



## Glenbard Wastewater Authority

945 Bemis Road Glen Ellyn, Illinois 60137  
Telephone: 630-790-1901 – Fax: 630-858-8119

February 4, 2019

Dear Neighbors and Community Members,

As many may recall, in June 2016 the Glenbard Wastewater Authority completed a \$5 Million Combined Heat and Power (CHP) project which allowed the Authority to recover some of the valuable resources that are contained within the wastewater we receive and treat. One of the main impacts of the project is that it allows the Authority to be greener by reusing resources in the wastewater instead of contributing to the creation of greenhouse gases, but it also allows the Authority to capitalize on lower energy costs and receive revenue. The revenue in turn is helping offset the \$5 Million cost of this project, and also can help the Authority budget for future capital projects that would normally increase user fees a faster pace. In August of 2017, the Authority's digestion process became upset due to improper co-digestion methods while accepting of high strength wastes (HSW) and fats, oils, and greases (FOG). HSW/FOG were being received from outside sources in order to help the CHP yield greater results. Therefore, due to the digester upset, a temporary moratorium was put on accepting HSW/FOG until the cause of the upset could be properly identified and analyzed.

At the April 2018 Executive Oversight Committee (EOC) meeting, the EOC approved the implementation of new HSW/FOG Receiving Standard Operating Procedures (SOP), and lifted the moratorium on the acceptance of the material. A couple of the main components of the new SOP's were that an additional pump was installed to allow for a steadier feed of HSW/FOG and limits were set on the volumes of HSW/FOG allowed to be received, and fed to the digestion process. In 2016 when the program was first initiated, there were not limitations set on the amount of HSW/FOG the Authority would accept or feed to the digestion system. The SOP's set restrictions on those amounts that were conservative in order to establish confidence in the program again. Accompanying the SOP's was a "Schedule A" that contained mathematical calculations that showed the appropriate amount of HSW/FOG waste the Authority could accept in the digesters based off of strengths of materials accepted, strength of existing municipal materials being fed to digesters, volumes of digester storage, and volumes of receiving storage. All calculations were performed conservatively, and some were performed based off assumptions, since at the time some parameters did not exist. Since their implementation, the SOP's have significantly improved the HSW/FOG program, and added many safeguards to the process. The SOP's have been being performed smoothly, with very few complaints from staff, and they have demonstrated their effectiveness.

*Protecting the Environment for Tomorrow*

With the continued success of the new program, haulers who had previously become weary of coming to the Authority due to a probability of being rejected, have now started to re-establish relationships. In the past couple of months, there were potential situations in which the Authority would have had to turn away haulers in order to not exceed the volumes allowed in the adopted SOP's, which would have been entirely unnecessary and could lead to steps backwards in our relationships with the haulers. In addition, the calculations demonstrate that a greater volume could be accepted, but it had been decided that the program start off slower. Therefore, since the program has been going well and no issues have arisen, the Authority is seeking to amend Schedule A of the SOP's to allow another step increase for a greater volume of HSW/FOG to be received per day. It is important to point out that although we are looking to increase the volume of HSW/FOG that we accept, we are still setting limitations on it, unlike when the program first started and there were none. Also, the feed rate to the digestion system, which has the most impact on the digester's health, is not being proposed to increase. Some key points are as follows:

- The volume of available storage in Schedule A was revised based on actual conditions instead of theoretical conditions
  - o High Levels and Low Levels in the storage tanks were adjusted to reflect actual conditions due to pump limitations
- The digester feed pump rates in Schedule A were revised based on actual conditions instead of theoretical conditions
  - o The digester feed pump was not in place prior to the new SOP's, therefore theoretical pumping rates were determined using product data (although the pump was not new, it had been repurposed) and bench trials.
  - o The actual feed rate will not be changing, Schedule A will only be changed to reflect the actual feed rate based on actual observations.
- The calculations in Schedule A demonstrate that the Authorities digesters can actually handle more volume of HSW/FOG than they are currently being fed.
  - o The new calculations take into account the most up to date data from current municipal sludge and the HSW/FOG that has been delivered
  - o Original Schedule A calculations took into account very conservative values for the strength of HSW/FOG
  - o Conservative values are still being used for all thresholds indicating digester health
- All safeguards in the SOP's to prevent a digester upset will remain in place
- The Authority is not seeking to modify the SOP's, just the Schedule A calculations

Attached are several exhibits that demonstrate the modifications that are being requested, along with a new set of "frequently asked questions." Also attached is the SOP language that is *not* being proposed to change, along with the original "Frequently Asked Questions" document, which are both being provided for reference purposes. As stated in the original SOP's, prior to seeking actual approval from the EOC for the proposed modifications, the Authority requires having a 45-day posting period for public comment.

