An outline of work at the Hartford Water Pollution Control Facility that will achieve compliance with regulatory requirements for the protection of water quality in the Connecticut River. All work is an integral part of the District's Clean Water Project.
Hartford Water Pollution Control Facility (HWPCF) was originally designed as a 60 million gallon per day (MGD) facility based upon a maximum month flow rate. Secondary treatment facilities were constructed in 1972, and can achieve final effluent limits of 30 mg/L of biochemical oxygen demand and 30 mg/L of total suspended solids. These limits meet the national definition of secondary treatment as established by the federal Environmental Protection Agency (EPA).

Flows received at the HWPCF remained well below the 60 MGD capacity for many years following the startup of the secondary facility. As sewers were extended to new service areas within the District’s eight member towns, flow rates gradually increased to the point where monthly flows were approaching 60 MGD or greater, especially during wet weather periods. The District was concerned that flow exceedances would subject the District to enforcement action by either citizens, the EPA or the Connecticut Department of Environmental Protection (DEP). As a result, the District approached the DEP in the early 1990’s and requested that the HWPCF be re-rated to a higher maximum month flow rate. To justify the revised rating, the District hired an engineering firm to conduct an evaluation of each unit process throughout the facility based upon current industry standards. Upon acceptance of the report by the DEP, the permit for the HWPCF was revised to a new maximum monthly flow rate of 80 MGD. It is important to note that no additional facilities were constructed to achieve this new flow rate.

The figure at the top of the following page represents the monthly average flows for approximately the last 10 years (January 2000 - October 2009). As can be seen from this figure, monthly average flows exceeded the original 60 MGD design flow 41 out of 118 months (35 percent of the time). The HWPCF maintains excellent compliance with the effluent limits contained within the National Pollutant Discharge Elimination System (NPDES) permit. As a demonstration of this, the HWPCF has received the National Association of Clean Water Agencies (NACWA) award for facility performance for six consecutive years, and 10 out of the past 12 years. In 2008, the HWPCF won the gold award for no permit violations.

Justification of Future Wet Weather Flow Rate

Dry Weather Flow Rate

To size the treatment facility for the future, one needs to know the dry weather flow rate, the capacity of the pipes going to the treatment facility and how much wet weather flow is generated from the 1-year storm event.
ExeCUTIVe SU MM ary

Hart Ford WPCF Ma S tEr Plan ClE an Wat Er Proj ECt

Three influent sewers collect sewage from the entire sewer service area that contribute flow to the HWPCF. These influent sewers are the Franklin Avenue Interceptor (FAI), the Connecticut River Interceptor (CRI) and the Connecticut River Relief Interceptor (CRRI). The FAI and CRI have been in operation since the early 1970s. The CRRI, which parallels the CRI, was constructed in 1995 as an early project in the combined sewer overflow correction program to allow more wastewater flows to be received at the HWPCF for treatment and to reduce the amount of overflows within the collection system. As a result of installing the CRRI, both the Masseek Street overflow as well as the Park River overflow experienced reduced overflow frequencies and volumes. Below is a depiction of the three interceptors that convey flows to the HWPCF.

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A hydraulic model of the sewerage system connected to the HWPCF has been developed, demonstrating the capacity of the existing system. SWMM stands for Stormwater Management Model, which is an industry-accepted model utilized across the country to determine how a separate and combined system reacts in wet weather events. It is a predictive tool that allows for engineering judgments to be made in the sizing of new infrastructure. CDM is updating the SWMM model by incorporating new improvements within the collection system into the base model. This SWMM model was accepted by the EPA and DEP in 2003. The model has demonstrated that under existing conditions (including pipe sizes, grades, and hydraulic grade line of the flow) each of the three interceptors has a peak free discharge hydraulic capacity (no surcharge) as follows:

- **Franklin Avenue Interceptor:** 18 MGD peak
- **Connecticut River Interceptor:** 57 MGD peak
- **Connecticut River Relief Interceptor:** 58 MGD peak

