE

1. The Village of Glen Ellyn shall act as Operating Agency for the Glenbard Wastewater Plant South Regional Interceptor and North Regional Interceptor and shall be responsible for the operation and maintenance of the same.

SECTION FOUR

1. The Village of Glen Ellyn shall provide that portion of the local share of funds necessary for construction of the South Regional Interceptor and Expansion of the Glenbard Plant which have been attributable to the Citizens Utilities/ ^{Company of Illinois} service area. 

SECTION FIVE

1. The Glenbard Wastewater Authority shall prepare an annual budget relating to the operation and maintenance, Debt Service Average Cost, and Overhead Fees of the Glenbard Wastewater Treatment Facilities. A copy of said budget shall be delivered to the Citizens Utilities Company of Illinois within 30 days of execution approved by Glenbard Wastewater Authority.

SECTION SIX

1. The Operating Agency shall compute rates for the treatment of wastewater received at the Glenbard Wastewater Treatment Plant on the basis of the following equation, the cost components of which relate solely to the Glenbard Treatment Plant, except in computing the rates as described in Section Eight:

$$\frac{\text{Annual Estimate of (Overhead Costs)} + \text{Annual Estimate of Operation \& (Maintenance Costs)} + (150\% \times \text{Debt Service Average Cost})}{\text{Previous Year Total Glenbard Flow}}$$

First year rates shall be based on the estimated flow as agreed upon by Participating Agencies.

2. Debt Service Average Costs shall be included in the rate structure for 20 years.

3. Citizens Utilities Company of Illinois shall pay their proportionate share of bond and interest reserve and reserve for depreciation as described in Section Nine, Paragraphs 1 (d) and (e). Said payment shall be satisfied in full from revenue produced from the rate described as stated in Paragraph 1 of this section.

SECTION SEVEN

1. The Operating Agency shall submit a bill computed in accordance with Paragraph 1 of Section Six to Citizens Utilities Company of Illinois not later than the 10th day of each month for wastewater treated by the Glenbard Wastewater Authority in the previous month and for expenses related to the South Regional Interceptor as set forth in Section Eight. The bill shall be payable by Citizens Utilities Company of Illinois within 30 days of mailing. Payments received later than 30 days of mailing shall be delinquent and shall be subject to 1/2 of 1% per month interest charge on the outstanding bill.

2. The Operating Agency shall also provide a monthly budget statement, detailing by line item expenditure for the previous month, end of month encumbrance and unencumbered budget balances.

3. The Operating Agency shall maintain a separate fund entitled "Glenbard Wastewater Authority Operating Fund". All expenditures for facility operation shall be charged to said fund and all payments by Participating Agencies shall be credited to said fund.

SECTION EIGHT

1. The Village of Glen Ellyn shall separately account for expenses related to the operation and maintenance and Debt Service Average Cost attributable to the South Regional Interceptor of Illinois. These costs shall be billed to Citizens Utilities Company/in the same manner as the billing procedure described in Section Six.

SECTION NINE

1. An annual audit of the financial activities related to the Glenbard Wastewater Authority shall be executed by an independent auditing firm appointed by the Village of Glen Ellyn; said audit to be completed within 90 days at the end of the fiscal year. The audit report shall include the following information:

- (a) Total flows billed per Agencies.
- (b) Total revenues billed and received per Agency.
- (c) Expenditure analysis including operating expenses by category, Overhead Fees of the Operating Agency, Debt Service Average Cost, Bond and Interest Revenue and Reserve for Depreciation.
- (d) An analysis of each Participating Agency's expense allocation determined by the product of the percentage of the flow for each Participating Agency to total flow applied to total expense.

$$\frac{\text{Agency A Flow}}{\text{Total Glenbard Flow}} \times (\text{Operating Expense} + \text{Overhead Fees} + \text{Debt Service Average Cost})$$

+

$$\frac{\text{Agency A Flow}}{\text{Glen Ellyn Flow, Citizens Utilities Company of Illinois Flow and DuPage County Flow}} \times (\text{Bond and Interest Revenue} + \text{Reserve for Depreciation}) = \text{Agency A Expense Allocation}$$

- (e) An amount payable or receivable by each Participating Agency based on an adjusted rate as determined by the difference between the agency expense allocation as described in the above formula and the total revenues received from the agency by the Operating Agency. Based on the audit report, the Operating Agency shall remit or bill the amount due to or from each Participating Agency. Payment by either the Authority or any Participating Agency shall be due within 60 days of billing. Interest on any past due bill, or portion thereof, shall accrue at the rate of 1/2 percent per month on the outstanding balance.
- (f) An analysis of Revenue and Expenses related to the South Regional Interceptor.

2. After adjustment of the Bond and Interest Revenue and Reserve for Depreciation the Village of Glen Ellyn shall retain all funds received for Bond and Interest Revenue and Reserve for Depreciation.

SECTION TEN

1. Not later than the 15th day of each month, the Village of Glen Ellyn shall bill and Citizens Utilities Company of Illinois shall pay interest during the Period of Construction on the following monthly basis:

$$\begin{array}{r} \frac{1}{2} \text{ of } 1\% \times .12 \text{ (total funds expended for Glenbard Plant expansion - total funds reimbursed from the EPA for Glenbard Plant expansion)} \\ + \\ \frac{1}{2} \text{ of } 1\% \times 1.00 \text{ (total funds expended for South Regional Interceptor - total funds reimbursed from the EPA for South Regional Interceptor)} \end{array}$$

Said bill shall be payable not later than the 15th day of each month subsequent to billing.

2. In the sixth year after the Period of Construction is ended, the Village of Glen Ellyn shall cause to have an audit performed in conjunction with the regular audit of Village funds to ascertain the 5 year aggregate proportion of wastewater contributed by Citizens Utilities Company of Illinois to the Glenbard Plan and South Regional Interceptor, respectively. Based upon this data, an adjustment to interest paid during period of construction shall be made on a similar basis as that rendered in Section Ten, Paragraph 1 of this Agreement.

SECTION ELEVEN

1. The metering of wastewater into the Glenbard Plant shall be such that the flow contributed by each Participating Agency can be accurately measured. Estimated flows can be used as a substitute in the case of meter failure. Such estimates, however, shall require the mutual approval of the Operating Agency and the affected Participating Agency.

SECTION TWELVE

1. All permits requiring Environmental Protection Agency approval shall be processed through the staff of the Operating Agency. Copies of any permits involving 15 person equivalent or less additions to the system shall be filed with the Operating Agency.

SECTION THIRTEEN

1. Any responsibility for punitive action taken by the Environmental Protection Agency against the Operating Agency shall be assumed by the allegedly offending Participating Agency including any and all legal costs and resultant fines levied by court action or the Pollution Control Board.

SECTION FOURTEEN

1. Citizens Utilities Company of Illinois shall not provide effluent which exceeds the effluent characteristics as described in the attached Exhibit "A" for such standards as may be adopted in the future by the Village of Glen Ellyn in compliance with Federal Agency requirements.

SECTION FIFTEEN

1. Citizens Utilities Company of Illinois shall submit a sanitary sewer evaluation survey of the sanitary sewer system in the Citizens Utilities Company of Illinois service area in compliance with U.S. and Illinois EPA guidelines and acceptable to Illinois and U.S. EPA guidelines prior to October 1, 1978.

2. Citizens Utilities Company of Illinois agrees to complete all sanitary sewer rehabilitation within the Citizens Utilities Company of Illinois service area as required in the approved Sanitary Sewer Evaluation survey prior to April 1, 1981.

SECTION SIXTEEN

1. Citizens Utilities Company of Illinois shall provide to the Village of Glen Ellyn such easements as may be necessary on property owned of Illinois ~~and~~  by Citizens Utilities Company/for the construction of the South Regional Interceptor.

SECTION SEVENTEEN

1. Citizens Utilities Company of Illinois shall provide sewerage collection services to the Butterfield Park District facilities in accord with Citizens Utilities Company of Illinois established fee structure.

SECTION EIGHTEEN

1. Citizens Utilities Company of Illinois shall have no proprietorship rights to the Glenbard Wastewater facilities.

SECTION NINETEEN

1. It is mutually covenant and agreed that any claims for damages arising out of the operation of the facilities owned and operated by Citizens

Utilities Company of Illinois shall be assumed by Citizens Utilities Company of Illinois. Any claims arising for damages from sewage flow after the same are delivered to Glenbard Wastewater Plant except claims based on strength and content of sewage delivered to Citizens Utilities Company of Illinois shall be assumed by the Glenbard Wastewater Authority.

SECTION TWENTY

1. Citizens Utilities Company of Illinois and its successors or assigns agree to indemnify and hold harmless the Villages of Glen Ellyn and Lombard, and the Glenbard Wastewater Authority, its Trustees, Officers, Officials and Employees from any and all losses, claims, actions, costs, expenses, judgments, subrogations or other damages resulting from injury to any person (including injury resulting in death), or damage (including loss or destruction) to property of whatsoever nature or any person arising out of or incidental to the performance of the terms of this agreement by Citizens Utilities Company of Illinois (including but not limited to its employees, agents, subcontractors, and others designated by Citizens Utilities Company of Illinois, to perform work or services in, about or attendant to the work and services under the terms of this contract). Citizens Utilities Company of Illinois shall not be held responsible for any losses, expenses, claims, subrogations, actions, costs, judgments or other damages, directly, solely and proximately caused by the negligence of the Village. Insurance covering this indemnity agreement shall be provided to the Village of Glen Ellyn by Citizens Utilities Company of Illinois subject to approval of the Village of Glen Ellyn.

SECTION TWENTY-ONE

1. This agreement shall continue as long as the parties, their successors and assigns own and operate facilities to be interconnected subject to the rights of holders of bonds issued by the Village of Glen

Ellyn, and the Village of Lombard or any other municipal corporation owning the treatment works to be interconnected and also subject to the statutes of the State of Illinois.

SECTION TWENTY-TWO

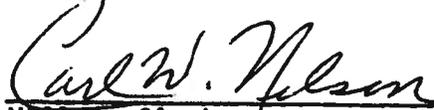
1. This agreement may be amended upon mutual approval by the Village President and Board of Trustees of the Village of Glen Ellyn and the President and the governing board of Citizens Utilities Company of Illinois.

EXECUTED this 15th day of March, 1978.

VILLAGE OF GLEN ELLYN

By 
Village President

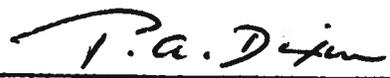
ATTEST:


Village Clerk

CITIZENS UTILITIES COMPANY OF ILLINOIS

By 
Title Vice President

ATTEST:


Assistant Secretary



THE CIVIC CENTER
535 DUANE STREET, GLEN ELLYN, ILL. 60137 • PHONE (312) 469-5000

March 10, 1978

Mr. Charles J. Weiss
Citizens Utilities Company of Illinois
Highridge Park
Stamford, Connecticut 06905

Dear Mr. Weiss:

[Handwritten initials]
B

Enclosed please find Exhibit "A" indicating estimated annual charges attributable to Citizens Utilities Company of Illinois for wastewater treatment by the Glenbard Wastewater Authority.

In reference to Section Six, Paragraph 1 of the proposed agreement between the Village of Glen Ellyn and Citizens Utilities Company of Illinois, the attached Exhibit shall serve as an estimate of cost attributable to Citizens Utilities Company/in the first year of actual operations. It should be noted that this Exhibit is an estimate of costs and actual costs may vary at the time the Glenbard Wastewater Authority begins full operations.

[Handwritten initials]

Please sign the duplicate copy of this letter and return to my office.

Sincerely,

[Signature of James D. Prosser]
James D. Prosser
Director of Management Services

JDP/cc
Enclosures

AGREED TO this 15th day of March, 1978

CITIZENS UTILITIES COMPANY OF ILLINOIS

By *[Signature]*
Vice President

ESTIMATED ANNUAL CHARGES BY GLENBARD WASTEWATER AUTHORITY - 1981

1.	Overhead Cost Estimate - 1981		
	(i) Department of Management Services Allocation	\$	62,500
	(ii) Department of Public Works Allocation		<u>14,000</u>
		\$	76,500
	Estimate of Citizens Utilities Flow Proportion		<u>12%</u>
			\$ 9,180
2.	Glenbard Plant Operation and Maintenance Cost Estimate - 1981		
	Personnel Services	\$	973,973
	Power		282,809
	Materials, Supplies		85,280
	Insurance & Miscellaneous		<u>102,032</u>
		\$1,444,094	
	Estimate of Citizens Utilities Flow Proportion		<u>12%</u>
			173,291
3.	Debt Service Average Cost Estimate		
	Citizens Utilities Proportion of Glenbard Plant Expansion	\$	537,500
	Citizens Utilities Proportion of South Regional Interceptor		<u>495,000</u>
		\$1,032,500	
	Average Annual Debt Service @ 6% Interest		<u>150%</u>
			135,996
*4.	Citizens Utilities Portion of Annual Bond and Interest Requirement Estimate	\$	11,333
*5.	Citizens Utilities portion of Annual Depreciation Requirements		15,000
6.	Estimate of Maintenance Cost - South Regional Interceptor		<u>5,000</u>
	TOTAL		<u>\$323,467</u>

*These amounts to be satisfied from the bond coverage required in Item 3.

EXHIBIT "A"

B

**ORDINANCE 7241
PAMPHLET**

**GLENBARD WASTEWATER AUTHORITY FACILITY
IMPROVEMENT PROJECT**



PUBLISHED IN PAMPHLET FORM THIS 22nd DAY OF JULY, 2016, BY ORDER
OF THE CORPORATE AUTHORITIES OF THE VILLAGE OF LOMBARD, DUPAGE
COUNTY, ILLINOIS.

A handwritten signature in black ink that reads "Sharon Kuderna". The signature is written in a cursive style and is positioned above a horizontal line.

Sharon Kuderna
Village Clerk

ORDINANCE NO. 7241

**AN ORDINANCE OF THE VILLAGE OF LOMBARD,
DUPAGE COUNTY, ILLINOIS, CONFIRMING AND SUPPORTING
A LOAN TO THE GLENBARD WASTEWATER AUTHORITY FROM
THE IEPA WATER POLLUTION CONTROL LOAN PROGRAM
FOR THE 2016 FACILITIES IMPROVEMENT PROJECT**

WHEREAS, the Village of Lombard (the "Village") and the Village of Glen Ellyn ("Glen Ellyn"), in accordance with authority conferred by the Illinois Constitution and the Illinois Intergovernmental Cooperation Act, entered into an Intergovernmental Agreement (the "IGA"), which was duly amended and restated as of April 17, 2014, that created the Glenbard Wastewater Authority (the "Authority") for the purpose of providing wastewater treatment for inhabitants of the Village, Glen Ellyn and other areas; and

WHEREAS, the Executive Oversight Committee (the "EOC") of the Authority, as authorized by Section II.C.ix of the IGA, has adopted a Resolution approving a loan, in an amount not to exceed \$16,725,000.00, to the Authority from the Water Pollution Control Loan Program (the "Loan") administered by the Illinois Environmental Protection Agency (the "IEPA") for the purpose of funding comprehensive repair and renovation of the Authority's main treatment facility at 21W551 Bemis Road (the "2016 Facilities Improvement Project"); and

WHEREAS, Section II.C.ix of the IGA gives the corporate authorities of either the Village or Glen Ellyn the right to negate the EOC's approval of the Loan; and

WHEREAS, the corporate authorities of the Village find that the 2016 Facilities Improvement Project is necessary for the health, safety and welfare of Village residents, and desire to take such actions as are necessary and appropriate to support and ratify the Loan;

NOW, THEREFORE, BE IT ORDAINED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF LOMBARD, DUPAGE COUNTY, ILLINOIS, as follows:

SECTION 1: The recitals in the foregoing preambles are true and correct, and are incorporated into this Ordinance as though fully set forth in this Section 1.

SECTION 2: The corporate authorities of the Village have no objection to the Loan and will not exercise any authority to negate the approval of the Loan by the EOC.

SECTION 3: The Village hereby pledges to the IEPA and the Authority that it will, in accordance with its obligations under the IGA, impose rates and collect and pay over to the Authority wastewater charges as are necessary to pay its proportionate share of the Authority's Loan obligations, other loan obligations, operating expenses and reserves.

SECTION 4: The Village will not adopt any resolutions or ordinances which provide for any substantive or material change in the scope or intent of this Ordinance, including, but not limited to, interest rate, preference or priority of any obligation over the Loan, or parity of any other loan obligation with the Loan, or otherwise alter or impair the obligation of the Authority or the obligation of the Village to assist the Authority in its proportional obligation to pay Loan principal and interest, without the written consent of the IEPA.

SECTION 5: In the event that the Authority fails to make Loan principal and interest payments to the IEPA, the Village pledges to make such payments, but only from revenues from its wastewater charges, and only to the extent of its proportional financial obligation for Authority operations and debts under the IGA.

SECTION 6: By pledge of its wastewater revenues to guarantee payment of its proportional share of Loan principal and interest, the Village is, in effect, issuing its revenue bond. This obligation shall be junior to any other revenue bonds previously made and outstanding. The principal amount of the Loan amount is not to exceed \$16,725,000.00, and must be fully amortized within twenty (20) years. The interest rate for the Loan shall not exceed the maximum rate authorized by the Illinois Bond Authorization Act, as amended, at the time of issuance of the Loan funds (30 ILCS 305/2), and is expected to be approximately 1.86%. It is expected that revenues of the Authority will be adequate to fully pay Loan principal and interest. The Loan shall not be a general obligation of the Village and does not constitute an indebtedness of the Village within the meaning of any constitutional or statutory limitation.