Therefore, we invite you to review this material and provide any feedback or questions to the Authority. After the 45-day public posting period, Authority staff will present the EOC with a final version of the calculations based on any feedback received, and seek approval. The anticipated date the Authority will seek approval from the EOC is at the April 11, 2019 regularly scheduled meeting, which will be held at the Glenbard Wastewater Authority at 8am.

We appreciate your time and concern in the matter, and encourage you to contact us with any questions or requests for information. You may contact me directly at [mstreicher@gbww.org](mailto:mstreicher@gbww.org), or 630-790-1901 x126.

Sincerely,

A handwritten signature in black ink, appearing to read "Matt Streicher", with a long horizontal flourish extending to the right.

Matt Streicher, P.E. BCEE  
Executive Director  
Glenbard Wastewater Authority

**Revised/Proposed**

Current Municipal Loading (March 2016 - December 2018)			
	Quantity	Units	
Total Sludge Production	9,555	Pounds Total Solids (TS) per day	
Volatile Solids (VS) Production	7,826	Pounds VS Per Day	
Solids Concentration	3.0%	%	
Flowrate to digester	39,647	Gallons Per Day	
Percent VS	80.00%	%	
Additional Allowable Digester Loading Rates (FOG)			
<i>Per the Manual of Practice No. 11 (MOP 11), Operations of Municipal Wastewater Treatment plants, a completely mixed anaerobic digester organic loading rate range is 100-400 Pounds of Volatile Solids Per 1,000 Cubic Feet Per Day (lb VS/kcfd)</i>			
	Quantity	Unit	
Allowable Organic Loading Rate	100	Pounds of VS Per Thousand Cubic Feet Per Day	
VS Loading Capacity	19,491.98	Pounds VS Per Day	
Additional Capacity for Digestion of HSW	11,666	Pounds VS Per Day	
Allowable Additional Volume of HSW at			
% TS		26,390	Gallons Per Day
5.68%	93.32%		
Digester Statistics			
	Quantity	Unit	
Total Volume to Primary Digesters Including HSW	66,037	Gallons Per Day	
Digester Detention Time	22.08	Days	
Combined Municipal and HSW VS% IN	85.33%	Percent	
VS% OUT	59.00%	Percent	
VS Reduction	75.25%	Percent	
HSW/FOG Storage Tank Capacities			
	Quantity	Unit	
Tank Number 1 (West Tank)	4,412	Cubic Feet	
	32,999	Gallons	
Tank Number 2 (East Tank)	968	Cubic Feet	
	7,239	Gallons	
Volume of Tanks Total	40,238	Gallons	

Key Health Indicators  
Revised Based Off Actual

**Previous**

Current Municipal Loading (March 2016 - June 2017)			
	Quantity	Units	
Total Sludge Production	14,288	Pounds Total Solids (TS) per day	
Volatile Solids (VS) Production	11,714	Pounds VS Per Day	
Solids Concentration	2.7%	%	
Flowrate to digester	59,287	Gallons Per Day	
Percent VS	82.47%	%	
Additional Allowable Digester Loading Rates (FOG)			
<i>Per the Manual of Practice No. 11 (MOP 11), Operations of Municipal Wastewater Treatment plants, a completely mixed anaerobic digester organic loading rate range is 100-400 Pounds of Volatile Solids Per 1,000 Cubic Feet Per Day (lb VS/kcfd)</i>			
	Quantity	Unit	
Allowable Organic Loading Rate	100	Pounds of VS Per Thousand Cubic Feet Per Day	
VS Loading Capacity	19,492.00	Pounds VS Per Day	
Additional Capacity for Digestion of HSW	7,778	Pounds VS Per Day	
Allowable Additional Volume of HSW at			
% TS		12,143	Gallons Per Day
8.00%	96.00%		
Digester Statistics			
	Quantity	Unit	
Total Volume to Primary Digesters Including HSW	71,430	Gallons Per Day	
Digester Detention Time	20.41	Days	
Combined Municipal and HSW VS% IN	85.33%	Percent	
VS% OUT	59.00%	Percent	
VS Reduction	51.79%	Percent	
HSW/FOG Storage Tank Capacities			
	Quantity	Unit	
Tank Number 1 (West Tank)	5,062	Cubic Feet	
	37,664	Gallons	
Tank Number 2 (East Tank)	1,101	Cubic Feet	
	8,235	Gallons	
Volume of Tanks Total	46,099	Gallons	

Key Health Indicators  
Estimated/Previous Conditions

(MOP 11 states no less than 10-15 Days)