All flows from each of the three interceptors join together at a junction chamber within the facility property just upstream of the screening and degritting facilities, and travels by gravity through the primary treatment system. Following the primary treatment system, the flow is lifted to a higher level by the primary effluent pump station, which allows for gravity flow through the remainder of the facility (including secondary treatment) and finally to the Connecticut River under low river elevations. During times of higher river elevation (greater than 7.0 feet NGVD29 (National Geodetic Vertical Datum 29)), the final effluent is required to be pumped out of the facility to avoid flooding the treatment facility site. The primary effluent pump station has a hydraulic capacity of 110 to 120 MGD while the final effluent pump station has an observed pumping capacity of 115 MGD. The outfall pipe to the Connecticut River has a hydraulic capacity of 200 MGD.

The HWPCF currently has a limited wet weather treatment system, which is not sufficiently sized to accommodate the 1-year storm flows. The 1-year storm flow has been set by the EPA and the DEP as the storm flow level of control necessary to abate pollution from combined sewer overflows. The current system consists of a wet weather pump station, two dynamic grit separators to remove large solids and a 4.7 million gallon wet weather storage basin. When flows approach 90 MGD, operators manually open a gate, which allows flows in excess of the 90 MGD to be pumped by the wet weather pump station to the dynamic grit separators and then into the wet weather storage basin. When flows exceed the capacity of the wet weather storage basin, the flows are then chlorinated (during chlorination season) prior to discharge to the Connecticut River. After the cessation of storm flows, any combined sewage in the wet weather storage basin is put back into the current treatment facility for full secondary treatment.
The District is under two separate enforcement actions of both the DEP and the federal EPA for control of combined sewage and elimination of sanitary sewer overflows in areas without combined sewers. The DEP has issued a Consent Order to the District that requires development of a long term control plan (LTCP) to reduce combined sewer overflow (CSO) volumes such that water quality standards of the state are achieved. The EPA, with the assistance of the DEP, has issued a Consent Decree to the District requiring the elimination of sanitary sewer overflows during wet weather events within the District’s separate sanitary sewer service area in the outlying member towns.

As a result of the enforcement action by the DEP (the Consent Order), the District developed a LTCP for CSOs. The LTCP has been approved by the DEP. This plan includes the implementation of multiple corrective actions, including separation of combined sewers into separate storm and sanitary sewers in six areas of Hartford; construction of a CSO storage tunnel in the northern area of Hartford; numerous consolidation conduits that will reroute overflow volumes downstream within the sewerage system to a storage tunnel; construction of a second CSO storage/conveyance tunnel in the southern area of Hartford and expanded hydraulic capacity of the HWPCF to provide treatment of the wet weather flows. The EPA and the DEP have accepted the recommended control level as the flows that would be generated during a one year storm. Flows in excess of this one year storm will continue to discharge to receiving streams such as the Park River and the Connecticut River during storm events of a higher return frequency.

In response to the EPA Consent Decree, the District has determined that rehabilitation of the separate sanitary sewers in the outlying member towns in conjunction with installing new consolidation conduits and a new storage/conveyance tunnel in the southern section of Hartford that connects to the HWPCF will eliminate all separate sanitary overflows during wet weather conditions. These system improvements will allow the District to comply with the requirements of the Consent Decree. This planned tunnel is referred to as the South Hartford Conveyance Tunnel (SHCT).

Appendix A depicts the many projects within the boundaries of the City of Hartford described above that will be required to comply with both the DEP Consent Order and the EPA Consent Decree. It gives both the name of the project and its geographical location for reference.
The only new infrastructure to be constructed that will bring additional flows directly to the HWPCF is the SHCT. This tunnel will carry flows from Newington, West Hartford, Wethersfield, and the southern portion of Hartford to the HWPCF. During storms, the tunnel will be pumped out at a rate that does not exceed the capacity of HWPCF. Excess flow beyond this capacity would be stored in the tunnel until such time as it could be pumped into the facility. The rate of pumping from the SHCT has not been finalized yet; however, preliminary estimates made prior to the Master Plan have indicated a pumping rate of 20 to 50 MGD is possible. Lower rates can be accommodated; however, it would mean that the tunnel would contain combined sewage for a longer period of time after a storm. Most importantly, the pump-out rate of the SHCT can be balanced and modified based on the HWPCF capacity and the gravity flow coming from the three interceptors. This will be accomplished with the real time control strategy being developed in a separate study.