SECTION 7: This Ordinance, together with a Notice in the statutory form (a copy of which is attached hereto as Exhibit A and made part hereof), shall be published once within ten (10) days after passage of the Ordinance in the *Lombardian*, a newspaper published and of general circulation in the Village, and if no Petition (a copy of which is attached hereto as Exhibit B and made part hereof), signed by electors numbering ten percent (10%) or more of the registered voters in the Village (i.e., two thousand eight hundred forty-five (2,845) or more electors) asking that the question of whether the Village should be responsible for its proportionate share of the Loan obligations for the 2016 Facilities Improvement Project (the "Referendum Question"), as provided for in this Ordinance, be submitted to the electors of the Village, is filed with the Village Clerk within thirty (30) days after the date of publication of this Ordinance and the Notice, then this Ordinance shall be in full force and effect. A Petition form shall be provided by the Village Clerk to any individual requesting one. In the event that no such Petition is filed, the Village Clerk shall provide a No Referendum Certificate to the IEPA in the form as attached hereto as Exhibit C and made part hereof.

SECTION 8: If any section, clause or provision of this Ordinance is held invalid by a court of competent jurisdiction, such invalidity shall not affect the validity of any other section, clause or provision of this Ordinance.

SECTION 9: All ordinances or resolutions of the Village of Lombard, or parts thereof, in conflict with provisions of this Ordinance are, to the extent of such conflict, hereby repealed.

SECTION 10: That this Ordinance shall be in full force and effect from and after its passage, approval and publication in pamphlet form, and as provided for in Section 7 above, as provided by law.

Passed on first reading this _____ day of _____, 2016.

First reading waived by action of the Board of Trustees this 21st day of July, 2016.

Passed on second reading this 21st day of July, 2016.

Ayes: Trustee Whittington, Fugiel, Foltyniewicz, Johnston, and Ware

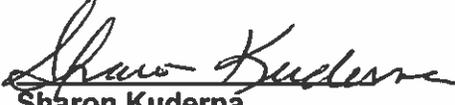
Nays: None

Absent: Trustee Pike

Approved this 21st day of July, 2016.


Keith T. Giagnorio
Village President

ATTEST:


Sharon Kuderna
Village Clerk

Published by me in pamphlet form on this 22nd day of July, 2016.


Sharon Kuderna
Village Clerk

Exhibit A

**NOTICE OF INTENT TO BE RESPONSIBLE
FOR A PROPORTIONATE SHARE OF THE LOAN OBLIGATION
OF THE GLENBARD WASTEWATER AUTHORITY
AND RIGHT TO FILE PETITION**

NOTICE IS HEREBY GIVEN that, pursuant to Ordinance Number 7241, adopted on July 21, 2016, the Village of Lombard, DuPage County, Illinois (the "Village") intends to be responsible for its proportionate share of the Glenbard Wastewater Authority's (the "GWWA") loan obligation with the Illinois Environmental Protection Agency in an aggregate principal amount not to exceed \$16,725,000.00 and bearing annual interest at an amount not to exceed the maximum rate authorized by law at the time of execution of the Loan Agreement by the GWWA, for the purpose of paying the cost of certain improvements to the GWWA's main wastewater treatment facility at 21W551 Bemis Road (the "2016 Facilities Improvement Project"). A complete copy of the Ordinance accompanies this Notice.

NOTICE IS HEREBY FURTHER GIVEN that, if a Petition signed by two thousand eight hundred forty-five (2,845) or more electors of the Village (being equal to ten percent (10%) of the registered voters in the Village), requesting that the question of the Village being responsible for the Village's proportionate share of the loan obligation of the GWWA relative to the 2016 Treatment Facilities Improvement Project be submitted to the electors of the Village, is submitted to the Village Clerk within thirty (30) days after the publication of this Notice, the question of the Village being responsible for the Village's proportionate share of the loan obligation of the GWWA relative to the 2016 Treatment Facilities Improvement Project, as provided in the Ordinance, shall be submitted to the electors of the Village at the next election to be held under general election law on November 8, 2016. A Petition form is available from the office of the Village Clerk.

SHARON KUDERNA
CLERK OF THE VILLAGE OF LOMBARD,
DUPAGE COUNTY, ILLINOIS

Exhibit B

PETITION

To the Clerk of the Village of Lombard, DuPage County, Illinois:

We, the undersigned, being registered voters of the Village of Lombard, DuPage County, Illinois, do hereby petition you to cause the following question, as provided for in Ordinance Number 7241 of said Village, to be certified to the County Clerk of DuPage County, Illinois, and submitted to the electors of said Village at the next appropriate regular election to be held on November 8, 2016:

“Shall the Village of Lombard, DuPage County, Illinois be responsible for its proportionate share of the Glenbard Wastewater Authority’s (the “GWWA”) loan obligation to the Illinois Environmental Protection Agency (the “IEPA”), pursuant to the IEPA’s Water Pollution Control Loan Program, in an amount not to exceed \$16,725,000.00, for improvements to the GWWA’s main wastewater treatment facility at 21W551 Bemis Road?”

<u>Name</u>	<u>Address</u>	
_____	_____	_____, Illinois

I, _____ of _____
(insert residence address), Illinois, do hereby certify that I am 18 years of age or older, that I am a citizen of the United States, and that the signatures on this Petition were signed in my presence within the Village of Lombard, and in the County of DuPage, Illinois, and are genuine, and, to the best of my knowledge and belief, the persons so signing were at the time of signing this Petition registered voters of said Village of Lombard and that their respective addresses are correctly stated herein.

Subscribed and sworn to before me
this ____ day of _____, 2016.

(Signature)

Notary Public

Exhibit C

NO REFERENDUM CERTIFICATE

I, the undersigned, do hereby certify that I am the duly qualified, and acting Clerk of the Village of Lombard, DuPage County, Illinois (the "Village"), and as such officer I am the keeper of the books, records, files and journal of proceedings of the Village and of the President and Board of Trustees of the Village.

I do further certify that Ordinance Number 7241, being the Ordinance entitled "AN ORDINANCE OF THE VILLAGE OF LOMBARD, DUPAGE COUNTY, ILLINOIS, CONFIRMING AND SUPPORTING A LOAN TO THE GLENBARD WASTEWATER AUTHORITY FROM THE IEPA WATER POLLUTION CONTROL LOAN PROGRAM FOR THE 2016 FACILITIES IMPROVEMENT PROJECT" (the "Ordinance") was presented to and passed by the Board of Trustees of the Village at its legally convened meeting held on the 21st day of July, 2016 and signed by the Village President of the Village on said day.

I do further certify that the Ordinance was duly and properly published in the *Lombardian*, a newspaper published and of general circulation within the Village, on the 27th day of July, 2016, being a date within ten (10) days from the date of passage of the Ordinance.

I do further certify that publication of the Ordinance was accompanied by a separate publication of Notice of: (1) the specific number of voters required to sign the Petition requesting the question of the Village being responsible for the Village's proportionate share of the loan obligation of the GWWA relative to the 2016 Treatment Facilities Improvement Project, as provided in the Ordinance; (2) the time in which such Petition must have been filed; and (3) the date of the prospective referendum.

I do further certify that I did make available and provide to any individual so requesting a Petition form, which Petition form provided for submission to the electors of the Village of the question as set forth therein. Such Petition forms were available from me continuously from July 22, 2016 up to and including August 26, 2016.

I do further certify that no Petition has been filed in my office within thirty (30) days after publication of the Ordinance, or as of the time of the signing hereof, as provided by statute, asking that the question of whether the Village should be responsible for the Village's proportionate share of the loan obligation of the GWWA relative to the 2016 Treatment Facilities Improvement Project, as provided in the Ordinance, be submitted to the electors of the Village.

IN WITNESS WHEREOF, I have hereunto affixed my official signature and the corporate seal of the Village of Lombard, DuPage County, Illinois this ____ day of August, 2016.

(SEAL)

Sharon Kuderna,
Clerk of the Village of Lombard,
DuPage County, Illinois

ATTACHMENT D - ENVIRONMENTAL CHECKLIST

If any project with secondary impacts is in a county under the jurisdiction of a Designated Water Quality Management Agency (DWQMA), which are the Greater Egypt Regional Planning & Development Commission (GERPDC), the Southwestern Illinois Metropolitan and Regional Planning Commission (SIMAPC), and the Chicago Metropolitan Agency for Planning (CMAP), provide records of consultation from:

7) **Date of DWQMA response:** N/A

For certain projects, if construction has the potential for adverse effects on properties that have religious, historical, or cultural significance, Section 106 of the NHPA requires consultation with federally recognized Indian tribes, including those previously residing in Illinois, to determine whether such properties are present. Check all boxes below that apply to this project. If any boxes except the first are checked, consultation must be initiated with a representative of each interested tribe, and IDNR SHPO’s determination must be submitted to the tribe, along with project information. Please refer to page 7 for specific instructions on consultation.

None of the below apply or not applying for loan funding – Tribal Consultation is Not Applicable, or:

Significant ground disturbance

Does NOT apply to sewer lining; in-place sewer or water main replacements without an increase to the size of a previously-disturbed trench; re-building any previously existing well or building within the same footprint. **Examples of significant ground disturbance include new sewers, new foundations or footings, grading, and new access roads.**

New construction in undeveloped natural areas

E.g.: treatment plants, pipelines, or other new facilities in undeveloped natural areas such as forests, etc.

Visual changes and/or audible changes

E.g.: construction of a focal point that is out of character with the surrounding natural area, impairment of the view from an observation point in the natural landscape or of the historic scenic qualities of an area, or an increase in noise levels above an acceptable standard in areas known and appreciated for their quietness.

Atmospheric changes

Example: introduction of lights that create skyglow in an area with a dark night sky.

Work on a building with significant tribal association

Examples: rehabilitation, demolition, or removal of a surviving ancient tribal structure(s), or a structure that is believed to be the location of a significant tribal event or that served as a tribal school or community hall.

Transfer, lease, or sale of a historic property of religious and cultural significance

Examples: Involves properties that contain archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, or structures with significant tribal association.

8) **Date IDNR SHPO consultation letter and project information submitted to tribes:** N/A

List tribes contacted below or attach a list. Indicate contact date and if a response was received. One copy of the consultation letter sent, and copies of all responses received, must be submitted to IEPA.

Certification: By signing this form, the Loan Applicant certifies that the applicable environmental evaluations were conducted for the proposed project locations, and if the review results for any of these environmental evaluations include recommendations, conditions, certifications, and/or permits, the Loan Applicant agrees to comply.

Signed: 
Loan Applicant’s Authorized Representative

Date: 12/24/2024



Illinois
Department of
**Natural
Resources**

JB Pritzker, Governor • Natalie Phelps Finnie, Director
One Natural Resources Way • Springfield, Illinois 62702-1271

www.dnr.illinois.gov

DuPage County

Lombard, Glen Ellyn

Glenbard Wastewater Authority Facility Improvements

Main facility -945 Bemis Rd., Glen Ellyn and CSO facility - 601 Hill Ave., Lombard

SHPO Log #015111224

December 19, 2024

Matt Wingen

Baxter & Woodman

8430 W. Bryn Mawr Ave., Suite 400

Chicago, IL 60631

We have reviewed the documentation submitted for the referenced project(s) in accordance with 36 CFR Part 800.4. Based upon the information provided, no historic properties are affected. We, therefore, have no objection to the undertaking proceeding as planned.

Please retain this letter in your files as evidence of compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. This clearance remains in effect for two years from date of issuance. It does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Remains Protection Act (20 ILCS 3440).

If you have any further questions, please contact Rita Baker, Cultural Resources Manager, at (217) 785-4998 or at Rita.E.Baker@illinois.gov.

Sincerely,

Carey L. Mayer, AIA

Deputy State Historic Preservation Officer



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
<http://dnr.state.il.us>

JB Pritzker, Governor

Natalie Phelps Finnie, Director

December 17, 2024

Matt Wingen
Baxter and Woodman
8678 Ridgefield Rd.
Crystal Lake, IL 60012

RE: Glenbard Wastewater Authority Facility Plan - 2024
Project Number(s): 2506056
County: DuPage

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Isabella Newingham
Division of Ecosystems and Environment
217-785-5500

Applicant: Baxter and Woodman
Contact: Matt Wingen
Address: 8678 Ridgefield Rd.
Crystal Lake, IL 60012

IDNR Project Number: 2506056
Date: 11/12/2024

Project: Glenbard Wastewater Authority Facility Plan - 2024
Address: 945 Bemis Road, Glen Ellyn

Description: The Glenbard Wastewater Authority Facility Plan – 2024 will provide guidance and recommendations to implement, focusing on future biological nutrient removal (BNR) treatment processes to meet future effluent limits. The Facility Plan will systematically examine the established record of GWA and study the need for new, expanded or upgraded wastewater facilities to best meet current and projected treatment demand, and all current and future regulatory requirements. All of these improvements would be confined to the project boundaries drawn in this submission. The Facility Plan section for the Combined Sewer Overflow facility will outline future rehabilitation to existing structures and equipment. This rehabilitation will also be limited to the existing property boundary

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Northern Long-Eared Myotis (*Myotis septentrionalis*)

Wetland Review (Part 1090)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: DuPage

Township, Range, Section:

39N, 10E, 24



IL Department of Natural Resources

Contact

Isabella Newingham
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction

IL Environmental Protection Agency
Ellen Jordal
1021 North Grand Avenue
P.O. Box 19276
Springfield, Illinois 62794 -9276

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.
2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.
3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
<http://dnr.state.il.us>

JB Pritzker, Governor

Natalie Phelps Finnie, Director

December 17, 2024

Matt Wingen
Baxter and Woodman
8678 Ridgefield Rd.
Crystal Lake, IL 60012

RE: Glenbard Wastewater Authority Facility Plan - 2024
Project Number(s): 2506057
County: DuPage

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Isabella Newingham
Division of Ecosystems and Environment
217-785-5500

Applicant: Baxter and Woodman
Contact: Matt Wingen
Address: 8678 Ridgefield Rd.
Crystal Lake, IL 60012

IDNR Project Number: 2506057
Date: 11/12/2024

Project: Glenbard Wastewater Authority Facility Plan - 2024
Address: 601 Hill Avenue, Lombard

Description: The Glenbard Wastewater Authority Facility Plan – 2024 will provide guidance and recommendations to implement, focusing on future biological nutrient removal (BNR) treatment processes to meet future effluent limits. The Facility Plan will systematically examine the established record of GWA and study the need for new, expanded or upgraded wastewater facilities to best meet current and projected treatment demand, and all current and future regulatory requirements. All of these improvements would be confined to the project boundaries drawn in this submission. The Facility Plan section for the Combined Sewer Overflow facility will outline future rehabilitation to existing structures and equipment. This rehabilitation will also be limited to the existing property boundary given in this submission.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

- Churchill Prairie INAI Site
- Churchill Prairie Nature Preserve
- Rusty Patched Bumble Bee (*Bombus affinis*)

Wetland Review (Part 1090)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: DuPage

Township, Range, Section:

39N, 10E, 12



IL Department of Natural Resources
Contact
Isabella Newingham
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
IL Environmental Protection Agency
Ellen Jordal
1021 North Grand Avenue
Springfield, Illinois 62794 -9276

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

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3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

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Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

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ATTACHMENT E - INTERGOVERNMENTAL AGREEMENTS

AGREEMENT BETWEEN THE
COUNTY OF DUPAGE
AND
THE VILLAGE OF GLEN ELLYN

This Agreement is entered this 9th day of January, 1990, between the County of DuPage, a body corporate and politic, with offices at 421 North County Farm Road, Wheaton, Illinois 60187 (hereinafter referred to as the COUNTY) and the Village of Glen Ellyn, a municipal corporation, with offices at 535 Duane Street, Glen Ellyn, Illinois 60137 (hereinafter referred to as the VILLAGE).

R E C I T A L S

WHEREAS, the COUNTY and the VILLAGE are vested with the authority to enter into intergovernmental agreements by the Illinois Intergovernmental Cooperation Act, Illinois Revised Statutes, 1985, chapter 127, paragraph 741, et seq., and Article VII, Section 10 of the 1970 Constitution of the State of Illinois which provide for units of local government to cooperate and to enter into agreements to their mutual benefit; and

WHEREAS, pursuant to authority granted to the COUNTY in the Illinois Revised Statutes, 1985, chapter 34, paragraph 3101, et seq. the COUNTY owns, operates and maintains a combined water and sanitary sewer system in the area commonly known as the Glen Ellyn Heights Sanitary District (hereinafter referred to as GLEN ELLYN HEIGHTS); and

WHEREAS, GLEN ELLYN HEIGHTS is located within the DuPage County Region IV B Facility Planning Area, as specified in the Illinois Water Quality Management Plan, which is administered by the Illinois Environmental Protection Agency; and

WHEREAS, pursuant to the authority granted to the VILLAGE in Division 147 of Article 11 of the Municipal Code of 1961, Illinois Revised Statutes, 1985, chapter 24, paragraph 11-147-1, et seq., the VILLAGE owns and operates sewage collection and treatment facilities, either by itself or jointly with the Village of Lombard through the Glenbard Wastewater Authority (hereinafter referred to as GLENBARD); and

WHEREAS, by Resolution No. PW55-76, the COUNTY approved and accepted the Facility Plan for the Region IV B Facility Planning Area, and the designation of the VILLAGE as the lead agency for the purpose of coordinating the completion of the Facility Plan for DuPage County Region IV B; and

WHEREAS, on or about December 1, 1984, the COUNTY dismantled the Glen Ellyn Heights Sewage Treatment Plant, and with the VILLAGE'S consent, the COUNTY became the VILLAGE'S customer by connecting the GLEN ELLYN HEIGHTS Sanitary Sewer System to the North Regional Interceptor which is part of GLENBARD'S facilities; and

WHEREAS, since that time, the COUNTY has not compensated the VILLAGE for treatment service of the flows from GLEN ELLYN HEIGHTS; and

WHEREAS, it is in the best interests of both the COUNTY and the VILLAGE to determine a rate of compensation for the flows from the GLEN ELLYN HEIGHTS system which have been treated by the VILLAGE since December 1, 1984, so that the parties can establish a new rate formula which reflects the periodic increases in rates for treatment of sewage established by the VILLAGE.