(MOP 11 states normal range is 40%-60%)

**Revised/Proposed**

<b>Typical Daily Schedule</b>							
	Monday	Tuesday	Wednesday	Thurs	Friday	Saturday	Sunday
HSW Volume Available to Start	40,238	35,838	31,438	27,038	22,638	18,238	33,838
HSW Volume Received into Holding Tanks*	20,000	20,000	20,000	20,000	20,000	0	0
HSW Volume Transferred to Digesters	15,600	15,600	15,600	15,600	15,600	15,600	15,600
Tank Volume Remaining in Holding Tanks**	35,838	31,438	27,038	22,638	18,238	33,838	40,238
* - Due to a typical HSW tanker being 5,000 gallons, volume added to holding tanks must be in 5,000 gallon increments							
** - If schedule is followed exactly, the holding tank would be emptied completely Sunday, resulting in the Total Volume Remaining to be the Total Available <i>If excess volumes occur, deliveries will be halted or reduced for an appropriate amount of time in order to make storage available again.</i>							

**Previous**

<b>Typical Daily Schedule</b>							
	Monday	Tuesday	Wednesday	Thurs	Friday	Saturday	Sunday
HSW Volume Available to Start	46,103	41,903	37,703	33,503	29,303	25,103	35,903
HSW Volume Received into Holding Tanks*	15,000	15,000	15,000	15,000	15,000	0	0
HSW Volume Transferred to Digesters	10,800	10,800	10,800	10,800	10,800	10,800	10,800
Tank Volume Remaining in Holding Tanks**	41,903	37,703	33,503	29,303	25,103	35,903	46,103
* - Due to a typical HSW tanker being 5,000 gallons, volume added to holding tanks must be in 5,000 gallon increments							
** - If schedule is followed exactly, the holding tank would be emptied completely Sunday, resulting in the Total Volume Remaining to be the Total Available Volume <i>If excess volumes occur, deliveries will be halted or reduced for an appropriate amount of time in order to make storage available again.</i>							

**HSW Transfer To Digesters Pump Operation**

Pump Speed (Variable Drive Percent Loading)	Gallons Per Minute	
5%	3-9	Due to HSW (especially FOG) being prone to creating blockages in the pipe, in order to allow for higher scouring velocities, the pump will be cycled on/off on an hourly basis HSW Transfer Pump Shall Operate at 100% (~130 gpm) for 5 minutes every hour of the day (Total Volume Transfer = 15,600 gallons per day)
10%	18-20	
15%	25-35	
25%	42-47	
50%	88	
75%	88	
85%	90-110	
100%	130-145	

**HSW Transfer To Digesters Pump Operation**

Pump Speed (Variable Drive Percent Loading)	Gallons Per Minute	
5%	3-9	Due to HSW (especially FOG) being prone to creating blockages in the pipe, in order to allow for higher scouring velocities, the pump will be cycled on/off on an hourly basis HSW Transfer Pump Shall Operate at 75%-100% (~90gpm) for 5 minutes every hour of the day (Total Volume Transfer = 10,800 gallons per day)
10%	18-20	
15%	25-35	
25%	42-47	
50%	88	
75%	88	
85%	90	
100%	90-115	

**Revised Based Off Actual Conditions**

Actual Volume Available Decreased by 12.7%

Actual Pump Speed Increased by 25%

**Proposed**

Increase Volume Received by 33%

Increase Volume Transferred by 44%

<b>Month/Year</b>	<b>Gallons Received (Monthly)</b>	<b>Gallons Allowed (monthly/daily)</b>	
Oct-16	221,000	N/A	
Nov-16	314,960	N/A	
Dec-16	180,894	N/A	
Jan-17	270,253	N/A	
Feb-17	319,906	N/A	
Mar-17	306,330	N/A	
Apr-17	353,953	N/A	
May-17	471,371	N/A	
Jun-17	572,038	N/A	
Jul-17	589,543	N/A	* Digester Upset
Aug-17	-	0	
Sep-17	-	0	
Oct-17	-	0	* Digester Recovered
Nov-17	-	0	
Dec-17	-	0	
Jan-18	-	0	
Feb-18	-	0	
Mar-18	-	0	
Apr-18	-	0	
May-18	63,882	300,000/15,000	* Moratorium Lifted
Jun-18	44,500	300,000/15,000	~83% decrease from previous amounts
Jul-18	60,500	300,000/15,000	
Aug-18	65,900	300,000/15,000	
Sep-18	30,400	300,000/15,000	
Oct-18	38,100	300,000/15,000	
Nov-18	77,873	300,000/15,000	
Dec-18	96,222	300,000/15,000	
	<i>Proposed</i>	<i>400,000/20,000</i>	