In addition to the SHCT, other infrastructure improvements at the HWPCF will increase the hydraulic capacity of the wet weather treatment system. This new infrastructure includes installing a new influent pump station that will lower the hydraulic grade line of the existing interceptors, thereby increasing their hydraulic capacity. With the lower hydraulic grade line, the three gravity interceptors are expected to have the following capacities: 32, 78 and 79 MGD (see below).

The combined flow from the three interceptors as calculated by the SWMM model during a 1-year storm is 180 MGD. Currently, the District is completing the preliminary design for the SHCT and is planning for the new influent pumping station. Both these projects are scheduled to be constructed and operational by 2014.

One other storage tunnel is proposed in the LTCP. As shown in Appendix A, the North CSO storage tunnel is a deep rock tunnel approximately 30 feet in diameter, running from near the confluence of the North Branch and the South Branch of the Park River in a northeasterly direction to the area near the intersection of Pleasant Street and Market Street. This storage tunnel will be operated differently from the SHCT. During wet weather events, the combined sewage will be collected from various consolidation conduits that will pick up overflows throughout the system and discharge the combined sewage into the tunnel. The CSO storage tunnel will not be pumping out during the course of the storm. Instead, once the storm has ended and there is excess capacity in the CRI, the pumping facilities will be operated at a rate that matches the downstream conveyance capacity and the capacity of the facility such that no overflows occur along the CRI. Whereas the flow from the CSO storage tunnel is discharged to the CRI, the flow from the CSO storage tunnel will not affect the capacity of either interceptor or the capacity of the HWPCF.

expected capacity of three gravity interceptors with the lowered hydraulic grade line

<table>
<thead>
<tr>
<th>Interceptor</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Franklin Avenue Interceptor</td>
<td>32 MGD</td>
</tr>
<tr>
<td>Connecticut River Interceptor</td>
<td>78 MGD</td>
</tr>
<tr>
<td>Connecticut River Relief Interceptor</td>
<td>79 MGD</td>
</tr>
</tbody>
</table>
During development of the Master Plan for the HWPCF, the task of assessing the need for Real Time Control (RTC) within the collection system was identified and a separate master plan was initiated. The District has hired a consultant to evaluate the potential benefits of implementing Real Time CSO controls within the Hartford sewage system. Currently, the District operates two separate SCADA systems for the collection system and the HWPCF. The consultant will use the SWMM hydraulic model to evaluate the benefit and extent of implementing real time controls. Installation of real time controls in other communities has allowed the efficient use of additional storage capacity within the collection system to control CSOs. Real time controls can enable the operators to control the amount of flow being treated at the HWPCF by utilizing upstream storage within the collection system and storage tunnels. The RTC master plan will evaluate the use of existing sewers in the collection system as well as those being planned in the separation projects and the storage tunnels projects. The RTC master plan will also evaluate and provide the framework for implementing a combined SCADA control structure, allowing the District to manage and control the collection system and treatment facilities at the HWPCF as a single process to maximize the storage and treatment of combined sewer flows during wet weather events.

As noted above, the capacity of the conveyance system to the HWPCF will set the capacity needed to treat for flows generated by the 1-year storm. The conveyance system that affects this capacity is the future SHCT and the three existing gravity interceptors. The wet weather capacity of the HWPCF is therefore the capacity of these four sources of flow shown above.

The schematic below shows the future flows to the HWPCF, including the three existing interceptors (and their future capacities) and the future SHCT.
Capacity of the Existing HWPCF Outfall

The existing HWPCF outfall leaves the site on the southerly side through the flood control dike and then proceeds 1,640 feet in various sized conduits to the Connecticut River. The outfall does not have a diffuser on the end of the outfall. As analyzed in the Master Plan, the capacity of the existing outfall while flowing by gravity is 110 MGD. With the effluent pumping station in operation, the capacity increases to 200 MGD. This capacity rating is limited by the pressure within the conduit during pumping and by the velocity of the effluent, which is limited to a recommended peak rate of 6.5 feet per second.