NOW, THEREFORE, in consideration of the covenants and premises contained herein, the COUNTY and the VILLAGE agree that:

1.0 RECITALS INCORPORATED.

1.1 The foregoing recitals are incorporated herein by reference as though fully set forth.

2.0 SCOPE OF SERVICES.

2.1 The VILLAGE shall supply and the COUNTY shall purchase wastewater collection, transportation and treatment services, through a metered connection, in a manner authorized by the VILLAGE, to the North Regional Interceptor of the GLENBARD facility, according to the terms of this Agreement.

2.2 The VILLAGE shall have no obligation to transport and treat any more than 1,020,000 gallons per day from COUNTY, which amount is the total design capacity of the currently existing 12 inch diameter gravity flow sewer constructed at a minimum slope of 0.22 percent into the St. Charles Lift Station of the North Regional Interceptor.

2.3 The VILLAGE hereby acknowledges that the existing 12 inch gravity flow sewer and the ADS meter constitute an authorized metered connection to the North Regional Interceptor. Because of the inaccuracy of sewer flow meters, this agreement will provide another method for the computation of the purchase of services from the VILLAGE by the COUNTY.

3.0 PAYMENTS TO THE VILLAGE FOR PAST SERVICES.

3.1 Upon execution of this Agreement, the COUNTY shall remit to the VILLAGE the sum of \$581,029.36, which includes payment for all services rendered by the VILLAGE for the period beginning December 1, 1984 and ending January 31, 1990, along with any claim for interest or other user charges.

3.2 The COUNTY shall further remit to the VILLAGE the sum of \$125,759.15, which represents \$178,176.60 in Connection Fees collected by the COUNTY during the period beginning December, 1984 and ending November 30, 1989, less the COUNTY'S administrative costs and capital expenses incurred to construct the Five Corners extension.

4.0 FUTURE CONNECTION PERMITS AND FEES.

4.1 The VILLAGE will receive and process within a reasonable period of time all applications for any extension of or connection to the collector sewer system within GLEN ELLYN HEIGHTS. Because the VILLAGE is the best judge of the capacity of its collection, transportation and treatment facilities, it shall have the absolute discretion to reject

any application for an extension of or connection to the GLEN ELLYN HEIGHTS system. When it grants permission, it shall indicate that action by issuing a written permit.

4.2 The COUNTY shall not allow any extension of or connection to its collector sewer system tributary to the GLENBARD facility without evidence that an applicant has first obtained the appropriate permit from the VILLAGE.

4.3 For any such extension or new connection, the VILLAGE shall collect its published Connection Fee and notify the COUNTY of any permit issued.

4.4 Such connections shall be subject to the maximum wastewater flow limits established by this Agreement.

4.5 The COUNTY shall issue its permits for extension of or connection to its system, and may collect the applicable portion of its published Connection Fee before any extension of or connection to its system

4.6 The COUNTY shall notify the VILLAGE whenever a new connection becomes active.

5.0 COMPENSATION TO THE VILLAGE FOR FUTURE SERVICES.

5.1 The rate at which the COUNTY shall compensate the VILLAGE for the services specified in paragraph 2.1 of this Agreement shall be determined by the rates for sanitary sewer services charged to VILLAGE nonresidents, established by Sections 23 through 28 of Chapter 7 of Title 11 of the Glen Ellyn Village Code as amended from time to time. Although the COUNTY itself is a customer of the VILLAGE, for the purposes of this Agreement, every user of services shall

be treated as an individual customer under the ordinances of the Village. The VILLAGE may establish a variety of rates for non-residents. Any rates for non-residents, which are lower than those applicable to GLEN ELLYN HEIGHTS must be justified by some lesser cost incurred by the VILLAGE or some other differential benefit to the VILLAGE. The VILLAGE shall provide the COUNTY with no less than the advanced written notice of any change in its sewer service rates as it provides its other customers to which such rates apply and in no case shall such notice be less than that given to the Village residents.

5.2 The VILLAGE'S rates for sanitary sewer services billed to the COUNTY shall be based on metered or estimated water consumption as specified in section 7-11-28 of the Glen Ellyn Village Code, and shall at all times conform to the rules and regulations promulgated at 40 C.F.R. Part 35, Subpart E, Sections 35.929 through 35.929-3 by the United States Environmental Protection Agency for the recipients of grant funds. The federal rules and regulations shall only be required to be adhered to so long as they are applicable to the treatment system.

5.3 The VILLAGE shall have the right to amend, change and modify the fees, rates, charges and methods of determining rates and charges for the services specified in paragraph 2.1 of this Agreement.

6.0 DUPAGE BILLING TO ITS CUSTOMERS.

6.1 The COUNTY, shall, on a bi-monthly basis, at its sole cost and expense, determine the fees due from its customers tributary to the North Regional Interceptor by reading its customers' meters measuring water consumption or by estimating its customers' water consumption where the customer's water is procured from a source other than a public utility.

6.2 Any estimation of a customer's water consumption shall conform to the Glen Ellyn Village Code, as amended from time to time.

6.3 Fees shall be calculated to include:

6.3.a The COUNTY'S administrative costs;

6.3.b Any applicable late fees, surcharges or penalties; and

6.3.c Fees due to the VILLAGE as provided from time to time in the Village Code.

6.4 The COUNTY shall make every reasonable effort to expedite its report of the consumption data of its customers tributary to the North Regional Interceptor to the VILLAGE on a bi-monthly basis. Consumption data shall conform to the standards contained within the Glen Ellyn Village Code, as provided from time to time.

7.0 VILLAGE BILLING AND COUNTY PAYMENT.

7.1 After the COUNTY calculates the fees owed to the Village according to paragraph 6.0, the COUNTY shall

transmit the calculations together with payment for services to the VILLAGE. If the VILLAGE objects to such calculations, it shall do so in writing.

7.2 The County shall remit payment together with billing data to the VILLAGE within thirty (30) days after the COUNTY bills its customers. The COUNTY shall bill its customers at least bi-monthly.

8.0 VILLAGE INSPECTION RIGHTS.

8.1 The COUNTY shall cooperate with the VILLAGE to allow the VILLAGE a reasonable opportunity to inspect and test all water meters used for billing purposes under the terms of this Agreement.

8.2 All testing shall be done in accordance with A.W.W.A. Standards.

8.3 The COUNTY shall, within a reasonable period of time, but with all promptness, correct any deficiencies from A.W.W.A. Standards.

8.4 The COUNTY shall require any commercial users connected to the GLEN ELLYN HEIGHTS system, to install water meters approved by the COUNTY and the VILLAGE by July 1, 1990.

8.5 The COUNTY shall have no responsibility for the accuracy or maintenance of the flow meter at the connection of the GLEN ELLYN HEIGHTS system to the North Regional Interceptor.

9.0 VILLAGE AUDIT RIGHTS.

9.1 The VILLAGE shall have the right, at all reasonable hours to audit the COUNTY'S books and records

pertaining to its customers tributary to the North Regional Interceptor.

10.0 NEW VILLAGE CUSTOMERS TRIBUTARY TO THE NORTH REGIONAL INTERCEPTOR.

10.1 The VILLAGE shall have the right to connect new VILLAGE sewer customers tributary to the North Regional Interceptor, thereby transporting sanitary sewer flows through the COUNTY'S GLEN ELLYN HEIGHTS system.

10.2 Such connections shall not be allowed if the downstream sanitary sewer does not have sufficient reserve capacity to adequately transport the additional, anticipated wastewater flow.

10.3 The COUNTY'S Director of Public Works shall determine if sufficient capacity exists within the COUNTY'S GLEN ELLYN HEIGHTS system. The exercise of such discretion shall not be unreasonably withheld.

10.4 The VILLAGE shall promptly notify the COUNTY of the name, billing address, service address and the beginning date of service for any such new VILLAGE customer.

10.5 The COUNTY shall not assess the VILLAGE any fee for such connections.

10.6 The COUNTY shall have no jurisdiction over any connection to the North Regional Interceptor which does not flow through the COUNTY'S Glen Ellyn Heights system.

11.0 ADDITIONAL OBLIGATIONS OF THE PARTIES.

11.1 The COUNTY shall operate and maintain all of their collector lines and the service lines connected thereto so as to prevent excessive infiltration and inflow (as that term is defined by Title 35, Ill. Adm. Code, Subtitle C,

Chapter 1, Section 306.303(c) and 40 C.F.R. Sections 35.2005(b)(16), (20), (21) and (28)) from entering the GLENBARD facility.

11.2 If the COUNTY is permitting infiltration and inflow into its system to an extent greater than that generally permitted within the system within the corporate boundaries of the VILLAGE, then the VILLAGE may require the COUNTY, within a reasonable period of time, to bring the GLEN ELLYN HEIGHTS system into compliance with a standard not higher than that generally found within the remainder of the Glen Ellyn system.

11.3 The parties shall operate their collector sewer systems which are tributary to the GLENBARD facility, in full compliance with all state and federal environmental protection laws and regulations and in full accordance with the Glen Ellyn Sewer Use Regulations.

11.4 The COUNTY shall require that its customers within the GLEN ELLYN HEIGHTS system, along with any other customer which connects into the Glen Ellyn system as a result of this Agreement, will follow all of the rules and regulations imposed by VILLAGE upon its other customers. The COUNTY shall use its legislative and regulatory powers to enforce the VILLAGE provisions as if those provisions were those of the COUNTY itself. Where a violation of the rules or regulations could result in a temporary or permanent termination of service, the COUNTY will, if requested, join

with the VILLAGE in taking such action as shall be necessary to cause such termination. If requested to do so, the COUNTY shall, among other actions, terminate water service to such customers or physically cause the termination of sewer service. The rules and regulations which the COUNTY shall enforce shall not be limited to those relating to non-payment, but shall include all other rules and regulations imposed by the VILLAGE, including but not limited to the nature of the material which the customer discharges into the sewer system.

11.5 The VILLAGE shall use its oversight authority to monitor that GLENBARD treats sewerage flowing from the GLEN ELLYN HEIGHTS system to the standards specified in GLENBARD's National Pollutant Discharge Elimination System permit.

11.6 The COUNTY shall indemnify to the full extent permitted by law, keep and save harmless the VILLAGE, its agents, officials and employees, against all injuries, deaths, loss, damages, claims, patent claims, suits, liabilities, judgments, costs and expenses, which may in any way accrue against the VILLAGE, arising out of this Agreement or which may in any way result therefrom, if it shall be alleged and determined that the act was caused through the negligence, the omission or commission of the COUNTY or its employees, contractors or their employees or their subcontractors or employees, if any, and the COUNTY

shall, at its own expense, appear, defend and pay all charges of attorney's fees and all costs and other expenses arising therefrom or incurred in connection therewith, and, if any judgment shall be rendered against the VILLAGE in any such action, the COUNTY shall, at its own expense, satisfy and discharge such judgment. The COUNTY especially understands and agrees that any performance bond or insurance protection required by this Agreement or otherwise provided by the COUNTY or by its contractors shall in no way limit the responsibility to indemnify, keep and save harmless and defend the VILLAGE as herein provided.

11.7 The VILLAGE shall indemnify to the full extent permitted by law, keep and save harmless the COUNTY, its agents, officials and employees, against all injuries, deaths, loss, damages, claims, patent claims, suits, liabilities, judgments, costs and expenses, which may in any way accrue against the COUNTY, arising out of this Agreement or which may in any way result therefrom, if it shall be alleged and determined that the act was caused through the negligence, the omission or commission of the VILLAGE or its employees, contractors or their employees or their subcontractors or employees, if any, and the VILLAGE shall, at its own expense, appear, defend and pay all charges of attorney's fees and all costs and other expenses arising therefrom or incurred in connection therewith, and, if any judgment shall be rendered against the COUNTY in any such action, the VILLAGE shall, at its own expense, satisfy and

discharge such judgment. The VILLAGE especially understands and agrees that any performance bond or insurance protection required by this Agreement or otherwise provided by the VILLAGE or by its contractors shall in no way limit the responsibility to indemnify, keep and save harmless and defend the COUNTY as herein provided.

12.0 AMENDMENTS.

12.1 This Agreement shall not be amended or modified without the written consent of the parties as evidenced by a resolution or ordinance adopted by the legislative bodies of the parties.

13.0 NON-ASSIGNMENT.

13.1 This Agreement shall not be assigned or transferred, by either party, without the prior written consent of the other, as evidenced by resolution or ordinance adopted by the legislative body of the consenting party.

14.0 FORCE MAJEURE.

14.1 For purposes of this Agreement, "Force Majeure" shall mean acts of God, war, insurrection, acts of terrorists or any event or effect that cannot reasonably be

anticipated or controlled.

14.2 In any case where by reason of force majeure, either the VILLAGE or the COUNTY is rendered unable wholly or in part to carry out its obligations under this Agreement, written notice fully describing such event shall be given by the party unable to fulfill its obligations to the other party within a reasonable period of time.

14.3 The obligations of the party giving such notice, so far as it is affected by such force majeure, shall be suspended during the continuance of the inability claimed, but no longer.

15.0 SERVICE OF NOTICE.

15.1 All notices or communications provided for in this Agreement shall be in writing and shall be delivered to the VILLAGE or the COUNTY either in person or by certified mail, return receipt requested, postage prepaid and addressed as follows:

Village Administrator
Glen Ellyn Civic Center
535 Duane Street
Glen Ellyn, Illinois 60137

County of DuPage
Director of Public Works
421 North County Farm Road
Wheaton, Illinois 60137

until and unless other addresses are specified by notice given in accordance herewith.

16.0 PARAGRAPH HEADINGS.

16.1 The headings given to the paragraphs of this Agreement shall not be used to interpret or construe the meaning of this Agreement.

17.0 TERM OF AGREEMENT.

17.1 This Agreement shall have a term of twenty (20) years commencing on date this Agreement is finally executed by the parties.

17.2 The parties may mutually agree to renew or extend this Agreement by appropriate action of the respective corporate authorities for any longer term.

18.0 ENTIRE AGREEMENT.

18.1 This Agreement represents the entire agreement between the COUNTY and the VILLAGE and supersedes all prior negotiations, representations or agreements, either written or oral.

19.0 GOVERNING LAW.

19.1 This Agreement shall be governed by the laws of the State of Illinois both as to interpretation and performance.

20.0 EFFECTIVE DATE.

20.1 The effective date of this Agreement shall be February 1, 1990.

IN WITNESS WHEREFORE, the Village of Glen Ellyn has caused this Agreement to be signed in multiple originals (each executed copy constituting an original) by the Village President and Village Clerk, pursuant to authority granted by the corporate authorities of the Village of Glen Ellyn. The County of DuPage has caused this Agreement to be signed in multiple originals (each executed copy constituting an original) by its Chairman of the County Board and the County Clerk, pursuant to authority granted by the proper legislative authorities of the County of DuPage.

VILLAGE OF GLEN ELLYN, a
municipal corporation

Arthur W. Angrist
Village President
Arthur W. Angrist

ATTEST:

Wilma D. Lunde
Village Clerk

Executed by the Village of Glen Ellyn pursuant to Ordinance No. 3715, passed and approved on the 8th day of January, 1990.

COUNTY OF DU PAGE, a body
politic and corporate

Jack T. Knuepfer
Chairman, County Board
Jack T. Knuepfer

ATTEST:

Gary A. King
County Clerk
Gary A. King

Executed by the County of DuPage pursuant to Ordinance or Resolution No. PW-0001-90 passed and approved by the proper legislative authority on the 9th day of January, 1990.

STATE OF ILLINOIS)
COUNTY OF DU PAGE)

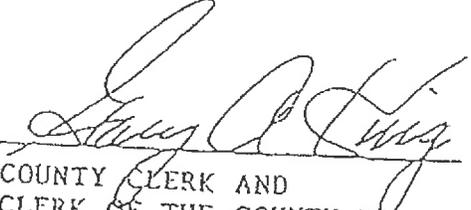
I, GARY A. KING, COUNTY CLERK AND CLERK OF THE
COUNTY BOARD IN THE COUNTY AND STATE AFORESAID, AND
KEEPER OF THE RECORDS AND FILES THEREOF, DO HEREBY
CERTIFY THE FOREGOING TO BE A TRUE AND CORRECT COPY OF

A RESOLUTION

ADOPTED BY THE COUNTY BOARD AT A MEETING HELD AT THE
DU PAGE CENTER, 421 N. COUNTY FARM ROAD, WHEATON,
ILLINOIS, ON THE 9TH DAY OF JANUARY,
A.D. 1990

ALL OF WHICH APPEARS FROM THE RECORDS OF THE
PROCEEDINGS OF SAID COUNTY BOARD NOW IN MY OFFICE
REMAINING.

GIVEN UNDER MY HAND AND OFFICIAL SEAL AT
WHEATON, ILLINOIS, THIS 10TH DAY OF JANUARY
A.D. 1990


COUNTY CLERK AND
CLERK OF THE COUNTY BOARD
OF DU PAGE COUNTY, ILLINOIS

AGREEMENT
BETWEEN THE VILLAGE OF GLEN ELLYN
AND CITIZENS UTILITIES COMPANY OF ILLINOIS

WHEREAS, the Village of Glen Ellyn, Illinois has been designated as the Lead Agency for Sub-region IVB of the DuPage County Regionalization area; and

WHEREAS, Sub-region IVB of the DuPage County Regionalization area encompasses a portion of the sanitary sewer system presently serviced by Citizens Utilities Company of Illinois; and

WHEREAS, the Villages of Glen Ellyn and Lombard have executed an agreement establishing the Glenbard Wastewater Authority which shall be responsible for the wastewater treatment for Sub-region IVB of DuPage County Regionalization area; and

WHEREAS, the Agreement between the Village of Glen Ellyn and the Village of Lombard designates Glen Ellyn as the Operating Agency for the Glenbard Wastewater Authority; and

WHEREAS, the Agreement between the Village of Glen Ellyn and the Village of Lombard establishes the authority of the Village of Glen Ellyn to enter into agreements with other agencies contributing wastewater flow to the Glenbard Wastewater Authority;

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the Village of Glen Ellyn and Citizens Utilities Company of Illinois agree as follows:

SECTION ONE

DEFINITIONS

1. "Wastewater Treatment Facilities" shall be defined as the interceptor line from the Glen Ellyn Heights (DuPage County) sanitary sewer collection system on the North to Glenbard Wastewater Plant, and from Valley View and Butterfield Subdivisions on the South to the Glenbard Wastewater Plant, and the Glenbard Wastewater Plant. It shall not include the sewer collection system of each individual member.