# Glenbard Wastewater Authority

945 Bemis Road Glen Ellyn, Illinois 60137  
Telephone: 630-790-1901 – Fax: 630-858-8119

## Amended High Strength Waste Receiving Frequently Asked Questions

Glenbard Wastewater Authority  
February 2019

### 1. What do you mean “revised based off actual conditions?”

When some of the parameters were originally calculated with the standard operating procedures, it was prior to some equipment actually being in operation, and therefore estimated or theoretical values were used. For example, when calculating the volumes of the tanks, exact dimensions of the tanks were used. Now, after using the system for a substantial amount of time, we realize that we actually cannot utilize the entire tank because of how the pumps operate, therefore the available volume of storage (tank volume) has been reduced. Also, the new transfer pump had not been used, so the pump speeds were based off values provided by the manufacturer. Again, after a substantial period of time using the pump, we realize that it is actually pumping at a higher rate than originally estimated.

Another example of an estimated value that we are now replacing with an actual value is the percent total solids (%TS) and the percent volatile solids (%VS). The original numbers used in the calculations were very conservative theoretical values. Now, after accepting high strength waste again, we are able to use actual values based off materials brought to us and ongoing laboratory analysis. Allowable loading rates used in the calculations are still being kept at very conservative values in order to error on the side of caution.

### 2. The volume being transferred to the digesters is increasing by 44%. Is that too much?

When the moratorium on accepting HSW/FOG was lifted in the Spring of 2018, the intent was to start off slow to ensure the process was understood, with the intent to slowly increase the program over a period of time. The biological calculations show that our digesters can actually accept quite a bit more HSW/FOG than the 44% increase we're proposing, however we are being precautionous and increasing slowly. We may seek further increases in the future if we continue to demonstrate our success. The total volume of our digestion system is over 1.8 million gallons, and we are only seeking to add another 24,000 gallons over a weeks period (1.3% of the total digester volume), so in the grand scheme it is a relatively small amount. It is also important to note that we are not seeking to adjust the feed or loading rate to the digesters, simply the amount of volume we accept from haulers, so that we can use our storage capacity to the fullest and there can be a more continuous feed to the digesters rather than sporadic based on availability.

**3. Will there be more truck traffic if this is allowed?**

Yes, there could be a slight increase in truck traffic. Typically, this material is delivered in tanker trucks that carry roughly 5,000 gallons each. Since we're only seeking to increase the allowable receiving volume by 5,000 gallons, that means we should only see about one more truck a day. Deliveries are only allowed Monday through Friday, from 7am to 4pm, and not on holidays.

**4. Will this generate more odors?**

The increase in volume of HSW/FOG received, and an increase in volume being fed to the digesters will not generate more odors. This system is entirely enclosed and not open to the air. The odors experienced in 2017 were due to the digester upset which has driven the creation of the more strict SOP. The odors that our neighbors had experienced during the late summer months in 2018 were due to low influent flows of raw wastewater, not HSW/FOG, and were completely unrelated. However, as explained in the FAQ's for the standard operating procedures, the digestion process is a biological process, and is always subject to getting "upset" whether or not high strength wastes are added. This process is much like the digestion process of the human body, which can be very prone to getting upset, but also can be avoided with proper practices. While we perform every measure we can to prevent an upset, we need to disclose that an upset is always a possibility with or without HSW/FOG.

**5. Are the standard operating procedures changing?**

No, the actual standard operating procedures are not changing, just the biological and volume calculations. The Authority has had great success with the new standard operating procedures and intends to continue enforcing them. The intent of the procedures are to ensure we take thorough steps to monitor the stability of the entire system and document everything.

**6. Who should we contact for further information regarding this process?**

You can always contact Matt Streicher, GWA's Executive Director, with any questions. He can be reached by phone at 630-790-1901x126, or via email at [mstreicher@qbww.org](mailto:mstreicher@qbww.org). GWA is always open to providing tours as well if you would like to come see the process first hand, and learn more about wastewater treatment. During off hours, you can always call our main number at 630-790-1901, and be connected to an operator on call.



## STANDARD OPERATING PROCEDURE

### HIGH STRENGTH WASTE RECEIVING

Date Approved:  
March 8, 2018

Approved By:  
Glenbard Wastewater Authority  
Executive Oversight Committee

**PURPOSE:** A guide to qualify proposed digester feedstock and to safely and effectively accept the feedstock and process it for the purposes of co-generation. It is important to note that this is a biological process, and that while defining strict operating procedures, the possibility of an upset condition cannot be eliminated – only reduced. Staff shall not be held liable for an upset condition as long as these procedures are followed.