Southerly view of outfall location from top of dike to Connecticut River.

Other Factors That Would Affect Capacity Needs of the HWPCF and Storage Tunnels

The District has undertaken more than $20 million of sewer system rehabilitation in the separate sanitary sewers of the surrounding member towns. Contracts for the lining of leaking sewers, spot repairs of leaking sewers, and the disconnection of inflow in the member towns of Newington, West Hartford, Wethersfield, and Windsor will help eliminate sanitary sewer overflows within the separate sewer system during wet weather events. Continued rehabilitation projects and installation of new structural improvements will address high infiltration rates and/or high inflow rates, which will mitigate downstream non-structural overflows and/or basement backups. As these sources of extraneous flow are eliminated from the sewerage system, capacity is freed up within the existing collection system. This selection and planning of cost-effective measures and improvements within the collection system will affect the final sizing of storage tunnels while ensuring that the selected capacity of the HWPCF is sufficient.

Granby Street, Tower Avenue and Upper Albany will reduce the needs (reduced volume or reduced hydraulic capacity) for downstream improvements, including Phase II consolidation conduits, the North CSO storage tunnel, the SHCT and the wet weather unit processes at the HWPCF. The SWMM model prepared by CDM has already accounted for a 10 percent reduction in infiltration and inflow from these areas to be separated, and that reduction has been accounted for in the sizing of the downstream facilities. Based on future flow monitoring after the completion of separation projects, additional reductions, if achieved, beyond the predicted amount of 10 percent can be accounted for in the design of the future consolidation conduits and the North CSO storage tunnel.

In summary, flow reductions from completed and anticipated sewer rehabilitation and separation projects have been accounted for within the SWMM model of the HWPCF sewerage system. No adjustment to the HWPCF wet weather capacity will be made as a result of sewer rehabilitation or separation beyond that already assumed.
Recommended Capacity for the HWPCF

District staff has concluded that the HWPCF be constructed for sustained dry weather flow capacity of 90 MGD and an additional 110 MGD of wet weather capacity for a combined capacity of 200 MGD. This capacity was selected for the following reasons:

- The three existing influent interceptors can only deliver 180 MGD to the facility.
- The SHCT will be pumped out at a rate to match the treatment capacity of the HWPCF. Therefore, the SHCT tunnel will be controlled by the HWPCF operators to a flow rate of 20 MGD, which is the remaining available capacity of the facility (or higher if the interceptors are flowing at less than 180 MGD). The operational scenarios will be determined by the real time control study.
- The existing HWPCF outfall has a peak hydraulic flow rate of 200 MGD under pumping conditions, matching the influent flows recommended above.
- The use of 200 MGD flow rate eliminates the need to construct a costly new outfall sewer. It also avoids significant delays to the overall project by avoiding the complexity of securing permits for this new outfall.
- A detailed outfall study will be conducted concurrent with the design and construction of the wet weather facilities to determine if additional capacity can be achieved from improvements to the existing outfall, if necessary in the future.
- Nothing within the design of the 200 MGD facility will preclude an increase in the treatment capacity in the future if ever required.
- After constructing the HWPCF to the 200 MGD flow rate along with the improvements to the sewerage collection system, the flow rates can be monitored to determine if the model predictions have been accurate. If additional facilities are necessary, the District can then move ahead with confidence that the facilities are truly needed.