2. "Operating Agency" shall be defined as the Village of Glen Ellyn. The authority of the Operating Agency shall be defined as detailed in the Agreement between the Villages of Glen Ellyn and Lombard, subject to the restrictions and limitations of Federal, State and Local regulations.

3. "Participating Agencies" shall be defined as private or public agencies contributing wastewater to the Glenbard Plant for treatment.

4. "Debt Service Average Cost" shall be defined as the sum of 1/20th of the total principal and interest provided by the Villages of Glen Ellyn and Lombard for capital used to fund (i) the Glenbard Plant expansion and (ii) South regional interceptor construction. For the purposes of this definition, any funds provided from the Villages from cash on hand shall be included in the computation of Debt Service Average Cost and shall be capitalized at the same annual interest cost as determined by the sale of bonds for the purposes intended and specified within this agreement.

5. "Overhead Fees" shall be defined as those costs for services and materials related to the operation of the Glenbard Plant by the Operating Agency and not directly charged to the Glenbard Authority specifically. Overhead charges will be initially developed on the following basis. The sum of:

(i) An allocation of cost from the Operating Agency Department of Management Services based on the proportion of Department of Management Services budget which is equivalent to the ratio of Glenbard Wastewater Authority Budget Expenditures to total Village of Glen Ellyn Operating Fund Budget Expenditures.

(ii) An allocation of cost from the Operating Agency's Department of Public Works Administration Division based on the proportion of the Department of Public Works Administration Division which is equivalent to the 50% of the ratio of Glenbard Wastewater Authority Budget Expenditures to total Department Expenditures of the Public Works Budget Expenditures.

It should be understood that the method of allocating Overhead Fees described above may require modification of this allocation of Overhead Fees upon mutual consent of both parties to this Agreement.

6. "Operating Expenses" shall be defined as those expenses relating to the operation and maintenance of the Glenbard Wastewater Plant, the South Regional Interceptor and the North Regional Interceptor.

7. "Bond Ordinance" shall be defined as the Ordinance approved by the Village of Glen Ellyn Board of Trustees authorizing the issuance and sale of Bonds necessary to fund the sum of Glen Ellyn, Citizens Utilities/and DuPage County portions of the capital requirements for expansion of the Glenbard Wastewater Treatment Facilities.

Company of Illinois 

8. "Annual Bond and Interest Reserve Requirements" shall be defined as those funds required by the Bond Ordinances to be placed in a reserve account on an annual basis for purposes of securing principal and interest payments.

9. "Annual Depreciation Reserve Requirement" shall be defined as those funds required by either the Bond Ordinance or EPA regulations (whichever requires the greater amount) to be placed in a reserve account.

10. "Period of Construction" shall be defined as that period of time commencing the 1st day of the month in which construction contracts for the Glenbard Plant Expansion and South Regional Interceptor are executed and ending the last day of the month in which the Glenbard Plant begins to receive normal wastewater flow from the Citizens Utilities Company of Illinois.

11. "Funds necessary for construction" shall be defined as construction costs, engineering fees, land costs, legal fees and costs directly related to issuance of bonds.

SECTION TWO

1. The Village of Glen Ellyn, as Lead Agency, shall have prepared engineering plans and specification, obtain easements (except as described in Section Fifteen of this Agreement), let contracts and perform other activities related to the construction of the South Regional Interceptor, South Regional Interceptors and expansion of the Glenbard Plant as defined by the Glenbard Wastewater Facilities Plan, prepared by Walter E. Deuchler and Associates and approved by the Illinois EPA.

SECTION THREE

1. The Village of Glen Ellyn shall act as Operating Agency for the Glenbard Wastewater Plant South Regional Interceptor and North Regional Interceptor and shall be responsible for the operation and maintenance of the same.

SECTION FOUR

1. The Village of Glen Ellyn shall provide that portion of the local share of funds necessary for construction of the South Regional Interceptor and Expansion of the Glenbard Plant which have been attributable to the Citizens Utilities/Service area. ^{Company of Illinois} 

SECTION FIVE

1. The Glenbard Wastewater Authority shall prepare an annual budget relating to the operation and maintenance, Debt Service Average Cost, and Overhead Fees of the Glenbard Wastewater Treatment Facilities. A copy of said budget shall be delivered to the Citizens Utilities Company of Illinois within 30 days of execution approved by Glenbard Wastewater Authority.

SECTION SIX

1. The Operating Agency shall compute rates for the treatment of wastewater received at the Glenbard Wastewater Treatment Plant on the basis of the following equation, the cost components of which relate solely to the Glenbard Treatment Plant, except in computing the rates as described in Section Eight:

$$\frac{\text{Annual Estimate of (Overhead Costs)} + \text{Annual Estimate of Operation \& Maintenance Costs} + (150\% \times \text{Debt Service Average Cost})}{\text{Previous Year Total Glenbard Flow}}$$

First year rates shall be based on the estimated flow as agreed upon by Participating Agencies.

2. Debt Service Average Costs shall be included in the rate structure for 20 years.

3. Citizens Utilities Company of Illinois shall pay their proportionate share of bond and interest reserve and reserve for depreciation as described in Section Nine, Paragraphs 1 (d) and (e). Said payment shall be satisfied in full from revenue produced from the rate described as stated in Paragraph 1 of this section.

SECTION SEVEN

1. The Operating Agency shall submit a bill computed in accordance with Paragraph 1 of Section Six to Citizens Utilities Company of Illinois not later than the 10th day of each month for wastewater treated by the Glenbard Wastewater Authority in the previous month and for expenses related to the South Regional Interceptor as set forth in Section Eight. The bill shall be payable by Citizens Utilities Company of Illinois within 30 days of mailing. Payments received later than 30 days of mailing shall be delinquent and shall be subject to 1/2 of 1% per month interest charge on the outstanding bill.

2. The Operating Agency shall also provide a monthly budget statement, detailing by line item expenditure for the previous month, end of month encumbrance and unencumbered budget balances.

3. The Operating Agency shall maintain a separate fund entitled "Glenbard Wastewater Authority Operating Fund". All expenditures for facility operation shall be charged to said fund and all payments by Participating Agencies shall be credited to said fund.

SECTION EIGHT

1. The Village of Glen Ellyn shall separately account for expenses related to the operation and maintenance and Debt Service Average Cost attributable to the South Regional Interceptor of Illinois. These costs shall be billed to Citizens Utilities Company/in the same manner as the billing procedure described in Section Six.

SECTION NINE

1. An annual audit of the financial activities related to the Glenbard Wastewater Authority shall be executed by an independent auditing firm appointed by the Village of Glen Ellyn; said audit to be completed within 90 days at the end of the fiscal year. The audit report shall include the following information:

- (a) Total flows billed per Agencies.
- (b) Total revenues billed and received per Agency.
- (c) Expenditure analysis including operating expenses by category, Overhead Fees of the Operating Agency, Debt Service Average Cost, Bond and Interest Revenue and Reserve for Depreciation.
- (d) An analysis of each Participating Agency's expense allocation determined by the product of the percentage of the flow for each Participating Agency to total flow applied to total expense.

$$\frac{\text{Agency A Flow}}{\text{Total Glenbard Flow}} \times (\text{Operating Expense} + \text{Overhead Fees} + \text{Debt Service Average Cost})$$

+

$$\frac{\text{Agency A Flow}}{\text{Glen Ellyn Flow, Citizens Utilities Company of Illinois Flow and DuPage County Flow}} \times (\text{Bond and Interest Revenue} + \text{Reserve for Depreciation}) = \text{Agency A Expense Allocation}$$

- (e) An amount payable or receivable by each Participating Agency based on an adjusted rate as determined by the difference between the agency expense allocation as described in the above formula and the total revenues received from the agency by the Operating Agency. Based on the audit report, the Operating Agency shall remit or bill the amount due to or from each Participating Agency. Payment by either the Authority or any Participating Agency shall be due within 60 days of billing. Interest on any past due bill, or portion thereof, shall accrue at the rate of 1/2 percent per month on the outstanding balance.
- (f) An analysis of Revenue and Expenses related to the South Regional Interceptor.

2. After adjustment of the Bond and Interest Revenue and Reserve for Depreciation the Village of Glen Ellyn shall retain all funds received for Bond and Interest Revenue and Reserve for Depreciation.

SECTION TEN

1. Not later than the 15th day of each month, the Village of Glen Ellyn shall bill and Citizens Utilities Company of Illinois shall pay interest during the Period of Construction on the following monthly basis:

$$\begin{array}{r} \frac{1}{2} \text{ of } 1\% \times .12 \text{ (total funds expended for Glenbard Plant expansion)} - \text{total funds reimbursed from the EPA for Glenbard Plant expansion)} \\ + \\ \frac{1}{2} \text{ of } 1\% \times 1.00 \text{ (total funds expended for South Regional Interceptor)} - \text{total funds reimbursed from the EPA for South Regional Interceptor)} \end{array}$$

Said bill shall be payable not later than the 15th day of each month subsequent to billing.

2. In the sixth year after the Period of Construction is ended, the Village of Glen Ellyn shall cause to have an audit performed in conjunction with the regular audit of Village funds to ascertain the 5 year aggregate proportion of wastewater contributed by Citizens Utilities Company of Illinois to the Glenbard Plan and South Regional Interceptor, respectively. Based upon this data, an adjustment to interest paid during period of construction shall be made on a similar basis as that rendered in Section Ten, Paragraph 1 of this Agreement.

SECTION ELEVEN

1. The metering of wastewater into the Glenbard Plant shall be such that the flow contributed by each Participating Agency can be accurately measured. Estimated flows can be used as a substitute in the case of meter failure. Such estimates, however, shall require the mutual approval of the Operating Agency and the affected Participating Agency.

SECTION TWELVE

1. All permits requiring Environmental Protection Agency approval shall be processed through the staff of the Operating Agency. Copies of any permits involving 15 person equivalent or less additions to the system shall be filed with the Operating Agency.

SECTION THIRTEEN

1. Any responsibility for punitive action taken by the Environmental Protection Agency against the Operating Agency shall be assumed by the allegedly offending Participating Agency including any and all legal costs and resultant fines levied by court action or the Pollution Control Board.

SECTION FOURTEEN

1. Citizens Utilities Company of Illinois shall not provide effluent which exceeds the effluent characteristics as described in the attached Exhibit "A" for such standards as may be adopted in the future by the Village of Glen Ellyn in compliance with Federal Agency requirements.

SECTION FIFTEEN

1. Citizens Utilities Company of Illinois shall submit a sanitary sewer evaluation survey of the sanitary sewer system in the Citizens Utilities Company of Illinois service area in compliance with U.S. and Illinois EPA guidelines and acceptable to Illinois and U.S. EPA guidelines prior to October 1, 1978.

2. Citizens Utilities Company of Illinois agrees to complete all sanitary sewer rehabilitation within the Citizens Utilities Company of Illinois service area as required in the approved Sanitary Sewer Evaluation survey prior to April 1, 1981.

SECTION SIXTEEN

1. Citizens Utilities Company of Illinois shall provide to the Village of Glen Ellyn such easements as may be necessary on property owned of Illinois ^{our}  by Citizens Utilities Company/for the construction of the South Regional Interceptor.

SECTION SEVENTEEN

1. Citizens Utilities Company of Illinois shall provide sewerage collection services to the Butterfield Park District facilities in accord with Citizens Utilities Company of Illinois established fee structure.

SECTION EIGHTEEN

1. Citizens Utilities Company of Illinois shall have no proprietorship rights to the Glenbard Wastewater facilities.

SECTION NINETEEN

1. It is mutually covenant and agreed that any claims for damages arising out of the operation of the facilities owned and operated by Citizens

Utilities Company of Illinois shall be assumed by Citizens Utilities Company of Illinois. Any claims arising for damages from sewage flow after the same are delivered to Glenbard Wastewater Plant except claims based on strength and content of sewage delivered to Citizens Utilities Company of Illinois shall be assumed by the Glenbard Wastewater Authority.

SECTION TWENTY

1. Citizens Utilities Company of Illinois and its successors or assigns agree to indemnify and hold harmless the Villages of Glen Ellyn and Lombard, and the Glenbard Wastewater Authority, its Trustees, Officers, Officials and Employees from any and all losses, claims, actions, costs, expenses, judgments, subrogations or other damages resulting from injury to any person (including injury resulting in death), or damage (including loss or destruction) to property of whatsoever nature or any person arising out of or incidental to the performance of the terms of this agreement by Citizens Utilities Company of Illinois (including but not limited to its employees, agents, subcontractors, and others designated by Citizens Utilities Company of Illinois, to perform work or services in, about or attendant to the work and services under the terms of this contract). Citizens Utilities Company of Illinois shall not be held responsible for any losses, expenses, claims, subrogations, actions, costs, judgments or other damages, directly, solely and proximately caused by the negligence of the Village. Insurance covering this indemnity agreement shall be provided to the Village of Glen Ellyn by Citizens Utilities Company of Illinois subject to approval of the Village of Glen Ellyn.

SECTION TWENTY-ONE

1. This agreement shall continue as long as the parties, their successors and assigns own and operate facilities to be interconnected subject to the rights of holders of bonds issued by the Village of Glen

Ellyn, and the Village of Lombard or any other municipal corporation owning the treatment works to be interconnected and also subject to the statutes of the State of Illinois.

SECTION TWENTY-TWO

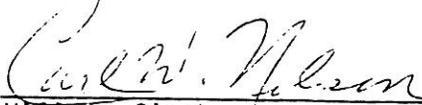
1. This agreement may be amended upon mutual approval by the Village President and Board of Trustees of the Village of Glen Ellyn and the President and the governing board of Citizens Utilities Company of Illinois.

EXECUTED this 15th day of March, 1978.

VILLAGE OF GLEN ELLYN

By 
Village President

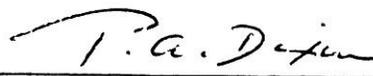
ATTEST:


Village Clerk

CITIZENS UTILITIES COMPANY OF ILLINOIS

By 
Title Vice President

ATTEST:


Assistant Secretary



THE CIVIC CENTER
535 DUANE STREET, GLEN ELLYN, ILL. 60137 • PHONE (312) 469-5000

March 10, 1978

Mr. Charles J. Weiss
Citizens Utilities Company of Illinois
Highridge Park
Stamford, Connecticut 06905

Dear Mr. Weiss:

[Handwritten initials]
B

Enclosed please find Exhibit "A" indicating estimated annual charges attributable to Citizens Utilities Company of Illinois for wastewater treatment by the Glenbard Wastewater Authority.

In reference to Section Six, Paragraph 1 of the proposed agreement between the Village of Glen Ellyn and Citizens Utilities Company of Illinois, the attached Exhibit shall serve as an estimate of cost attributable to Citizens Utilities Company of Illinois in the first year of actual operations. It should be noted that this Exhibit is an estimate of costs and actual costs may vary at the time the Glenbard Wastewater Authority begins full operations.

[Handwritten initials]

Please sign the duplicate copy of this letter and return to my office.

Sincerely,

[Handwritten signature of James D. Prosser]

James D. Prosser
Director of Management Services

JDP/cc
Enclosures

AGREED TO this 15th day of March, 1978

CITIZENS UTILITIES COMPANY OF ILLINOIS

By *[Handwritten signature]*
Vice President

ESTIMATED ANNUAL CHARGES BY GLENBARD WASTEWATER AUTHORITY - 1981

1.	Overhead Cost Estimate - 1981		
	(i) Department of Management Services Allocation	\$	62,500
	(ii) Department of Public Works Allocation		<u>14,000</u>
	Estimate of Citizens Utilities Flow Proportion	\$	<u>76,500</u>
			<u>12%</u>
			\$ 9,180
2.	Glenbard Plant Operation and Maintenance Cost Estimate - 1981		
	Personnel Services	\$	973,973
	Power		282,809
	Materials, Supplies		85,280
	Insurance & Miscellaneous		<u>102,032</u>
	Estimate of Citizens Utilities Flow Proportion	\$	<u>1,444,094</u>
			<u>12%</u>
			173,291
3.	Debt Service Average Cost Estimate		
	Citizens Utilities Proportion of Glenbard Plant Expansion	\$	537,500
	Citizens Utilities Proportion of South Regional Interceptor		<u>495,000</u>
	Average Annual Debt Service @ 6% Interest	\$	<u>1,032,500</u>
			<u>150%</u>
			135,996
*4.	Citizens Utilities Portion of Annual Bond and Interest Requirement Estimate	\$	11,333
*5.	Citizens Utilities portion of Annual Depreciation Requirements		15,000
6.	Estimate of Maintenance Cost - South Regional Interceptor		<u>5,000</u>
	TOTAL		<u>\$323,467</u>

*These amounts to be satisfied from the bond coverage required in Item 3.

B
EXHIBIT "A"

[Handwritten signature]

**AN INTERGOVERNMENTAL AGREEMENT BETWEEN THE VILLAGES OF
GLEN ELLYN AND LOMBARD IN REGARD TO THE GLENBARD
WASTEWATER AUTHORITY**

Amended and Restated March 7, 2024

This Intergovernmental Agreement Between the Villages of Glen Ellyn and Lombard in Regard to the Glenbard Wastewater Authority (hereinafter referred to as the “Agreement”) is amended and restated as of this 20th day of March, 2024 by and between the Village of Lombard, DuPage County, (hereinafter referred to as “LOMBARD”), an Illinois municipal corporation, and the Village of Glen Ellyn, DuPage County, (hereinafter referred to as “GLEN ELLYN”), an Illinois municipal corporation, and is intended to provide for the joint and cooperative establishment and operation of a wastewater treatment system under, and pursuant to the Illinois Intergovernmental Cooperation Act (5 ILCS 220/1 et seq). (LOMBARD and GLEN ELLYN are sometimes referred to herein individually as a “Member” and collectively as the “Members”.)