**SCOPE:** This Standard Operating Procedure (SOP) covers all aspects of receiving High Strength Waste (HSW). and is broken down into sections as detailed below.

It is desirable to use a single source hauler for delivery of high strength waste to the Authority so that greater control of delivery amounts and accountability of delivered materials can be had. However, as market changes may necessitate using more than one hauler or changing the sole hauler, included in this SOP is the process of qualifying additional feedstock and suppliers.

<b>Part I</b>	Staff Responsible: Environmental Resources Coordinator																			
<b>Qualification of Feedstock</b>																				
<p>1. HSW hauler will provide a complete description of the waste characteristics, including the following:</p> <ul style="list-style-type: none"> <li>a. Waste type and origin. Type description to include general industry (food, medical, etc.)</li> <li>b. A Laboratory analysis of the proposed feedstock waste must be submitted and reviewed. The hauler may provide the analysis from an independent laboratory or it may be analyzed by the Glenbard Wastewater Authority (GWA) laboratory staff at the hauler’s sole expense.</li> <li>c. The analysis must contain the following parameters and be within the ranges indicated.</li> </ul> <table border="1" style="margin-left: 40px; margin-top: 10px; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Parameter</th> <th style="width: 35%;">Minimum</th> <th style="width: 35%;">Maximum</th> </tr> </thead> <tbody> <tr> <td>COD</td> <td>30,000</td> <td>N/A</td> </tr> <tr> <td>pH</td> <td>3</td> <td>8</td> </tr> <tr> <td>%VSS</td> <td>60%</td> <td>100%</td> </tr> <tr> <td>Sulfates</td> <td>0</td> <td>350 mg/Kg</td> </tr> <tr> <td>Volatile Fatty Acids</td> <td colspan="2">Informational Purposes Only/No Limit</td> </tr> </tbody> </table>			Parameter	Minimum	Maximum	COD	30,000	N/A	pH	3	8	%VSS	60%	100%	Sulfates	0	350 mg/Kg	Volatile Fatty Acids	Informational Purposes Only/No Limit	
Parameter	Minimum	Maximum																		
COD	30,000	N/A																		
pH	3	8																		
%VSS	60%	100%																		
Sulfates	0	350 mg/Kg																		
Volatile Fatty Acids	Informational Purposes Only/No Limit																			
<p>2. The Environmental Resources Coordinator (ERC) is responsible for reviewing the data provided and accepting or declining the feedstock based on the established range of parameters.</p> <p>3. The ERC may decline feedstock that meets the analysis criteria when there are other concerns, such as consistency or other risk factors.</p> <p>4. The Executive Director has the final approval or disapproval in all instances. The Authority has the right to refuse any feedstock or hauler at any time</p>																				

<b>Part 2</b>	Staff Responsible: Environmental Resources Coordinator
<b>Hauler Qualification</b>	
<ol style="list-style-type: none"> <li>1. Prior to delivering feedstock, proposed haulers must complete a permit application/contract agreement with GWA.</li> <li>2. Haulers must provide proof of insurance with the following minimum coverage: <ol style="list-style-type: none"> <li>A. Comprehensive General Liability Insurance covering personal injury, bodily injury, property damage, and contractual liability in the amount of One Million Dollars (\$1,000,000) for each occurrence and Two Million Dollars (\$2,000,000) aggregate per policy period;</li> <li>B. Comprehensive Automobile Liability Insurance covering personal injury, bodily injury and Property damage with a minimum combined limit of One Million Dollars (\$1,000,000).</li> <li>C. Worker’s Compensation insurance in the minimum amounts required by statute.</li> </ol> </li> <li>3. A certificate or certificates of insurance naming THE AUTHORITY, the Village of Lombard and the Village of Glen Ellyn as additional insured parties. The certificate or certificates shall reflect the above coverages and shall be in effect at all times. Updated certificates of insurance shall be submitted annually to the Authority.</li> <li>4. Haulers must provide a “renders license” or sign an affidavit certifying they only transport material agreed upon.</li> <li>5. The ERC is responsible for reviewing the information submitted and recommending that the hauler be approved or disapproved.</li> <li>6. The Executive Director has the final approval or disapproval in all instances.</li> </ol>	
<b>Part 3</b>	Staff Responsible: Operations Department
<b>Feedstock Receiving</b>	Back-Up Staff: ERC
<ol style="list-style-type: none"> <li>1. The ERC should make all efforts possible to schedule deliveries ahead of time, and convey this schedule to Operations on a daily basis or as mutually convenient.</li> <li>2. Haulers must stop at gate and push button to announce arrival and open the gate.</li> <li>3. A member of the Operations Department will meet the hauler at the receiving station to unlock it.</li> <li>4. Prior to unlocking the station to commence discharge, the operator must check the daily log to ensure that there is capacity and the maximum volume of waste received will not be exceeded by the acceptance of the load. The criteria for the maximum volume of waste allowed to receive will be found in Schedule A of these SOP’s.</li> <li>5. The hauler is to provide a completed manifest for the load.</li> <li>6. The hauler must fill out the label on a GWA provided sample container and use the container to grab a sample of the load as it is discharging.</li> <li>7. Sample jars are to be provided by the Authority with labels.</li> <li>8. The sample is to be placed in the small refrigerator that is located near the desk in the garage of the press building (Building P).</li> <li>9. A member of the Operations Department will observe the discharge to check for possible contaminants.</li> <li>10. Should the load appear to be contaminated, the operator must stop the hauler from discharging anymore of the suspect load.</li> <li>11. When the discharge is complete, the operator will re-lock the station.</li> <li>12. Once the maximum amount of HSW is received for that day, the operator must communicate this to the ERC and the administrative secretary in order to divert any further loads.</li> <li>13. If there is failure in equipment associated with the receiving, maintaining, or transfer of the High Strength Waste, additional hauling will be ceased immediately until such equipment is repaired.</li> <li>14. Deliveries will only be received when full time staff is present, i.e. M-F 7am-4pm, excluding holidays.</li> </ol>	