- Prior to re-assessing if the capacity needs to increase beyond the 200 MGD, the District will update and enhance the hydraulic model to verify flow conditions, a process the District intends to implement during the construction of improvements within the collection system throughout the Clean Water Project.
- Completion of the Real Time Control study could maximize operational controls of flows to the facility with a potential reduction in needed infrastructure. Therefore, the 200 MGD flow rate is recommended, as additional capacity beyond the 200 MGD is not likely to be needed due to both the benefits of the Real Time Control study and the ability to reduce flows further in the future with additional infiltration/inflow rehabilitation.
- Finally, in order to allow for future upgrades if warranted, new facilities will be designed for a hydraulic capacity of 200 MGD, but a structural capacity of 250 MGD (i.e., the new influent pumping station pumps will be designed for 200 MGD, but the facility will be constructed to allow retrofitting for additional pump(s) for 250 MGD capacity).
As noted in the previous section, the combined hydraulic capacity of the HWPCF is recommended at 200 MGD; 90 MGD for dry weather flows and 110 MGD for wet weather flows. It should not be assumed that the wet weather treatment system is turned on and off at exactly 90 MGD as the facility flows are highly variable during storm events. Factors which influence the flows received at the HWPCF include groundwater level, amount of soil moisture content, frozen vs. thawed ground, snow cover or lack thereof, intensity of storm, and duration of storm among others. Therefore, the operations of the wastewater treatment system before, during and after the end of any particular precipitation event are a complex set of decisions made by the wastewater operators.

The expectations for operations is that all dry weather flows will receive secondary treatment sufficient to meet the NPDES permit, as well as nitrogen removal to comply with the General Permit for the Discharge of Nitrogen, both issued by the DEP. Therefore, the dry weather system will operate continuously for non-precipitation events as well as for precipitation events.

As flows approach 90 MGD, the wastewater operators will make decisions as to when to activate the wet weather treatment system. Relying on both physical and chemical processes, the wet weather system can be turned “on and off” more readily than a biological treatment system that must be constantly operated to provide consistent treatment levels. As required by the DEP, all wet weather flows will receive the equivalent of primary treatment and disinfection (requirements for disinfection vary by season with disinfection being required between May 1 and September 30). Therefore, all flows in excess of the 90 MGD flow rate will be diverted to the wet weather treatment system, which will consist of an influent pumping station, screening and grit removal, chemically enhanced primary treatment and disinfection with sodium hypochlorite prior to discharge to the Connecticut River. The figure at the top of the following page provides a schematic of both the dry weather and wet weather treatment trains at the HWPCF.
As indicated in the previous section, the District will construct two tunnels that will be operated in different manners as described below. The CSO storage tunnel, also known as the North Tunnel, will collect excess flows from the five proposed consolidation conduits during wet weather events. Each of these consolidation conduits will be located north of I-84 as identified in Appendix A. The consolidation conduits will divert combined sewage from the collection system during wet weather events in excess of the 1-year storm into the CSO storage tunnel rather than sending the flow to the HWPCF for treatment. During dry weather or flows below that for a 1-year storm, the flows will be directed to the HWPCF. As required by the DEP, all flows up to the 1-year storm event must either flow directly to the HWPCF or be diverted into the CSO storage tunnel. For a rainfall event with a return frequency greater than the 1-year storm, CSOs will still occur at numerous locations within the collection system, but at a frequency much less than the 50+ times per year that now occur. In a typical year, with all storms equal to or smaller than 1-year storm events, the LTCP eliminates overflows. However, in any given year, there may be a number of rain events that are larger than a 1-year storm and therefore CSOs would occur.

The combined peak hydraulic flow rate for flows coming through both the CRI and the CRRI is 157 MGD (the flow rate of 157 MGD is derived from the SWMM model and represents the flows that can be conveyed through the two interceptors after the new headworks are constructed). All sewage flow from the new consolidation conduits as well as flow from the downtown and Capitol area flow through either of these interceptors to the HWPCF. When the hydraulic capacity of these two interceptors is exceeded, flows will be diverted into the CSO storage tunnel. Sewage collected in the storage tunnel cannot flow by gravity out of the tunnel as it will be more than 100 feet below the surface and will need to be pumped out after flows subside in the CRI and CRRI below their hydraulic capacity of 157 MGD. Therefore, the pump-out rate and the duration of the pumping of the CSO storage tunnel will be determined by available capacity of the downstream interceptors and treatment capacity at the HWPCF. The
operators of the treatment facility will be able to manage the pump-out rate by monitoring the real time control system with the intent of maximizing treatment of combined sewage from the tunnel after the precipitation event subsides.