WITNESSETH:

WHEREAS, the Members hereto have been jointly involved in wastewater treatment under the terms and conditions of an agreement dated April 1, 1968, and amendments thereto; and

WHEREAS the Federal Environmental Protection Agency (EPA) and Illinois Environmental Protection Agencies (IEPA) have adopted certain wastewater collection and treatment standards requiring the Operation and Maintenance of the Glenbard Treatment Plant (as defined below), two interceptor trunk lines transporting wastewater from the Members (as defined below), the St. Charles Road Lift Station and the Valley View Lift Station (as defined below), and the LOMBARD Stormwater Plant (as defined below); and

WHEREAS, units of local government have had conferred upon them the following powers by Article VII, Section 10 of the Constitution of the State of Illinois:

“Units of local government and school districts may contract or otherwise associate among themselves, with the State, with other states and their units of local government and school districts, and with the United States to obtain or share services and to exercise, combine or transfer any power or function, in any manner not prohibited by law or by ordinance. Units of local government and school districts may contract and otherwise associate with individuals, associations, and corporations in any manner not prohibited by law or by ordinance. Participating units of government may use their credit, revenues, and other resources to pay costs and to service debt related to intergovernmental activities”;

and

WHEREAS, the Illinois Intergovernmental Cooperation Act, 5 Illinois Compiled

Statutes 220/1 et seq., formerly Chapter 127, Illinois Revised Statutes, Sections 741 et sequitur, provides as follows:

“Section 220/3. Intergovernmental Agreements

Any power of powers, privileges or authority exercised or which may be exercised by a public agency of this State may be exercised and enjoyed jointly with any other public agency of this State and jointly with any public agency of any other state or of the United States to the extent that laws of such other state or of the United States do not prohibit joint exercise of enjoyment.

Section 220/5. Intergovernmental Contracts

Any one or more public agencies may contract with any one or more other public agencies to perform any governmental service, activity or undertaking which any of the public agencies entering into the contract is authorized by law to perform, provided that such contract shall be authorized by the governing body of each Member to the contract. Such contract shall set forth fully the purposes, powers, rights, objectives and responsibilities of the contracting parties”;

and

WHEREAS, the Members hereto have authorized the execution of this Agreement, as an exercise of their respective governmental authority, and as an exercise of their Intergovernmental Cooperation authority under the Constitution and laws of the State of Illinois; and their purposes, powers, rights, objectives, and responsibilities hereunder are fully set forth herein;

NOW, THEREFORE, in consideration of the foregoing, the mutual agreements contained herein and other good and valuable considerations, the receipt and sufficiency of which is acknowledged by the Members hereto, it is hereby agreed by, between and among the Members hereto, as follows:

I. DEFINITIONS

- A. “Member” or “Members” means LOMBARD and/or GLEN ELLYN.
- B. “Authority” means the Glenbard Wastewater Authority.
- C. “Board” means the Board of Directors of the Glenbard Wastewater Authority, as provided for in Section II.A. of this Agreement.
- D. “Budget” means the Annual Operating Budget and Capital Improvements Plan for the Glenbard Wastewater Authority.

- E. “Executive Director” means the employee hired in accordance with Section IV. of this Agreement with principal responsibilities for the general management of the Authority.
- F. “Executive Oversight Committee” means the executive oversight committee of the Glenbard Wastewater Authority, as provided for in Section II. C. of this Agreement.
- G. “Wastewater Treatment Facilities” means:
- i. Glenbard Treatment Plant – Main operating facility for all wastewater flows located at 945 Bemis Road, Glen Ellyn, Illinois 60137;
 - ii. Stormwater Plant – Combined sewerage treatment facility utilized to treat excess flow during high flow events located at 625 West Glen Oak Drive, Lombard, Illinois 60148;
 - iii. Hill Avenue Lift Station – Utilized to convey excess combined sewer flow to the Stormwater Plant during high flow events;
 - iv. North Regional Interceptor (NRI) – Trunk sewer pipe that conveys flow beginning at the St. Charles Road Lift Station to the Glenbard Treatment Plant;
 - v. South Regional Interceptor (SRI) – Trunk sewer pipe that conveys wastewater beginning at the Valley View Lift Station to the Glenbard Treatment Plant;
 - vi. St. Charles Road Lift Station – Pumping station responsible for conveying flow from Glen Ellyn Heights Subdivision and Northern Glen Ellyn to the NRI;
 - vii. Valley View Lift Station – Pumping station responsible for conveying flows from the Valley View Subdivision to the SRI;
 - viii. SRI Lift Station – Pumping station built to provide a level of protection for the SRI during high flow conditions;
 - ix. Sunnyside Lift Station – Pumping station responsible for conveying flow from the homes on Sunnybrook Drive to the Glenbard Treatment Plant;
 - x. Appurtenances - Any other facilities which convey or are necessary to contribute to the conveyance of the sewer flow from the termination of the sewer collection system of each of the Members to the facilities owned and operated by the Authority.

The term “Wastewater Treatment Facilities” shall not include the sewer collection system of each of the Members.

- H. "Operating Agency" means GLEN ELLYN. The authority of the Operating Agency shall be only as defined or detailed herein, subject to the restrictions and limitation of applicable Federal, State, and local laws or regulations. In general, the Operating Agency shall provide the Authority with support services, including accounts receivable, accounts payable, payroll, bookkeeping and accounting services, human resources services and overall management supervision to oversee the day-to-day operations of the Wastewater Treatment Facilities in accordance with the general direction and policy as provided by the Executive Oversight Committee. The Operating Agency shall be paid an Overhead Fee (as defined below) as compensation for these services.

At such time, as a Member accounts for sixty percent (60%) of the annual flow, as measured at the Glenbard Treatment Plant for four (4) consecutive years, that Member shall have the right, but not the obligation, to serve as the Operating Agency. The Member must make notice of its intent to assume the responsibilities of Operating Agency through notice to the presiding officer of the Executive Oversight Committee within thirty (30) days of the determination of the annual flows for the four (4) consecutive years. If said notice is given, said Member shall take over as the Operating Agency at the end of the Authority's current operating/Budget year, so that the current Operating Agency may serve in such capacity for the remainder of the operating/Budget year in which the notice is given.

- I. "Participating Agency" shall be defined as public agencies, other than the Members, contributing wastewater to the Glenbard Treatment Plant for treatment.
- J. "Overhead Fees" are those costs for personnel, services and materials incurred by the Operating Agency relative to the Authority and not directly charged to the Authority. The Overhead Fees charged by the Operating Agency to the Authority shall be annually determined and incorporated into the approved Budget.

The determination of the Overhead Fees shall be based upon the sum of:

- i. An allocation of costs from the Operating Agency's administrative and public works staff, representative of that portion of time spent and costs incurred by the Operating Agency's administrative and public works staff for Authority related functions, plus
 - ii. An allocation of all the direct costs incurred by the Operating Agency for items relating solely to Authority matters, including costs of generating accounts payable checks, payroll checks, supplies, prorated maintenance, postage, computer programming fees, telephone charges and similar items.
- K. "Operation & Maintenance and Capital Expenses" shall be defined as follows:

- i. Operation and Maintenance Expenses are those costs associated with the day-to-day operations of the Wastewater Treatment Facilities.
 - ii. Capital Expenses are those costs associated with more significant improvements to the Wastewater Treatment Facilities operated by the Authority. Capital Expenses are subject to the purchasing policies established by the Operating Agency.
- L. "Control Mechanisms" shall be defined as the legal control techniques used to obtain compliance from industrial dischargers through permit, contract, order, or other similar means

II. GLENBARD WASTEWATER AUTHORITY; ESTABLISHMENT, DUTIES

- A. The Authority is hereby created and established for the purpose of jointly treating and processing wastewater for the Members. The Board of the Authority shall consist of the following:
- i. The Village President and six (6) Trustees from GLEN ELLYN; and
 - ii. The Village President and six (6) Trustees from LOMBARD.

The presiding officer of the Board shall alternate each calendar year beginning with CY2015. The alternation shall be between the Village President of LOMBARD and the Village President of GLEN ELLYN, with the Village President of LOMBARD being the presiding officer in even-numbered calendar years and the Village President of GLEN ELLYN being the presiding officer in odd-numbered calendar years, unless the Village Presidents agree otherwise. The location of the meetings of the Board shall be the Village Hall of the presiding officer's municipality unless the Village Presidents agree otherwise.

The Board shall meet at the call of the presiding officer or any four (4) members of the Board. All meetings of the Board shall comply with the requirements of the Illinois Open Meetings Act. A quorum to conduct business shall occur when there are at least four (4) members from each Village Board present at a legally posted meeting of the Authority,

- B. The Authority, by action of its Board, shall have, and is hereby delegated full power and authority to:
- i. Operate and maintain the Wastewater Treatment Facilities in accord with applicable Federal, State, and local laws, ordinances and regulations;
 - ii. Secure and provide necessary personnel, equipment, and improvements, either directly or through the Members;

- iii. Establish a system of revenue through direct payments by Members, a Participating Agency and/or other private or public bodies;
- iv. Enter into agreements with any other unit of government, or private utility company, for the treatment of wastewater generated from within the Authority's Facility Planning Area;
- v. Perform such other acts as may be necessary or desirable for the establishment, maintenance, and operation of the Wastewater Treatment Facilities, including, but not limited to, designating a Member to exercise its condemnation authority in the acquisition of sites for additional wastewater treatment facilities; and
- vi. Review and approve an annual Budget.
- vii. Execute Elements of the Approved Pretreatment Program listed in the National Pollutant Discharge Elimination System Permit IL0021547 as follows:
 - (a) Sewer Use Ordinances – The Members agree to adopt a pretreatment sewer use ordinance that is no less stringent than the ordinance the Authority is required to uphold per EPA requirements, as may be amended from time to time.
 - (b) Local Limits – The Members agree to adopt local limits for industrial discharges into its collection system that are at least as stringent as the ordinances the Authority is required to uphold per EPA requirements, as may be amended from time to time.
 - (c) Control Mechanism – The Authority shall be responsible for issuing Control Mechanisms to industrial users located within the Members' jurisdictions.
 - (d) Transfer of Records – The Members agree to provide the Authority access to all records compiled as part of the Members activities that may affect the Authority's pretreatment program. The Members shall provide notice to the Authority of key activities, such as enforcement actions, permit issuances, etc.
 - (e) Right of Entry/Inspection and Sampling – The Members shall grant the Authority the power to enter into the facilities of industrial users as allowable by applicable laws to periodically verify compliance with applicable pretreatment standards and requirements.
 - (1) The Authority acts as an agent of the contributing Member jurisdictions, for the purposes of implementation and enforcement of Member's sewer use ordinance against industrial users located in the Authority's service area. The Authority may take any action under the Member jurisdiction's Sewer Use Ordinance that could have been taken by a Member, including the enforcement of the Sewer Use Ordinance in a court of law.
 - (2) The Authority, on behalf of and as an agent for Member, will

perform technical and administrative duties necessary to implement and enforce the Sewer Use Ordinance. The Authority will:

- a. update the industrial waste survey;
 - b. issue industrial discharge permits to all industrial users required to obtain a permit;
 - c. conduct inspections, enforcement action as outlined in sampling, and analysis;
 - d. take all appropriate actions within the enforcement response plan and provided for in Member's sewer use ordinances; and
 - e. perform any other technical or administrative duties the Parties deem appropriate.
- (f) In addition, Authority may, as agent of Member take emergency action to stop or prevent any discharge which presents or may present an imminent danger to the health, or welfare of humans, which reasonably appears to threaten the environment, or which threatens to cause interference, pass through, or sludge contamination.

Enforcement – The Authority has the primary responsibility for issuing enforcement through the Members' code enforcement departments.

- C. There is hereby created an Executive Oversight Committee (EOC), which shall consist of the following:
- i. the Village President of GLEN ELLYN or the Member's designee;
 - ii. one (1) elected official from GLEN ELLYN other than the Village President;
 - iii. the Village Manager of GLEN ELLYN or a designee;
 - iv. the Public Works Director from GLEN ELLYN or a designee;
 - v. the Village President of LOMBARD or the Member's designee;
 - vi. one (1) elected official from LOMBARD other than the Village President;
 - vii. the Village Manager of LOMBARD or a designee; and
 - viii. the Public Works Director from LOMBARD or a designee.

Each Member shall communicate, to the Executive Director, changes to the EOC representation in advance of any meetings.

The presiding officer of the Executive Oversight Committee shall be the presiding officer of the Board. In the event of the absence of the presiding officer, the elected official from the presiding officer's municipality shall serve as presiding officer pro term for that meeting. In the event of the absence of the presiding officer and the presiding officer pro term, the non-presiding Village President shall assume the role and duties of the presiding officer for that meeting at which the presiding officer and presiding officer pro term are absent. If the presiding officer, presiding officer pro term and the non-presiding officer Village President are absent, the elected official from the non-presiding officer Member shall serve as presiding officer pro term for that meeting.

The location of the meetings of the Executive Oversight Committee shall be the Glenbard Treatment Plant, 945 Bemis Road, Glen Ellyn, Illinois 60137, unless otherwise specified by the then presiding officer by reasonable notice to the other members of the Executive Oversight Committee. The duties and powers of the Executive Oversight Committee shall include the following:

- i. To make policy recommendations regarding, but not limited to restructuring of the Authority, sale or transfer of the assets of the Authority, long-term planning and capital improvements;
- ii. To review and recommend an annual Budget to the Board;
- iii. To review the annual audit;
- iv. To periodically review the Wastewater Treatment Facilities operations;
- v. To sell equipment which the Executive Oversight Committee determines to be obsolete and no longer necessary for the operation of the Authority,
- vi. To approve expenditures which are specifically provided for within the annual Budget or which are necessary in order to implement matters more generally provided for within the annual Budget;
- vii. To review and approve contracts or expenditures of money in excess of the current maximum limit over which competitive bidding is required by 65 ILCS 5/8-9-1 of the Illinois Municipal Code, or to such higher amount as the legislature may from time to time amend such section, provided monies have been previously budgeted in a Budget approved by the Board;
- viii. To review and make recommendations to the Board or to the corporate authorities of the respective Members sitting independently, concerning facilities planning area (FPA) boundary changes, with final endorsement of any FPA boundary change requiring the concurrence of the corporate authorities of both of the Members;
- ix. To approve debt or loan obligations related to the operation of the Authority, provided that the Executive Oversight Committee must give no less than thirty (30) days' notice to the corporate authorities of GLEN ELLYN and LOMBARD after taking any such action. If the corporate authorities of either Member pass an ordinance removing the power from the Executive Oversight Committee to take the action so taken, then the Executive Oversight Committee shall thereafter lose the power to take such action.
- x. To take such additional action as the Executive Oversight Committee determines is necessary and proper for the operation of the Authority by a 4/5^{ths} (four-fifths) vote of the Executive Oversight Committee members

present and voting; provided, however, that any such vote shall be of no force and effect until the Executive Oversight Committee has given no less than thirty (30) days' notice to the corporate authorities of GLEN ELLYN and LOMBARD after taking any such action. If the corporate authorities of either Member pass an ordinance removing the power exercised from the Executive Oversight Committee, within said thirty (30) day period, then the Executive Oversight Committee shall thereafter lose the power to take such action, and the action taken shall be null and void.

The Executive Oversight Committee shall meet at the call of the presiding officer or at the call of any two (2) members of the Executive Oversight Committee. A simple majority, (i.e., five (5) members of the Executive Oversight Committee), shall constitute a quorum to transact business.

Nothing shall preclude the Village Managers, or their designees, from meeting to discuss matters related to the operation of the Glenbard Wastewater Authority, provided that a report of that meeting is provided to the Executive Oversight Committee at the next meeting of the Executive Oversight Committee.

III. BUDGET ADOPTION, AUDIT

- A. Adoption of the annual operating Budget shall require the affirmative vote of four (4) members of the Board from each Member. The fiscal year of the Authority shall be the same as the fiscal year of the Operating Agency (January 1st to December 31st).
- B. The Authority Budget shall be prepared and maintained as a separate document and shall not be intermingled or made a part of the regular budget of the Operating Agency.
- C. The annual audit shall be executed by an auditing firm selected by the Operating Agency, subject to the advice and consent of a majority of the members of the Executive Oversight Committee.

IV. PERSONNEL

- A. All appointments, evaluations and discipline of personnel for the Authority shall be made by the Operating Agency.
- B. Members of the Executive Oversight Committee shall have the right to submit information and comments to the Village Manager of the Operating Agency, relative to the performance of the Executive Director, no less than thirty (30) days prior to the Executive Director of the Authority's performance review. The Operating Agency shall provide the Executive Oversight Committee with no less than sixty (60) days prior written notice of the scheduled date of the Executive Director of the Authority's performance review. Information submitted to the

Operating Agency shall be included in the Executive Director of the Authority's personnel file in accordance with the personnel policies of the Operating Agency.

- C. All appointments shall be made only on the basis of merit and fitness, as determined by the Operating Agency.
- D. All persons directly employed in the operation of the Authority shall be considered to be employees of the Operating Agency, subject to the supervision of the Operating Agency in the performance of its duties.
- E. Employees of the Authority meeting the eligibility requirements for pension benefits shall be sponsored by the Operating Agency for participation in the Illinois Municipal Retirement Fund.
- F. The Operating Agency shall provide employee benefits and health insurance to the Authority personnel, subject to the benefit levels established within the personnel rules and policies as adopted by the Operating Agency. Such benefits and insurance shall be the cost of the Authority.