<b>Part 4</b>	Staff Responsible: Operations/Laboratory
<b>Processing of HSW Samples</b>	
<ol style="list-style-type: none"> <li>1. At the end of each day, a member of the Operations Department is to collect all load sample bottles from the refrigerator located in Building P, ensure they are labeled properly, and place them in the laboratory refrigerator in the designated area.</li> <li>2. Laboratory staff is to ensure that if there are multiple haulers throughout a month that the random samples reflect each of the haulers.</li> <li>3. If the Authority is to receive loads from multiple haulers, the results of these random samples will be entered into OPS works in the HSW worksheet.</li> <li>4. All samples are to be saved for thirty (30) days, and at the end of the thirty (30) day period composited and analyzed for total solids and volatile solids.</li> <li>5. The results of this composited sample are to be entered into OPS works on the Digester Volatile Acids worksheet and used to calculate the amount of volatile solids being sent to the digester. This will be used to determine if an appropriate amount of HSW is being sent to the digesters and will be evaluated monthly, or if/when a new waste stream is introduced.</li> <li>6. Laboratory staff is to take a sample of the digester three times a week (Monday, Wednesday, and Friday) at consistent times and analyze it for the acids to alkalinity ratio. This data is to be recorded in the "Volatile Acids Binder," as well as the Digester Volatile Acids worksheet in the database management software (currently OPS Works).</li> <li>7. The Laboratory Services Coordinator and/or Operations Superintendent is responsible for reporting any changes to the acids to alkalinity ratio outside above 0.15 to the Operations Superintendent and Executive Director immediately, and feeding of High Strength Waste to the digester will immediately be ceased. In this event, more frequent digester sampling will be taken as needed to more closely monitor the health of the digester and ensure upset conditions are not occurring. This range has been determined based on existing data from extended time periods when the Authority's digesters are operating without issue.</li> <li>8. If the acids to alkalinity ratio range exceeds allowable limits, and/or the acids go above 200 mg/L, in a 24-hour period, feeding of High Strength Waste to the digester will immediately be ceased. In this event, more frequent digester sampling will be taken as needed to more closely monitor the health of the digester and ensure upset conditions are not occurring.</li> <li>9. In the event of any upset conditions, the collected samples may be analyzed to determine if any potential containments were introduced via the high strength waste loads. Investigative work would be performed based on the type of upset condition that occurred, and if any unusual or suspect loads were received.</li> </ol>	
<b>Part 5</b>	Staff Responsible: Executive Director/ Operations Department
<b>HSW Daily Loading</b>	
<ol style="list-style-type: none"> <li>1. The Executive Director shall work with the Authority consultants to determine the maximum daily HSW volume that may be received, and that may be transferred to the digesters.</li> <li>2. The determination of allowable volume to be transferred to the digesters will be made based on volatile solids loading bases, volume of storage available in the digesters, an acceptable feed rate to the digesters and resultant, empirical digester process testing.</li> <li>3. The determination of allowable volume to be received will be made based on the volume of HSW allowed to be transferred to the digesters, the volume of storage available, and acceptable feed rates to the digesters in accordance with calculations defined in the attached "Schedule A."</li> <li>4. These calculations will be reviewed periodically for potential adjustment based on: <ol style="list-style-type: none"> <li>(a) Changes in the volatile solids loading base.</li> </ol> </li> </ol>	

(b) Changes in equipment or process changes.