The SHCT will collect flows in excess of local sewer capacity through new consolidation conduits from the West Hartford, Newington and Folly Brook drainage areas during wet weather events. However, unlike the North Tunnel, this tunnel may be either utilized as a storage tunnel (similar to the North Tunnel) or may be pumped out during the precipitation event up to an estimated flow rate of 20 MGD. If flows into the tunnel exceed the estimated pump-out rate of 20 MGD, flows will then be stored in the tunnel to be pumped out at a later time when the flows into the tunnel are less than 20 MGD or when the flows from the other three interceptors (FAI, CRI and CRRI) are less than 180 MGD. Again, the operators of the HWPCF will be able to manage the pump-out rate through the real time control system.

**Wet Weather Treatment System Description**

The layout of the wet weather unit processes for the 200 MGD flow rate is shown on the following pages. Each unit process is more fully described below. The District is considering the relocation of the influent pump station, screening and grit removal and the new primary clarifiers to land immediately west of the current plant site. If this occurs, the layout would be altered from that shown here.

**Influent Pump Station**

The new influent pump station will eliminate the current tail water condition within the FAI, CRI, and CRRI that exists at the HWPCF due to the elevation of the existing primary clarifier weirs. Since the influent pump station will be constructed at a lower elevation, the tail water condition will be eliminated, thereby increasing the hydraulic capacity of the three interceptors that lead into the HWPCF to a new maximum flow rate of 180 MGD. The influent pump station will be designed with two wet wells and two pumping systems each with redundant pumps. One wet well will be utilized for the dry weather flows up to 90 MGD, which will pump the sewage into the secondary treatment side of the facility. The other wet well will be utilized for flows in excess of 90 MGD and will pump these flows into the wet weather side of the facility (as shown on the following pages). The structural design of the pump station will allow for future flows of 250 MGD; however, the number of pumps and sizing of the pumps will be for the recommended 200 MGD. Additional pumps can be added in the future if necessary to achieve any higher flow rate up to 250 MGD flow rate.

**Screening and Grit Removal**

The recommended treatment system for screening and grit removal is to construct multiple channels for flows up to 250 MGD with each channel providing coarse with space for future fine screens followed by vortex degritting. However, the screens and grit removal equipment will be installed in only those channels necessary to achieve 200 MGD of treatment. Collected screenings will be deposited onto conveyors and sent through a grinder/washer/compactor system and then into disposal containers. Grit collected in the vortex units will be pumped to a grit washer/classifier and then into containers for off-site disposal. Grit can be disposed of as municipal waste and screenings, once ground, can be combined with grit for the same end disposal site. Note that grinding screenings is a relatively new process and final design should evaluate the process for reliable operation prior to installation.
Executive Summary

Hartford WPCF Master Plan Clean Water Project

Wet Weather Facility Footprint to treat 200 MGD

South Hartford Conveyance Tunnel Pumping Facility

Proposed New Facilities

Proposed Modified Facilities
Odor Control Headworks

New Screening, Grit Removal and Pumping Facilities

Convert Existing Primary Clarifiers to CEPT (Wet Weather)

Flow Distribution Structure

Wet Weather Clarifier Odor Control

Odor Control for Dry Weather Clarifiers

Wet Weather Chemical Storage and Feed Facility, Sodium Hypochlorite and Sodium Bisulfite Chemical Storage and Feed System, Flow Distribution Structure and Primary Sludge and Scum Pumping Station

New Primary Clarifiers (Dry Weather)
The screenings and grit removal system will be located prior to the new influent pump station to minimize wear and tear on the pumps and operational problems.