V. LEGAL COUNSEL

The Authority shall retain independent legal counsel to assist the Authority on all legal matters. Unless approved by the Board, legal counsel shall not work with, or for, either Member. Legal counsel shall be selected by a subcommittee of the Executive Oversight Committee, with approval of the appointment made by the Executive Oversight Committee. The subcommittee shall consist of the Executive Director of the Authority, a representative from LOMBARD and a representative from GLEN ELLYN. The Executive Director of the Authority shall serve as chairperson of the subcommittee.

VI. AUTHORITY INSURANCE

The Operating Agency shall first attempt to utilize its insurance provider to extend coverage to the Authority for liability, workers compensation, property and other coverage deemed to be necessary, consistent with the coverage limits maintained by the Operating Agency. Such insurance shall be the cost of the Authority.

VII. WASTEWATER TREATMENT FACILITIES OPERATIONS & FINANCES

A. Financing of Operations.

The Operating Agency has responsibility for oversight of the Wastewater Treatment Facilities as agreed upon by the Members. The Village Manager of the Operating Agency shall have purchasing authority up to the limit established for the Executive Oversight Committee as referenced in Section II.C.vii of this Agreement.

The Operating Agency shall maintain separate funds or accounts as necessary to ensure that the billing and financing of the Authority's operations and capital replacements are apportioned to each Member as detailed in Section VII.C of this Agreement.

B. Billing Procedure

Each Member will transfer into such fund or account, and in the manner, including electronic transfer, as the Authority may direct, a set amount on the last day of the month for which service is rendered as a preliminary payment for that service. This monthly amount is established as 1/12th (one-twelfth) of that fiscal year's Budget apportioned to each Member as determined by Section VII.C of this Agreement.

Not later than the twentieth (20th) calendar day of each month, the Authority shall send a monthly flow bill to each Member for the treatment of wastewater based on respective metered flows for the prior month. The amount due from each Member may be adjusted, if applicable, twice a year based on the monthly flow bills issued from January through June and July through December. After the issuance of the June and December flow bills, the Members will remit any balance due, or the Authority will return any overpayment, within sixty (60) days. Any other revenue or audit adjustment will be handled as a separate invoice/credit transaction, and not deducted or added to the flow bills.

The Operating Agency will also make available to each Member, upon request, a monthly Budget statement, said statement detailing, by line item, expenditures for the previous month, end of the month encumbrances, and unencumbered Budget balances.

Each Member shall include in its annual appropriation or budget ordinance an appropriation of adequate funds for the aforementioned payments.

C. Rate Determination.

The Authority shall maintain proper flow metering equipment to ensure that sufficient monitoring exists to support the Members' contributions.

The monthly Member contributions shall be based upon the following formulas:

LOMBARD

$$\frac{(\text{Current Year Operating Budget}) \times (\text{Previous 5 Year Average \% of Total Flow})}{12}$$

GLEN ELLYN

$$\frac{(\text{Current Year Operating Budget}) \times (\text{Previous 5 Year Average \% of Total Flow})}{12}$$

The Authority shall maintain a system of tracking and reporting the allocation of personnel and resources to each of the Wastewater Treatment Facilities as defined in Section I.F. of this Agreement.

D. Capital Expenses

As part of the annual Budget process, the Executive Oversight Committee will recommend the annual contribution to the Board as part of the annual Budget based off of the most recently approved ten (10) year capital plan including all debt service, other than debt service on Member Debt (as hereinafter defined). Every five (5) years, the Authority shall conduct a review of the capital plan; said review shall be performed by an outside consultant and be known as the facilities plan. The result shall be used as the basis for updating the Authority's ten (10) year capital plan.

The Capital Equipment Replacement Fund shall be funded through a mechanism that uses a fixed cost split of fifty percent (50%) of the annual capital contributions funded by each Member. The remaining fifty percent (50%) of the Capital Equipment Replacement Fund shall be split based upon the average of the previous five (5) year percent of total area flow.

The Members' annual contribution rate for the Capital Equipment Replacement Fund shall be based upon the following formula:

LOMBARD

$(\text{Fiscal Year Capital Expenses} \times .25) = \text{fixed contribution}$

$(\text{Fiscal Year Capital Expenses} \times .50) \times (\text{LOMBARD's average percent of the total area flow for the previous five (5) years}) = \text{variable contribution}$

GLEN ELLYN

$(\text{Fiscal Year Capital Expenses} \times .25) = \text{fixed contribution}$

$(\text{Fiscal Year Capital Expenses} \times .50) \times (\text{GLEN ELLYN's average percent of the total area flow for the previous five (5) years}) = \text{variable contribution}$

E. Rate Adjustment

The audit shall be completed within six (6) months of completion of the fiscal year of the Operating Agency. The audit report shall include, but not be limited to the following information:

- i. Total measured flows billed per Member;

- ii. Total revenues billed and received per Member;
- iii. An expenditure analysis, including operating expenses by category;
- iv. An analysis of each Member's expense allocation determined by the product of the percentage of measured flow for each Member to total flow applied to total expense; and
- v. An amount payable or receivable by each Member based on an adjusted rate as determined by dividing total expenses by total flow.
- vi. Based on the audit report, the Operating Agency shall either remit or bill the amount due to, or from, each Member, except for that cash fund balance which shall be maintained by the Authority, as further defined in subsection I. below, entitled "Cash Balance." Payment by either the Authority or any Member shall be due within sixty (60) days of the billing.

F. Method of Metering

The metering of the wastewater into the Glenbard Treatment Plant shall be such that the flow contributed by each Member can be accurately measured. Estimated flows may be used as a substitute in the case of meter failure. Such estimates, however, shall require the mutual approval of the Operating Agency and the affected Member. Where a dispute should occur, the Members shall consider using prior year's flows for the same period.

For the purposes of this Agreement, total area flow shall be determined through readings taken from the sixteen (16) flow meters and two (2) rain gauges operated by the Authority.

G. Control of Permits

All Member permits requiring EPA or IEPA approval shall be processed through the staff of the Authority. Copies of any permits involving fifteen (15) persons equivalent, or less, additions to the sewer system flowing to the Glenbard Treatment Plant shall be filed with the Authority staff.

H. Punitive Action

Any responsibility for punitive action taken by the EPA or IEPA against the Operating Agency must be assumed by the allegedly offending Member, including any and all legal costs and any resultant fines levied by court action or the Illinois Pollution Control Board, unless the fine is a result of negligence on the part of the Authority. In such case, the Authority shall be responsible for the punitive actions.

I. Cash Balance

A working cash fund shall be maintained in an amount approximately equal to twenty-five percent (25%) of the previous Budget year's expenditures for operation and maintenance, as determined by the audit, exclusive of depreciation and equipment reserves. Working cash shall be calculated as the total of the general ledger cash and short-term investment balances. This calculation shall be done only for the operation and maintenance fund and not on a combined fund basis.

VIII. FUTURE CAPITAL IMPROVEMENTS

If, at some future date, it becomes necessary or advisable to enlarge, improve, or expand the Wastewater Treatment Facilities, the same may be accomplished with the approval and concurrence of each Member and the Board under such terms as may be agreed to by the Members.

Any enlargement, improvement, or expansion of the Wastewater Treatment Facilities may be funded in accordance with the following provisions:

A. Member Contribution

With the approval of the Executive Oversight Committee, the Members may, collectively but not individually, contribute the amount required for such enlargement, improvement, or expansion of the Wastewater Treatment Facilities to the Authority. In such case, the required amount shall be determined by the Executive Oversight Committee and apportioned to the Members based on each Member's most recent annual Capital Equipment Replacement Fund contribution rate, as calculated under Paragraph D of Section VII of this Agreement and adjusted under paragraph E of Section VII of this Agreement.

B. Member Borrowing

If one Member (the "Borrowing Member") issues its own debt obligation or obligations to pay the amount required for such enlargement, improvement, or expansion of the Wastewater Treatment Facilities (the "Member Debt") and contributes the proceeds of the Member Debt to the Authority, then the following provisions shall apply:

- i. The debt service schedule for the Member Debt shall be provided to the Authority (the "Member Debt Service Schedule").
- ii. An investment banking firm or financial advisor acceptable to the Authority shall prepare a debt service schedule for the proposed issuance of the Member Debt by the Authority (the "Authority Debt Service Schedule"). The Authority Debt Service Schedule shall be based upon the expected rating of the Authority and using estimated costs of issuance appropriate for the proposed transaction. Interest rates shall be spread to the appropriate index

(AAA MMD for a tax-exempt issuance and U.S. Treasury Rates for a taxable issuance) based on the date the Member Debt was sold. The Authority Debt Service Schedule shall be structured with principal amortization uniform to the Member Debt Service Schedule. The investment banking firm or financial advisor retained by the Authority shall provide information to justify the interest rates utilized to generate the Authority Debt Service Schedule, such as detail on recently sold comparable issues and secondary trading information. Each Member shall be given the opportunity to review the assumptions utilized in preparing the Authority Debt Service Schedule.

- iii. The difference between (i) the total debt service shown in the Authority Debt Service Schedule (reduced by any required debt service reserve) (the “*Total Authority Debt Service*”) and (ii) the total debt service shown in the Member Debt Service Schedule (reduced by any required debt service reserve) (the “*Total Member Debt Service*”) constitutes the “Debt Service Savings” for the Member Debt.
- iv. The product of the Debt Service Savings and the Non-Borrowing Member’s most recent annual Capital Replacement Fund contribution rate, as calculated under Paragraph D of the Section VII of this Agreement and as adjusted under Paragraph E of Section VIII of this Agreement constitutes the “Non-Borrowing Member Debt Service Savings” for the Member Debt.
- v. Annual debt service, on the Member Debt (the “*Annual Debt Service*”) shall be apportioned between the Members based on the following percentages calculated as of the date of issuance of the Member Debt:

For the Borrowing Member: The product of Total Member Debt Service and the Borrowing Member’s most recent annual Capital Replacement Fund contribution rate (as calculated under Paragraph D of the Section VII of this Agreement and as adjusted under Paragraph E of Section VII of this Agreement), reduced by 50% of the Non-Borrowing Member Debt Service Savings and then divided by Total Member Debt Service. This percentage constitutes the “Borrowing Member Annual Debt Service Allocation Percentage” for the Member Debt.

For the Non-Borrowing Member: 100%, minus the Borrowing Member Annual Debt Service Allocation Percentage.

- vi. For each year that the Member Debt is outstanding, the Authority shall include the Annual Debt Service in the total annual Capital Equipment Replacement Fund contribution amount to be apportioned between the Members based on the allocation percentages calculated in accordance with the provisions of subsection v. above.

- vii. Each year, when and as received by the Authority, Capital Equipment Replacement Fund contributions, to the amount of the Annual Debt Service, shall be reserved for debt service on the Member Debt.
- viii. Not more than 60 and not less than 30 days prior to each payment date on the Member Debt, the Authority shall pay the Borrowing Member an amount equal to the debt service due on the Member Debt on such payment date.
- ix. The Authority shall reimburse the Borrowing Member for any costs of issuance related to the Member Debt not paid with proceeds of the Member Debt.

Prior to the Borrowing Member issuing the Member Debt, the Executive Oversight Committee shall approve such plan of finance for the Authority. An example of the calculation described in this Paragraph B is set forth in *Exhibit B* to this Agreement.

IX. REVENUE BOND RESTRICTIONS

Sections XII and XIII of this Agreement shall be subject to restrictions contained in present and/or future Revenue Bond Ordinances of LOMBARD and GLEN ELLYN, which provide funding for Wastewater Treatment Facilities and/or sanitary sewer facilities.

X. USE OF AUTHORITY PROPERTY

Land and facilities owned by the Authority are intended for the sole use of the Authority. Any request to utilize land, office space, storage space, garage space or other property shall be subject to the prior approval of the Executive Oversight Committee.

All revenues derived from the use of the land and Wastewater Treatment Facilities operated by the Authority shall be deposited in the Capital Equipment Replacement Fund.

XI. COMPENSATION OF OPERATING AGENCY - OVERHEAD FEES

The initial Overhead Fees adopted as part of this Agreement are attached as Exhibit A and made part thereof. The Operating Agency shall use the percentage increase equivalent to the most recent calendar year consumer price index (CPI-U for the Chicago Metropolitan Area) as a guide for the annual adjustment to the Overhead Fees.

- A. The Operating Agency shall be entitled to compensation for services rendered to the Authority, with the amount of compensation being the "Overhead Fees" defined in Section I.J. above. The amount of Overhead Fees payable to the Operating Agency shall be mutually determined by the Members and included in the annual operating Budget. In the event the Members fail to agree upon the compensation payable to the Operating Agency, then the amount of compensation contained in the most current, approved operating Budget shall be carried forward into the subsequent year's annual operating Budget,

provided, however, that the use of the preceding year's budgeted amount to determine the Operating Agency's compensation shall not be employed in two (2) consecutive years.

- B. If any extraordinary costs are incurred by the Operating Agency in excess of this adopted fee schedule, such extraordinary costs shall be subject to the approval of the Executive Oversight Committee prior to the reimbursement of the Operating Agency therefor.
- C. The components of the indirect costs of the Overhead Fees shall be reviewed every three (3) years by the Executive Oversight Committee beginning in CY 2017. The Executive Oversight Committee shall have the authority to make revisions to Exhibit A without amendment to this Agreement.

XII. SINGLE VILLAGE OWNERSHIP

Should it become necessary for either the GLEN ELLYN or LOMBARD to own part or all of the Wastewater Treatment Facilities in its/their entirety at any time, it may do so upon approval of the sale, and conditions of the sale, from each of the Village Boards of LOMBARD and GLEN ELLYN. The purchase price shall be the seller's proportionate share of the appraisal value of that part of the Wastewater Treatment Facilities at the time of the sale, determined by the respective contributions of the Members as provided for herein, multiplied by the then appraised value of the portion of the Wastewater Treatment Facilities that is being sold. The purchase shall be either as a lump sum payment or may be amortized over a period not to exceed twenty (20) years at a rate of interest equal to the interest rate of the outstanding bonds of the selling Member and deducted from the sewage treatment service charges if agreeable to both Members. Upon payment of the full purchase price, the selling Member shall have the right to continue to use that part of the Wastewater Treatment Facilities at such rate as will allow the purchasing Member a reasonable return of its total investment above operating costs.

XIII. SALE TO A THIRD PARTY

If it becomes necessary or desirable to sell part or all of the Wastewater Treatment Facilities to a third party, that may be done upon the mutual consent and agreement of each of the Village Boards of GLEN ELLYN and LOMBARD. The proceeds of such sale shall be distributed in proportion to the amounts each Member contributed to the total cost of that part of the Wastewater Treatment Facilities, less any Federal contribution. However, in no event shall the share distributed to either Member be less than is required to satisfy in full the outstanding bonded indebtedness incurred by either Member of the portion of the Wastewater Treatment Facilities that is being sold, and the system connected therewith.

XIV. CONFLICT RESOLUTION

A. Definition

A “Grievance” is defined as a difference of opinion raised by a Member against the Authority, the Authority against a Member or a Member against a Member regarding an alleged violation, misapplication or misinterpretation of an express provision of this Agreement.

B. Procedure

The aggrieved Member shall submit the Grievance in writing, within thirty (30) days of the alleged violation, to the Village President, or his designee, of the other Member, specifically indicating that the matter is a Grievance under this Agreement. The Grievance shall contain a complete statement of the complaint, the provision, or provisions, of this Agreement which are alleged to have been violated, and the relief requested. All Grievances must be presented no later than thirty (30) business days from the date of the occurrence of the matter giving rise to the Grievance or the aggrieved Member’s discovery of such matter using reasonable diligence, whichever is later. The Member served with the written notice of Grievance shall provide a written response within seven (7) business days from receipt of the notice.

C. Arbitration

Arbitration shall proceed in the following manner:

- i. The Authority and the Member or Members shall confer and attempt to reach agreement on the selection of an arbitrator. In the event that Members are unable to agree upon the arbitrator within ten (10) days, they shall obtain a list of recognized arbitrators from the Federal Mediation and Conciliation Service. Upon receipt of such list, the Authority and/or each Member, as the case may be, shall strike names from the list until there is one name remaining. The remaining individual shall be the arbitrator. The Member, or the Authority, requesting the arbitration shall strike first.
- ii. The arbitrator shall promptly review the Grievance and shall hold a hearing, and the scope of the hearing shall be defined by the Grievance and this Agreement. The hearing shall only be open to the Authority and Member(s) in interest. The Member and/or the Authority may request that a written transcript of the hearing be made, to be paid for by each Member and/or the Authority.
- iii. The decision of the arbitrator shall be in writing and shall set forth the findings of fact, reasoning and conclusion of the issues submitted.
- iv. The decision of the arbitrator shall be binding upon the Authority and the Member(s) to the Grievance.

- v. The cost of the arbitrator's fees and expense and the cost of a court reporter shall be borne equally by the Parties to the Grievance. Each Member and the Authority shall be responsible for its own costs.
- vi. The arbitrator shall have full authority to decide all substantive and procedural issues; however, the Members and Authority shall not be prejudiced from challenging the arbitrator's determinations on subsequent review in judicial and quasi-judicial proceedings.