(c) Changes in the normal range of the volatile acids to alkalinity ratio.

5. The HSW Transfer pump to the digesters will be programmed to cease operating when the maximum allowable volume determined in Schedule A has been transferred to the digesters.
6. The HWS Transfer Pump (gallons per minute and duration) shall be programmed to pump at a consistent rate throughout the day according to calculations determined on Schedule A
7. The Authority, along with its consultants, have determined the maximum volumes of HSW allowed to be received and transferred to the digesters are defined in the attached Schedule A. These calculations are to be reviewed every 12 months and subject to change.
8. If changes are made to the high strength waste calculations/receiving/transfer amounts, a notification will be posted publicly on the Authority's website 45 days ahead of time, and notices will be sent via email to the Authority's subscribed email addresses, in order for there to be a public review/comment period.
9. Daily transfer rates to the digesters shall be in accordance with Schedule A in order to reduce the potential of a biological upset.



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## High Strength Waste Operating Procedure Frequently Asked Questions

Glenbard Wastewater Authority  
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### **About:**

The Glenbard Wastewater Authority located in Glen Ellyn, Illinois is an agency formed in 1977 between the Villages of Lombard and Glen Ellyn via an intergovernmental agreement. Its mission is to operate and maintain municipal wastewater treatment facilities, protect public health, and protect the environment, for approximately 109,000 residents and businesses in the Lombard, Glen Ellyn, Valley View/Butterfield and Glen Ellyn Heights service areas. ([www.gbww.org/about-us](http://www.gbww.org/about-us))

In 2017, the facility began processing High Strength Waste, including fats, oils and greases. The below FAQ contains information about the benefits and procedures involved in the processing these materials.

### **1. What is High Strength Waste (HSW) and Fats, Oils, Greases (FOG)?**

High strength waste (HSW) can be defined as wastewater that has more impurities in it than levels found in domestic wastewater, which is wastewater generated in homes. While this is a general definition, Glenbard Wastewater Authority (GWA) accepts only HSW that is generated during food processing or preparing. This includes waste such as grease laden water generated by restaurant dishwashing, sugar and grease laden water from the recycling of expired soda pop, salad dressing and other food products as well as clean up water from food manufacturing such as candy.

Fats, oils and greases (FOG) are a specific type of high strength waste. It is generated by restaurants during the preparation and clean-up of meals. Restaurants are required to have a grease trap to remove the grease from dishwashing water to keep it out of the sewers. Grease traps then must be pumped out from time to time and the material (food particles, oil and grease) properly disposed of. FOG is a desired high strength waste because it provides lots of energy over a long period versus sugar wastewater that provides high energy for short periods of time. This can be compared to how the human body reacts to sugar versus protein.

### **2. Why does GWA want to accept HSW, including FOG?**

The wastewater treatment process uses large amounts of electricity. It accounts for a significant percent of our operating costs. Just like for homeowners, rising utility costs are a concern. GWA is constantly looking for ways to be energy efficient. A by-product of

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wastewater treatment is methane gas. GWA has upgraded parts of the treatment system to be able to capture this gas and use it to generate energy to run the plant. However, the domestic wastewater coming into the plant from the area businesses and homes is not enough to generate all the energy GWA needs to operate. By accepting HSW and FOG, GWA will be able to generate a larger portion of the energy it needs to run.

The more energy GWA can produce, the less it has to pay for it. In addition to producing energy, the process generates heat. This heat is also captured and used in the process instead of depending on natural gas boilers for heat. This further reduces utility costs for GWA. Additionally, it allows budget money to be shifted to fund much needed upgrades to aging equipment and helps contain sewer rates for all users of the system.

This process is a “green” initiative and helps preserve the environment. It keeps HSW and FOG from ending up in a landfill and turns it into renewable energy. It also reduces the carbon footprint GWA creates since a larger portion of the treatment process would be run by the renewable energy.

**3. How is HSW turned into energy?**

Wastewater treatment at GWA is hugely dependent on micro-organisms or “bugs”. The bugs are in large covered tanks called digesters. The HSW is pumped into these tanks as food for the bugs. The bugs eat the grease, food particles, and sugars in the HSW and produce methane gas. The methane gas is then captured and processed through engines to generate electricity.