Conversion of Existing Primary Clarifiers into Wet Weather Primary Clarifiers

A major concept identified in the development of the Master Plan was the need to provide new treatment facilities for the dry weather flows and the re-use of existing older process units for less frequent wet weather flows. This concept was endorsed by the District as a means to provide newer and more reliable treatment unit processes for dry weather flows that occur 365 days and reusing older existing process units for less frequent wet weather flows that occur only about 50 days per year or less. This concept helps manage overall upgrade costs at the HWPCF. As a result, the primary treatment of wet weather flows is recommended to be provided by refurbishing the existing primary clarifiers. Chemically enhanced primary treatment (CEPT) is recommended. This system utilizes both a coagulant and a flocculant aid to increase the capture of suspended solids and colloidal particles in the primary clarifiers. With the addition of coagulant and flocculant agents, higher overflow rates through the existing units can be achieved. Although there are two sets of existing primary clarifiers, only the west bank of primary clarifiers would need to be refurbished to provide acceptable treatment with CEPT for 200 MGD. The east bank of primary clarifiers would not be refurbished at this time, but would remain in place for future use if needed.

Wet Weather Disinfection

The DEP requires that wet weather flows be disinfected during the disinfection season of May 1 through September 30 of each year, the same period as is required for all dry weather flows. The District is converting its dry weather chlorination disinfection process to an ultra-violet (UV) system as described later. Chlorine disinfection of wastewater typically requires a separate chlorine contact tank that is sized to provide a minimum detention time of 30 minutes at peak flow rate. The HWPCF does not have a separate contact tank; therefore, a new contact tank would need to be constructed of approximately 1.1 million gallons. This would be a large expense as well as use more land. Another alternative that is recommended is to disinfect within the primary clarifiers. Although this will require a higher dosage of sodium hypochlorite than normal, it will avoid the expense of a new tank while providing sufficient disinfection levels. Again, this practice considers that wet weather treatment will only take place about 50 days per year, so investing capital costs is not feasible when slightly higher operational costs can meet requirements. Following treatment in the converted primary clarifiers, the flow will be discharged to the Connecticut River either by gravity during normal river elevations or pumped during higher river elevations.

Potential Effluent Pump Station Modifications

With a recommended peak flow of 200 MGD, the existing outfall has sufficient theoretical capacity while the effluent pump station has 150 MGD capacity. To have sufficient confidence in the capacities of both the outfall and the effluent pump station, the District will conduct a detailed evaluation of both facilities to either confirm that capacity currently exists or to recommend modifications to meet the recommended flow rate of 200 MGD. A request for qualifications and proposals will be developed in early 2010 for this evaluation with a completion date of late 2010 for the evaluation. Any recommended project as a result of this evaluation will be coordinated with the other wet weather projects such that the unit processes are operating during the same time period.
Recommendation for Biological Nutrient Removal at the Hartford WPCF

The DEP utilizes a broad definition of a biological nutrient removal (BNR) project at a wastewater facility. Not only does the project comprise tanks and equipment directly needed to support BNR, it also comprises a refurbishment of the entire facility such that all treatment processes and equipment can be considered to have a new 20-year design life. This approach allows municipalities to qualify for grants and low-interest loans for a facility-wide upgrade that will provide reliable and efficient operation for the next 20 years. Based upon the adopted priority rating system within the Clean Water Fund Priority List, the District’s BNR project is currently rated on the FY 09 Priority List with 40 priority points. This high rating is exceeded by only two other municipalities and equaled by one other. This rating virtually assures the District that the BNR project will be funded with grants and loans from the Clean Water Fund. It is recommended that the District take advantage of this broad definition of BNR with the addition of two additional projects beyond the current fast track projects as identified later.

Current Fast Track Projects Included in BNR Project

The following pages illustrate a site plan of the three fast track projects that are starting construction in the first quarter of 2010 as well as additional projects to be included in the BNR projects. These three projects include the demolition of the compost facility foundations, the addition of aeration tanks 7 and 8 along with final settling tanks 7 and 8, and UV disinfection for dry weather flows.