XV. NOTICE

Notice, or other writings which either Member is required to, or may wish to, serve upon the other Member in connection with this Agreement shall be in writing and shall be delivered personally or sent by registered or certified mail, return receipt requested, postage prepaid and addressed as follows:

If to the Village of Lombard:

Village Manager
Village of Lombard
255 E. Wilson Avenue
Lombard, Illinois 60148

If to the Village of Glen Ellyn:

Village Manager
Village of Glen Ellyn
535 Duane Street
Glen Ellyn, Illinois 60137

If to the Authority

Executive Director
Glenbard Wastewater Authority
945 Bemis Road
Glen Ellyn, Illinois 60137

XVI. WASTEWATER SERVICE AGREEMENTS

- A. The Members acknowledge that GLEN ELLYN currently has agreements with the County of DuPage and the Illinois American Water Company of Illinois, which allow sewage from certain portions of the unincorporated areas of DuPage County, served with sanitary sewer service by said entities. The Members agree that said agreements can continue to exist, provided the flows as a result thereof count as

sewage flows from GLEN ELLYN, for purposes of sewage flow calculations under this Agreement.” These agreements are hereby referred to as Intergovernmental Agreements with the following names:

- (i) Agreement Between the County of DuPage and Glen Ellyn
- (ii) Citizens Utility – VGE Agreement Valley View Lift Station

B. The Members acknowledge that LOMBARD currently has an agreement with County of DuPage, which allows sewage from the unincorporated residential area of DuPage County known as the Flowerfield Subdivision, served with sanitary sewer by DuPage County. The members agree that the said agreement can continue to exist, provided the flows as a result thereof count as sewage flows from LOMBARD, for the purposes of sewage flow calculations under this Agreement. This agreement is hereby referred to as the Intergovernmental Agreement with the following name

- (i) IGA for Flowerfield Subdivision

XVII. PREVIOUS AGREEMENT

The agreement between GLEN ELLYN and LOMBARD dated the 22nd day of May, 2023, and all amendments thereto, are hereby rendered void as of the effective date of this Agreement. Said effective date being that date on which both Members have authorized and executed this Agreement, which date shall be inserted in the opening paragraph hereof.

EXECUTED this 20th day of March, 2024, by the Village of Glen Ellyn.

VILLAGE OF GLEN ELLYN

By 
Village President

ATTEST:


Village Clerk, Deputy

EXECUTED this 7th day of March, 2024, by the Village of Lombard.

VILLAGE OF LOMBARD

By 
Village President

ATTEST:



Village Clerk

EXHIBIT A

**Glenbard Wastewater Authority
Schedule of Operating Agency Overhead Fees
CY2024**

CY24 Operating Agency Charges	\$136,161
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EXHIBIT B

Article VIII(B) Calculation Example

For illustrative purposes only. Total Authority Debt Service, Total Member Debt Service and most recent Capital Replacement Fund contribution rates are hypothetical.

PART I. CALCULATION OF DEBT SERVICE SAVINGS (Paragraphs B(i), B(ii) and B(iii) of Article VIII)

	Total Authority Debt Service	10,771,656
(-)	Total Member Debt Service	9,631,896
=	Debt Service Savings	1,139,760

PART II. CALCULATION OF NON-BORROWING MEMBER DEBT SERVICE SAVINGS (Paragraph B(iv) of Article VIII)

	Debt Service Savings	1,139,760
x	Most recent annual Capital Replacement Fund contribution rate of Non-Borrowing Member	54.50%
=	Non-Borrowing Member Debt Service Savings	621,169

PART III. CALCULATION OF ANNUAL DEBT SERVICE ALLOCATION PERCENTAGE (Paragraph B(v) of Article VIII)

For Borrowing Member

	Total Member Debt Service	9,631,896
x	Most recent annual Capital Replacement Fund contribution rate of Borrowing Member	45.50%
=	Subtotal	4,382,513
(-)	Non-Borrowing Member Debt Service Savings x 50%	310,585
=	Sub-total	4,071,928
÷	Total Member Debt Service	9,631,896
=	Borrowing Member Annual Debt Service Allocation Percentage	42.23%

For Non-Borrowing Member

	100%	100.00%
(-)	Borrowing Member Annual Debt Service Allocation Percentage	42.23%
=	Non-Borrowing Member Annual Debt Service Allocation Percentage	57.77%

ATTACHMENT F - FUNDING NOMINATION FORMS



Illinois Environmental Protection Agency

1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276 • (217)782-3397

WATER POLLUTION CONTROL LOAN PROGRAM (WPCLP) INSTRUCTIONS FOR FUNDING NOMINATION FORMS FOR LOAN ASSISTANCE

Funding Nomination Forms must be received by the Agency on or before March 31st preceding the fiscal year for which assistance is requested. To appear on the Agency's Project Priority List, a loan applicant must submit a Funding Nomination Form each year prior to March 31st. To be eligible for the annual Intended Funding List, a Project Plan must be approved by March 31st. A separate form is needed for each loan.

Mail completed forms to: IFAS, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, IL 62794-9276.

1. Legal name of the loan applicant that will own the facilities to be constructed.
2. Provide the mailing address of the loan applicant.
3. Check the box that describes your organization. Units of Local Government include cities, villages, towns, townships, water districts, etc. Choose OTHER for a type of organization that is not listed.
4. The county and legislative district should be consistent with the mailing address.
5. The authorized representative must be the person or officer with the local government unit that will be responsible to execute loan documents.
6. The name of the architectural/engineering consultant or other person that will be responsible for the facility planning, design and construction of the loan project.
7. Provide a brief description of the proposed project along with the total estimated cost. Unless the loan is only funding a portion of the project, the cost should include construction, planning, design, legal services, construction oversight, and a 10% contingency. If the loan is only financing a portion, do not include costs which will be paid by other funding sources or local funds. For example, if IEPA is only funding construction, insert the estimated cost of construction plus a 10% contingency.
8. Briefly explain why the project is necessary. If the project is compliance related, indicate as such. Compliance will be verified by the Agency. For loan program purposes, compliance projects are those projects that meet the one or more of the criteria listed below.
 - a. The Project is necessary to correct a situation that has resulted in the applicant receiving a Violation Notice, Compliance Commitment Agreement, or Noncompliance Advisory from IEPA.
 - b. The project is necessary to correct a violation that has resulted in referral to the IL Attorney General's Office, referral to USEPA, a court order directing the applicant to remedy the situation, or an administrative order from USEPA directing the applicant to remedy the situation.
 - c. Project that will correct a design, operation or maintenance issue which resulted in the applicant being placed on the Agency's restricted status list or critical review list.
9. Project location refers to the construction location. If the project involves multiple locations, describe each. Examples are below.
 - a. An address or addresses when available.

- b. For pipe projects, a description such as Grand Avenue between 9th St. and 11th St., or 500 feet northwest of the intersection of County Road 6 and Rural Drive. Descriptions may be used for other circumstances: streambank projects, detention basins, etc. without addresses. (Continued on back.)
 - c. For large or citywide pipe projects, the center point of construction may be used. An address at the center of construction may be used. This could be utilized if all mains in a specific ward or area were being replaced.
 - d. Longitude and Latitude may be used.
10. Does the applicant own and operate a Wastewater Treatment Facility? If YES is selected, only complete questions a) through e). If NO is selected, answer questions f) and g). Many communities own their sewers and pump stations, but waste water is piped to another community, sanitary district, or water reclamation district for treatment. The largest water reclamation district in IL is the Metropolitan Water District of Greater Chicago which provides wastewater treatment for over 100 municipalities.
11. Provide the service population for the applicant. If the applicant serves multiple municipalities, provide the service population for each municipality. If the applicant serves unincorporated areas, provide the service population for those areas as well. Service population is not service connections or billed units. It is the number of people served by the system.
12. The applicant has implemented or is currently developing a system-wide Asset Management Plan (AMP) or equivalent. An AMP is any system-wide plan that contains information on asset conditions, service levels, customer needs, and financial resources. This plan will ensure the applicant can conduct planned maintenance and repair, replace and upgrade capital assets to reliably provide quality service for the foreseeable future.
- Equivalent plans include systemwide Fiscal Sustainability Plans (FSP), CMOMs, certain Capital Improvements Plans, etc. Loans funds can be used to develop and implement a system-wide AMP. If YES is selected, IEPA may request a copy of the applicant's AMP.
13. Provide answers regarding the how the project implements or utilizes conservation practices, resiliency components, green infrastructure, or eliminates potential public health issues.
- a. Answer YES if the project will result in a 20% or greater reduction in water or energy usage by the applicant. This includes projects that utilize renewable energy to reduce expenditures or produce renewable energy through measures such as incorporating solar panels or wind turbines. Answer YES if the project incorporates water recycling or reuse of wastewater.
 - b. Answer YES if the project includes resiliency components including facilities built for redundancy. A utility's resiliency is the ability to provide uninterrupted service and this can be affected by manmade or natural occurrences such as earthquakes, drought, flooding, or climate change.
 - c. Answer YES if the project includes other types of "Green Infrastructure" including, but not limited to, LEED certified buildings, green roofs, cisterns, gray water use, rain gardens, constructed wetlands, riparian buffers or pervious pavement.
 - d. Answer YES if the project implements any agricultural best management practices (BMPs)?
 - e. Will the project correct a situation that has resulted in sewer overflows or basement backups?
 - f. Answer YES if 50% or more of the project's cost is to provide sewer service to an unsewered area?
14. Provide an estimated schedule of the events listed. When planning is approved, IEPA sends a letter to the applicant. Planning approval is effective for five years.
15. If the Project has received an IEPA construction permit provide the appropriate information requested (i.e. Permit Number and date the permit was issued).



FUNDING NOMINATION FORM FOR WATER POLLUTION CONTROL LOAN PROGRAM

Annual Filing Deadline: March 31st

FOR AGENCY USE ONLY

Date Received

Loan Number:

Check here if new project without a loan number

1. Legal Name of Applicant: _____

2. Address of Applicant:

3. Organizational Type:
- Unit of Local Government
 - Investor-Owned Water Utility
 - Not for Profit Water Corporation
 - Mutually or Cooperatively Owned Water System
 - Other: _____

4. Location Information:
- a. County: _____
 - b. U.S. Congressional District #: _____
 - c. Illinois House District #: _____
 - d. Illinois Senate District #: _____
 - e. Public Water Supply ID #: _____

5. Authorized Representative:

Name: _____

Title: _____

Phone: _____

Email: _____

6. Engineer:

Name: _____

Firm: _____

Address:

Phone: _____

Email: _____

7. Brief Description of Proposed Project Including Cost Estimate Estimated Cost: _____
(Attach additional pages if necessary)

8. Reason for Project: _____
If this project is compliance-related, or will resolve water quality issues such as taste, odor, or color, indicate above.

9. Project Location(s): _____
(May be address, address start & end points, latitude/longitude, or brief description)

10. Does the applicant own and operate a Wastewater Treatment Plant or Facility? YES NO

If YES, complete a. through e. If Applicant has multiple treatment facilities, questions only apply to facilities impacted by the proposed project.

a. NPDES Permit Number(s) of the Treatment Facility(s): _____

b. Name of Treatment Facility(s): _____

c. Design Average Flow (DAF) of the Treatment Facility: _____ MGD

d. Latitude and Longitude of the discharge (from NPDES permit): _____

e. Name of the receiving body of water (from NPDES permit): _____

If NO, complete f. and g.

f. Name of entity providing wastewater treatment: _____

g. Average flow per day delivered to this facility by the applicant: _____ MGD

11. Population Served of the Loan Applicant: _____

12. Protection of Assets (using AMP of Equivalent):

a. Has the loan applicant has implemented a system-wide Asset Management Plan (AMP)? YES NO

b. Is the loan applicant currently developing a system-wide Asset Management Plan? YES NO

c. With the loan be used to develop a system-wide Asset Management Plan? YES NO

13. Additional Questions regarding this Project:

a. Will the project result in a 20% or greater reduction in water or energy use by the applicant? YES NO

b. Does the project include resiliency components, such as facilities built for redundancy? YES NO

c. Does the project implement green infrastructure, such as green roofs, constructed wetlands, etc.? YES NO

d. Does the project implement one or more agricultural best management practices (BMPs)? YES NO

e. Will the project correct a situation that has resulted in overflows or basement backups? YES NO

f. Will 50% or more of the project costs provide service to an unsewered area? YES NO

14. Proposed Project Schedule:

a. Project Plan Approval Date: _____

b. Advertise for Bids: _____

c. Construction Start Date: _____

d. Completion of Construction: _____

15. Has the loan applicant received an IEPA construction permit? YES NO No Permit Required

If YES, complete a and b below:

a. Permit #: _____

b. Date Permit Issued: _____

Authorized Representative: _____ **Date:** _____



Illinois Environmental Protection Agency

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1. Legal name of the loan applicant that will own the facilities to be constructed.
2. Provide the mailing address of the loan applicant.
3. Check the box that describes your organization. Units of Local Government include cities, villages, towns, townships, water districts, etc. Choose OTHER for a type of organization that is not listed.
4. The county and legislative district should be consistent with the mailing address.
5. The authorized representative must be the person or officer with the local government unit that will be responsible to execute loan documents.
6. The name of the architectural/engineering consultant or other person that will be responsible for the facility planning, design and construction of the loan project.
7. Provide a brief description of the proposed project along with the total estimated cost. Unless the loan is only funding a portion of the project, the cost should include construction, planning, design, legal services, construction oversight, and a 10% contingency. If the loan is only financing a portion, do not include costs which will be paid by other funding sources or local funds. For example, if IEPA is only funding construction, insert the estimated cost of construction plus a 10% contingency.
8. Briefly explain why the project is necessary. If the project is compliance related, indicate as such. Compliance will be verified by the Agency. For loan program purposes, compliance projects are those projects that meet the one or more of the criteria listed below.
 - a. The Project is necessary to correct a situation that has resulted in the applicant receiving a Violation Notice, Compliance Commitment Agreement, or Noncompliance Advisory from IEPA.
 - b. The project is necessary to correct a violation that has resulted in referral to the IL Attorney General's Office, referral to USEPA, a court order directing the applicant to remedy the situation, or an administrative order from USEPA directing the applicant to remedy the situation.
 - c. Project that will correct a design, operation or maintenance issue which resulted in the applicant being placed on the Agency's restricted status list or critical review list.
9. Project location refers to the construction location. If the project involves multiple locations, describe each. Examples are below.
 - a. An address or addresses when available.

- b. For pipe projects, a description such as Grand Avenue between 9th St. and 11th St., or 500 feet northwest of the intersection of County Road 6 and Rural Drive. Descriptions may be used for other circumstances: streambank projects, detention basins, etc. without addresses. (Continued on back.)
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11. Provide the service population for the applicant. If the applicant serves multiple municipalities, provide the service population for each municipality. If the applicant serves unincorporated areas, provide the service population for those areas as well. Service population is not service connections or billed units. It is the number of people served by the system.
12. The applicant has implemented or is currently developing a system-wide Asset Management Plan (AMP) or equivalent. An AMP is any system-wide plan that contains information on asset conditions, service levels, customer needs, and financial resources. This plan will ensure the applicant can conduct planned maintenance and repair, replace and upgrade capital assets to reliably provide quality service for the foreseeable future.
- Equivalent plans include systemwide Fiscal Sustainability Plans (FSP), CMOMs, certain Capital Improvements Plans, etc. Loans funds can be used to develop and implement a system-wide AMP. If YES is selected, IEPA may request a copy of the applicant's AMP.
13. Provide answers regarding the how the project implements or utilizes conservation practices, resiliency components, green infrastructure, or eliminates potential public health issues.
- a. Answer YES if the project will result in a 20% or greater reduction in water or energy usage by the applicant. This includes projects that utilize renewable energy to reduce expenditures or produce renewable energy through measures such as incorporating solar panels or wind turbines. Answer YES if the project incorporates water recycling or reuse of wastewater.
 - b. Answer YES if the project includes resiliency components including facilities built for redundancy. A utility's resiliency is the ability to provide uninterrupted service and this can be affected by manmade or natural occurrences such as earthquakes, drought, flooding, or climate change.
 - c. Answer YES if the project includes other types of "Green Infrastructure" including, but not limited to, LEED certified buildings, green roofs, cisterns, gray water use, rain gardens, constructed wetlands, riparian buffers or pervious pavement.
 - d. Answer YES if the project implements any agricultural best management practices (BMPs)?
 - e. Will the project correct a situation that has resulted in sewer overflows or basement backups?
 - f. Answer YES if 50% or more of the project's cost is to provide sewer service to an unsewered area?
14. Provide an estimated schedule of the events listed. When planning is approved, IEPA sends a letter to the applicant. Planning approval is effective for five years.
15. If the Project has received an IEPA construction permit provide the appropriate information requested (i.e. Permit Number and date the permit was issued).



FUNDING NOMINATION FORM FOR WATER POLLUTION CONTROL LOAN PROGRAM

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Check here if new project without a loan number

1. Legal Name of Applicant: _____

2. Address of Applicant:

3. Organizational Type:
- Unit of Local Government
 - Investor-Owned Water Utility
 - Not for Profit Water Corporation
 - Mutually or Cooperatively Owned Water System
 - Other: _____

4. Location Information:
- a. County: _____
 - b. U.S. Congressional District #: _____
 - c. Illinois House District #: _____
 - d. Illinois Senate District #: _____
 - e. Public Water Supply ID #: _____

5. Authorized Representative:

Name: _____

Title: _____

Phone: _____

Email: _____

6. Engineer:

Name: _____

Firm: _____

Address:

Phone: _____

Email: _____

7. Brief Description of Proposed Project Including Cost Estimate Estimated Cost: _____
(Attach additional pages if necessary)

8. Reason for Project: _____
If this project is compliance-related, or will resolve water quality issues such as taste, odor, or color, indicate above.