**4. Why is the Glenbard Wastewater Authority (GWA) deciding to take in HSW and FOG again?**

After the biological upset during late summer/early fall of 2017, a temporary moratorium was placed on the acceptance of these materials, with the anticipation of accepting it again after thorough investigation to ensure proper handling and addition of the material. Accepting HSW/FOG will allow GWA to produce more bio-gas (a natural bi-product of wastewater treatment), which in turn will allow for the generation of more renewable energy to use on site. Since our mission is to both protect public health and preserve the environment, this is a method of saving costs, protect the public health, and being green to help preserve the environment. The cost savings realized will assist GWA in paying for future improvements, which will result in less costs for GWA customers.

**5. How did GWA put together the Standard Operating Procedures?**

GWA had initially reached out to members of the public to attempt to form an Ad-Hoc committee, but only had one volunteer, and unfortunately could not put together a proper committee. Therefore, GWA performed in depth research on proper methods of receiving and adding the material to our own waste, and formulated it into a document. GWA staff also visited a neighboring wastewater treatment plant who is currently, and successfully, accepting HSW/FOG. Procedures that have worked successfully for this other facility were included in GWA’s policy.

**6. What kind of preventative measures do the Standard Operating Procedure include?**

GWA will thoroughly vet haulers before allowing them to bring material in, as well as thoroughly analyzing the nature of the material they propose to haul in to ensure it is a

suitable product. Once GWA has deemed a hauler and their material acceptable, the hauler will be issued a permit, along with a copy of the standard operating procedures. The hauler will also be required to provide a “renders license,” or sign an affidavit, which states they will only bring in material that was agreed upon. The volume will be carefully controlled and each delivery will be inspected by GWA staff with a sample taken from each load.

**7. What caused the offensive odor in August and what is GWA doing to try and prevent it from happening again?**

Plain and simple, the bugs were overfed. This caused a chain reaction and the treatment system got upset; much like when you overeat or eat something that does not agree with you. The treatment process was still working, but since it was upset it produced more hydrogen sulfide than normal. Human noses are extremely sensitive to the smell of hydrogen sulfide, so even though the odors were potent, the levels contained in the air were non-hazardous. GWA took air samples during this time period, and although the odors were detectable by the human nose, the levels of hydrogen sulfide in the air at the plant were too low to even register in the measuring devices.

**8. What has GWA done to prevent an upset from occurring again?**

The entire process has been thoroughly reviewed by GWA staff and consulting engineers and the following improvements have been made:

- An additional pump was added to be able to continuously feed the digesters with the HSW, where previously a single pump was being shared between two separate steps of the process. This allows GWA to feed the bacteria with more consistency instead of the “feast or famine” method from having only a single pump.
- GWA staff visited a neighboring wastewater treatment plant who is currently, and successfully, accepting HSW/FOG. Procedures that have worked successfully for this other facility were included in GWA’s procedures.
- The calculations regarding how much HSW could be safely added were reviewed and revised. That data collected from the 10 months of successfully accepting this waste were included.
- While GWA had a process in place to accept the HSW, the policy was reviewed, refined and formalized in a standard operating procedure document. Safeguards have been incorporated into this document to ensure limits on accepting HSW are regulated closely. [Click here to review GWA’s full SOP for HSW Receiving.](#)
- Additional laboratory tests will be done on the HSW in order to best determine how much food the bugs are receiving; similar to knowing the calories in your food and staying within a certain number of calories per day to not put on weight.
- Additional and more frequent laboratory tests are being performed on the digesters themselves so that the Authority can be proactive in seeing if there is any trend towards a potential upset, and be able to take preventative measures prior to an upset occurring.

**9. How will GWA know if a biological upset is going to happen again?**

Whether or not GWA accepts HSW/FOG, the possibility of an upset always exists, as this is a biological process much like human digestion. Just like every person has different tolerances and is prone to digestive upsets, GWA's digesters have the potential of being upset even just from the normal domestic wastewater stream coming from our residents. However, as part of the standard operating procedures, GWA will be monitoring the biological health of the digesters much closer. The procedures define a set of published standards on digester health, and GWA have set those standards to be even more conservative than what is recommended. If it's noticed the health of the digester is approaching the limits of those standards, we can immediately begin taking preventative measures in order to attempt to stop an upset from occurring.

**10. Who should we contact for further information regarding this process?**

You can always contact Matt Streicher, GWA's Executive Director, with any questions. He can be reached by phone at 630-790-1901x126, or via email at [mstreicher@gbww.org](mailto:mstreicher@gbww.org). GWA is always open to providing tours as well if you would like to come see the process first hand, and learn more about wastewater treatment. During off hours, you can always call our main number at 630-790-1901, and be connected to an operator on call.