9. Project Location(s): _____
(May be address, address start & end points, latitude/longitude, or brief description)

10. Does the applicant own and operate a Wastewater Treatment Plant or Facility? YES NO

If YES, complete a. through e. If Applicant has multiple treatment facilities, questions only apply to facilities impacted by the proposed project.

a. NPDES Permit Number(s) of the Treatment Facility(s): _____

b. Name of Treatment Facility(s): _____

c. Design Average Flow (DAF) of the Treatment Facility: _____ MGD

d. Latitude and Longitude of the discharge (from NPDES permit): _____

e. Name of the receiving body of water (from NPDES permit): _____

If NO, complete f. and g.

f. Name of entity providing wastewater treatment: _____

g. Average flow per day delivered to this facility by the applicant: _____ MGD

11. Population Served of the Loan Applicant: _____

12. Protection of Assets (using AMP of Equivalent):

a. Has the loan applicant has implemented a system-wide Asset Management Plan (AMP)? YES NO

b. Is the loan applicant currently developing a system-wide Asset Management Plan? YES NO

c. With the loan be used to develop a system-wide Asset Management Plan? YES NO

13. Additional Questions regarding this Project:

a. Will the project result in a 20% or greater reduction in water or energy use by the applicant? YES NO

b. Does the project include resiliency components, such as facilities built for redundancy? YES NO

c. Does the project implement green infrastructure, such as green roofs, constructed wetlands, etc.? YES NO

d. Does the project implement one or more agricultural best management practices (BMPs)? YES NO

e. Will the project correct a situation that has resulted in overflows or basement backups? YES NO

f. Will 50% or more of the project costs provide service to an unsewered area? YES NO

14. Proposed Project Schedule:

a. Project Plan Approval Date: _____

b. Advertise for Bids: _____

c. Construction Start Date: _____

d. Completion of Construction: _____

15. Has the loan applicant received an IEPA construction permit? YES NO No Permit Required

If YES, complete a and b below:

a. Permit #: _____

b. Date Permit Issued: _____

Authorized Representative: _____ **Date:** _____



Illinois Environmental Protection Agency

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WATER POLLUTION CONTROL LOAN PROGRAM (WPCLP) INSTRUCTIONS FOR FUNDING NOMINATION FORMS FOR LOAN ASSISTANCE

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1. Legal name of the loan applicant that will own the facilities to be constructed.
2. Provide the mailing address of the loan applicant.
3. Check the box that describes your organization. Units of Local Government include cities, villages, towns, townships, water districts, etc. Choose OTHER for a type of organization that is not listed.
4. The county and legislative district should be consistent with the mailing address.
5. The authorized representative must be the person or officer with the local government unit that will be responsible to execute loan documents.
6. The name of the architectural/engineering consultant or other person that will be responsible for the facility planning, design and construction of the loan project.
7. Provide a brief description of the proposed project along with the total estimated cost. Unless the loan is only funding a portion of the project, the cost should include construction, planning, design, legal services, construction oversight, and a 10% contingency. If the loan is only financing a portion, do not include costs which will be paid by other funding sources or local funds. For example, if IEPA is only funding construction, insert the estimated cost of construction plus a 10% contingency.
8. Briefly explain why the project is necessary. If the project is compliance related, indicate as such. Compliance will be verified by the Agency. For loan program purposes, compliance projects are those projects that meet the one or more of the criteria listed below.
 - a. The Project is necessary to correct a situation that has resulted in the applicant receiving a Violation Notice, Compliance Commitment Agreement, or Noncompliance Advisory from IEPA.
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 - c. Project that will correct a design, operation or maintenance issue which resulted in the applicant being placed on the Agency's restricted status list or critical review list.
9. Project location refers to the construction location. If the project involves multiple locations, describe each. Examples are below.
 - a. An address or addresses when available.

- b. For pipe projects, a description such as Grand Avenue between 9th St. and 11th St., or 500 feet northwest of the intersection of County Road 6 and Rural Drive. Descriptions may be used for other circumstances: streambank projects, detention basins, etc. without addresses. (Continued on back.)
 - c. For large or citywide pipe projects, the center point of construction may be used. An address at the center of construction may be used. This could be utilized if all mains in a specific ward or area were being replaced.
 - d. Longitude and Latitude may be used.
10. Does the applicant own and operate a Wastewater Treatment Facility? If YES is selected, only complete questions a) through e). If NO is selected, answer questions f) and g). Many communities own their sewers and pump stations, but waste water is piped to another community, sanitary district, or water reclamation district for treatment. The largest water reclamation district in IL is the Metropolitan Water District of Greater Chicago which provides wastewater treatment for over 100 municipalities.
11. Provide the service population for the applicant. If the applicant serves multiple municipalities, provide the service population for each municipality. If the applicant serves unincorporated areas, provide the service population for those areas as well. Service population is not service connections or billed units. It is the number of people served by the system.
12. The applicant has implemented or is currently developing a system-wide Asset Management Plan (AMP) or equivalent. An AMP is any system-wide plan that contains information on asset conditions, service levels, customer needs, and financial resources. This plan will ensure the applicant can conduct planned maintenance and repair, replace and upgrade capital assets to reliably provide quality service for the foreseeable future.
- Equivalent plans include systemwide Fiscal Sustainability Plans (FSP), CMOMs, certain Capital Improvements Plans, etc. Loans funds can be used to develop and implement a system-wide AMP. If YES is selected, IEPA may request a copy of the applicant's AMP.
13. Provide answers regarding the how the project implements or utilizes conservation practices, resiliency components, green infrastructure, or eliminates potential public health issues.
- a. Answer YES if the project will result in a 20% or greater reduction in water or energy usage by the applicant. This includes projects that utilize renewable energy to reduce expenditures or produce renewable energy through measures such as incorporating solar panels or wind turbines. Answer YES if the project incorporates water recycling or reuse of wastewater.
 - b. Answer YES if the project includes resiliency components including facilities built for redundancy. A utility's resiliency is the ability to provide uninterrupted service and this can be affected by manmade or natural occurrences such as earthquakes, drought, flooding, or climate change.
 - c. Answer YES if the project includes other types of "Green Infrastructure" including, but not limited to, LEED certified buildings, green roofs, cisterns, gray water use, rain gardens, constructed wetlands, riparian buffers or pervious pavement.
 - d. Answer YES if the project implements any agricultural best management practices (BMPs)?
 - e. Will the project correct a situation that has resulted in sewer overflows or basement backups?
 - f. Answer YES if 50% or more of the project's cost is to provide sewer service to an unsewered area?
14. Provide an estimated schedule of the events listed. When planning is approved, IEPA sends a letter to the applicant. Planning approval is effective for five years.
15. If the Project has received an IEPA construction permit provide the appropriate information requested (i.e. Permit Number and date the permit was issued).



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Annual Filing Deadline: March 31st

FOR AGENCY USE ONLY

Date Received

Loan Number:

Check here if new project without a loan number

1. Legal Name of Applicant: _____

2. Address of Applicant:

3. Organizational Type:
- Unit of Local Government
 - Investor-Owned Water Utility
 - Not for Profit Water Corporation
 - Mutually or Cooperatively Owned Water System
 - Other: _____

4. Location Information:
- a. County: _____
 - b. U.S. Congressional District #: _____
 - c. Illinois House District #: _____
 - d. Illinois Senate District #: _____
 - e. Public Water Supply ID #: _____

5. Authorized Representative:

Name: _____

Title: _____

Phone: _____

Email: _____

6. Engineer:

Name: _____

Firm: _____

Address:

Phone: _____

Email: _____

7. Brief Description of Proposed Project Including Cost Estimate Estimated Cost: _____
(Attach additional pages if necessary)

8. Reason for Project: _____
If this project is compliance-related, or will resolve water quality issues such as taste, odor, or color, indicate above.

9. Project Location(s): _____
(May be address, address start & end points, latitude/longitude, or brief description)

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e. Name of the receiving body of water (from NPDES permit): _____

If NO, complete f. and g.

f. Name of entity providing wastewater treatment: _____

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11. Population Served of the Loan Applicant: _____

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 - d. Illinois Senate District #: _____
 - e. Public Water Supply ID #: _____

5. Authorized Representative:

Name: _____

Title: _____

Phone: _____

Email: _____

6. Engineer:

Name: _____

Firm: _____

Address:

Phone: _____

Email: _____

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(Attach additional pages if necessary)

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If this project is compliance-related, or will resolve water quality issues such as taste, odor, or color, indicate above.

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APPENDIX D

Recommended Special Sampling Parameters

APPENDIX D – SPECIAL SAMPLING RECOMMENDATIONS

GLENBARD WASTEWATER AUTHORITY (GWA)

Glenbard Facility Plan Update - 2024

Subject: Long-term Influent Fractionation Sampling Matrix

This facility plan recommends that GWA implement a two-week special sampling campaign of the raw influent on a quarterly basis to establish a comprehensive long-term dataset for influent characterization, which will support future BNR upgrades. During each special sampling campaign, raw influent samples should be collected at least three days per week as 24-hour composite samples, with an effort to include both weekday and weekend profiles. Ideally, all requested parameters should be measured on the same day for each sampling event. Additionally, it is critical to identify and flag sampling days affected by wet weather events to ensure accurate interpretation of the data.

Notably, the influent carbon-based ratios and fractionation calculated during this facility plan update presented significant challenges. The analysis indicates that the influent fractionation is predominantly particulate in nature, which has important implications for future process design and optimization.

Table 1 Proposed Special Sampling Parameters and Sampling Location

Parameter	Raw Influent	Primary Clarifier Effluent	Final Clarifier Effluent
Alkalinity	X		
pH	X		
COD	X	X	
sCOD	X		X
ffCOD	X		
BOD	X	X	
sBOD	X		
TSS	X	X	
VSS	X		
TKN	X		
sTKN	X		
NH ₃	X		
NO ₂	X		
NO ₃	X		
Total-P	X		
Ortho-P	X		
Magnesium	X		
Calcium	X		

APPENDIX E

Detailed OPC Liquid Treatment Process Alternatives

New Extended A/O Process

Description	Total	Probable Cost
GENERAL CONDITIONS		\$770,000
SITE WORK		\$1,130,000
MODIFY TSHPOAS AS ANAEROBIC BIO P TANKS		\$0
EXTENDED A/O PROCESS TANKS		\$16,206,390
CHEMICAL FEED BUILDING - LOCATED IN EX CRYO BUILDING		\$510,000
BLOWER BUILDING		\$2,495,000
PE TRANSFER PUMP STATION		\$3,000,000
	Sub-Total	\$24,110,000
	Electrical 20%	\$1,420,000
	Instrumentation 10%	\$710,000
	Construction Sub-Total	\$26,240,000
	Contingency 30%	\$7,870,000
	Overhead, Bonds, Profit, Insurance 15%	\$3,940,000
	Construction with Contingency	\$38,050,000
	Engineering, Legal, Admin 13%	\$4,950,000
	Probable Project Cost	\$43,000,000
	20-Year Carbon, Aeration, Metal Salt, and Sludge	\$28,738,975
	Parcel Acquisition	\$1,200,000
	Total 20-Year Costs	\$72,938,975

Description	Quantity	Unit	Unit Price	Total Probable Cost
GENERAL CONDITIONS				
Dumpsters	24	Each	\$500	\$12,000
Job Trailer	24	Mo.	\$2,000	\$48,000
Eng Trailer	24	Mo.	\$2,000	\$48,000
Mobilization/Demobilization	1	Lump Sum	\$50,000	\$50,000
Supervision	24	Mo.	\$24,000	\$576,000
Surveying	1	Lump Sum	\$25,000	\$25,000
Record Drawing	1	Lump Sum	\$10,000	\$10,000
			TOTAL GENERAL CONDITIONS:	\$769,000
SITE WORK				
Piping				
30" DI	2886	LF	\$215	\$620,490
Small Diameter Piping	1	LS	\$300000	\$300,000
Fittings	1	LS	\$155,123	\$155,123
Misc. Site				
Restoration	1	Lump Sum	\$25,000	\$25,000
Paving Removal & Replacement (Full Depth)	200	Sq. Yd.	\$100	\$20,000
Sidewalk	100	Sq. Ft.	\$50	\$5,000
			TOTAL SITE WORK:	\$1,125,613
EXTENDED A/O PROCESS TANKS				
Structure	927139	CF	\$15	\$13,768,015
Equipment	927139	CF	\$3	\$2,438,376
			TOTAL BIOLOGICAL PROCESS:	\$16,206,390
CHEMICAL FEED BUILDING - LOCATED IN EX CRYO BUILDING				
Structure Rehab	1	LS	\$100000	\$100,000
Equipment	1	LS	\$410000	\$410,000
			TOTAL CHEMICAL FEED BUILDING:	\$510,000
BLOWER BUILDING				
Structure		2700	SF	\$350
Equipment		1	LS	\$1610000
			TOTAL BLOWER BUILDING:	\$2,495,000
PE TRANSFER PUMP STATION				
Structure		1	LS	\$1,394,977
Equipment		1	LS	\$1,600,000
			TOTAL PE TRANSFER PUMP STATION:	\$2,994,977

TSHPOAS Rehabilitation					
Description				Total	Probable Cost
GENERAL CONDITIONS					
SITE WORK					\$1,690,000
CHEM FEED BUILDING - LOCATED IN EX CRYO BUILDING					\$390,000
INTERMEDIATE CLARIFIER REHAB					\$510,000
INTERMEDIATE PUMPING STATION REHAB					\$1,870,000
UNOX VALVE, MIXER REPLACEMENT, CRYO PLANT REHAB					\$1,360,000
					\$4,420,000
Sub-Total					\$10,240,000
Electrical 20%					\$2,050,000
Instrumentation 10%					\$1,020,000
Construction Sub-Total					\$13,310,000
Contingency 40%					\$5,320,000
Overhead, Bonds, Profit, Insurance 15%					\$2,000,000
Construction with Contingency					\$20,630,000
Engineering , Legal, Admin 13%					\$2,680,000
Probable Project Cost					\$23,310,000
20-Year Oxygen Costs					\$7,500,000
20-year Metal Salt + Chem					\$28,487,616
Total 20-Year Costs					\$59,297,616
Chemical Phosphorus Removal (1.0 mg/L)					
Description	Quantity	Unit	Unit Price	Total Probable Cost	
GENERAL CONDITIONS					
Dumpsters	32	Each	\$500	\$16,000	
Job Trailer	32	Mo.	\$1,000	\$32,000	
Eng Trailer	32	Mo.	\$1,000	\$32,000	
Mobilization/Demobilization	1	Lump Sum	\$10,000	\$10,000	
Supervision	32	Mo.	\$24,000	\$768,000	
Surveying	32	Lump Sum	\$16,000	\$512,000	
Record Drawing	32	Lump Sum	\$10,000	\$320,000	
TOTAL GENERAL CONDITIONS:					\$1,690,000
SITE WORK					
Paving Removal & Replacement (Full Depth)	1500	Sq. Yd.	\$100	\$150,000	
Sidewalk	500	Sq. Ft.	\$50	\$25,000	
Silt Fence & SE/SC Control	1	Lump Sum	\$30,000	\$30,000	
Restoration	1	Lump Sum	\$25,000	\$25,000	
Piping					
2" Chemical Feed Pipe	200	Lin. Ft.	\$100	\$20,000	
6" DIP NPW	200	Lin. Ft.	\$250	\$50,000	
NPW Yard Hydrants	4	Each	\$2,500	\$10,000	
6" DIP Fittings	25	Each	\$1,000	\$25,000	
TOTAL SITE WORK:					\$335,000
CHEMICAL FEED BUILDING - LOCATED IN EX. CRYO BUILDING					
Structure Remodeling	1	LS	\$100000	\$100,000	
Equipment	1	Lump Sum	\$410000	\$410,000	
TOTAL CHEMICAL FEED BUILDING:					\$510,000
Intermediate Clarifier Rehabilitation					
Description				Total	Probable Cost
INTERMEDIATE CLARIFIERS					
Demo Existing Mechanisms	1	LS		\$200,000	\$200,000
Process					
Mechanisms (86-ft)	2	Each	\$600,000	\$1,200,000	
Mechanism Installation	2	Each	\$175,000	\$350,000	
Walkways	2	Each	\$40,000	\$80,000	
T-Valves	2	Each	\$17,500	\$35,000	
TOTAL INTERMEDIATE CLARIFIERS:					\$1,866,667
Intermediate Pumping Station Rehabilitation					
Description	Quantity	Unit	Unit Price	Total Probable Cost	
SITE WORK					
Paving Removal & Replacement (Full Depth)	100	Sq. Yd.	\$150	\$15,000	
Sidewalk	200	Sq. Ft.	\$50	\$10,000	
Silt Fence & SE/SC Control	1	Lump Sum	\$10,000	\$10,000	
Restoration	1	Lump Sum	\$15,000	\$15,000	
TOTAL SITE WORK:					\$50,000
INTERMEDIATE PUMPING STATION					
Demo Existing Equipment	1	Each	\$150,000	\$150,000	
Process					
Intermediate Screw Pump	3	Each	\$200,000	\$600,000	
Mechanism Installation	3	Each	\$75,000	\$225,000	
Pump Lower Bearing	3	Each	\$0	\$0	
Temp Pumping	6	Mo.	\$20,000	\$120,000	
Aluminum Covers	1200	Sq. Ft	\$150	\$180,000	
Cover Installation	1	Lump Sum	\$50,000	\$50,000	
Concrete					
Grout	16	Sq. Ft.	\$1,000	\$16,000	
Installation	1	Lump Sum	\$14,400	\$14,400	
TOTAL INTERMEDIATE PUMPING STATION:					\$1,355,400
UNOX Valve, Mixer Replacement, Cryo Plant Rehab					
Description				Total Probable Cost	
SITE WORK					
UNOX Valve, Mixer Replacement, Cryo Plant Rehab					
UNOX Mixer Replacement (7.5/10HP, LAR 60L)	29	Each	\$55,000	\$1,595,000	
UNOX Mixer Replacement (15/20HP, LAR 90L)	9	Each	\$154,000	\$1,386,000	
UNOX Mixer Replacement (25/30HP)	2	Each	\$175,000	\$350,000	
Pure Ox Supply Valve & Operator - 6" (DeZurik)	10	Each	\$15,000	\$150,000	
Pure Ox Supply Iso Valve - 6" (DeZurik)	10	Each	\$15,000	\$150,000	
Pure Ox Waste Valve - 6" (DeZurik)	7	Each	\$15,000	\$105,000	
Installation	55	Each	\$2,000	\$110,000	
Cryo Plant Rehab	1	LS	\$250,000	\$250,000	
Pure Ox Purge Blower (Siemens-Allis)	5	Each	\$65,000	\$325,000	
TOTAL UNOX Valve, Mixer Replacement, Cryo Plant Rehab					\$4,421,000