Demolition of Compost Facility Foundation

This contract has been bid and awarded in December 2009. The construction completion date is May 2010. The project will remove the foundation of the former compost facility as well as remove an earthen berm and compost odor control system to the south of the incinerator building. These facilities must be removed to make way for the construction of the aeration tanks 7 and 8 and final settling tanks 7 and 8.
Dry Weather Facility Footprint
to treat 200 MGD

Secondary Treatment
Improvements Phase II BNR

Final Settling Tank #7
Aeration Tank #7
Demolition of Compost Facility Foundation

Final Settling Tank #8
Aeration Tank #8

Proposed New Facilities
Proposed Modified Facilities
Solids Handling Improvements
Phase II BNR

UV Disinfection Facility
(Dry Weather)

UV Electrical Generator

UV Electrical Building
Aeration Tanks 7 and 8 and Final Settling Tanks 7 and 8

The existing secondary aeration system consists of six aeration tanks and six final settling tanks. While the existing system was modified in 2008 to provide capability for partial nitrogen removal, the additional aeration volume gained by the two new aeration tanks, and the additional sludge volume within the two new final clarifiers, will provide treatment capabilities to potentially achieve the final 2014 permit limits for the HWPCF as contained in the General Permit for the Discharge of Nitrogen issued by the DEP. This contract has been bid and will be awarded in February 2010. Following construction of these new tanks, the District is expected to avoid purchasing nitrogen credits for the HWPCF. Should the HWPCF consistently remove more nitrogen than the permit requirements, the excess will be used to offset some or all of the credits the District will still need to purchase for the Rocky Hill, Poquonock and East Hartford facilities.

UV Disinfection

The recommendation for disinfection for dry weather flows is to replace the current gaseous chlorine system with a new low-pressure, high-output vertical lamp UV disinfection system. The new facility will be located just to the west of the existing effluent pump station building. The project will be bid in the first quarter of 2010 with a completion date of October 2011.

Additional Projects to Be Included in BNR Project

The District intends to enter into engineering contracts for several additional contracts beyond the fast track projects as part of the overall BNR project. One contract will address improvements/upgrades to the existing secondary treatment system, including the area of the six aeration tanks, the six final settling tanks, and the compressor building. Key components within this project include the replacement of the current aeration compressors with high-efficiency compressors for energy savings, the refurbishment of the sludge collector mechanisms in all six existing final settling tanks, upgrades to the air system and diffusers in the six existing aeration tanks, and the addition of new Invent mixers for improved nitrogen control in pass one of aeration tanks 1-6.
The second major project will include overall improvements to the solids handling system that will provide solids handling for both dry weather solids as well as wet weather solids. While the hydraulic system for the treatment of wet weather flows and dry weather flows includes separate facilities, the solids handling for both wet and dry weather is combined into a single sludge system. Key components of the solids handling project include the addition of a fourth centrifuge, upgrades to the three existing centrifuges, replacement of various sludge pumps, new dewatered cake storage facility and a fine screening system for the sludge.

The dry weather illustration on the previous pages identifies the locations of the secondary treatment system improvements along with the solids handling improvements.

Expected Nitrogen Removal and Assessment of Compliance with 2014 General Permit for Nitrogen Discharges Limits

Within the General Permit for Nitrogen Discharges are both 2008 and 2014 permit limits for each of the four District treatment facilities. The permit limits for each facility and the 2008 performance numbers are shown in the table below.

As can be seen from the table, collectively the District did not achieve the 2008 permit limits. As a result, the District purchased nitrogen credits as the means of complying with the General Permit for Nitrogen Discharges. In 2008, as in previous years, the District was one of the largest purchasers of nitrogen credits in the state, at a cost to the District of $972,673. The bulk of the purchase ($803,183) was for the HWPCF.

The interim nitrogen upgrade at the HWPCF was completed in September 2008. Prior to the upgrade, the three-year average for 2006 through 2008 was 6,189 pounds per day discharged. Subsequent to the interim upgrade, nitrogen removal performance has improved to 5,078 pounds per day discharged. The performance of the interim nitrogen removal project surpassed

<table>
<thead>
<tr>
<th>Facility</th>
<th>2008 Performance</th>
<th>2008 Permit Limits</th>
<th>2014 Permit Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartford</td>
<td>5,326</td>
<td>2,881</td>
<td>2,377</td>
</tr>
<tr>
<td>East Hartford</td>
<td>417</td>
<td>354</td>
<td>292</td>
</tr>
<tr>
<td>Rocky Hill</td>
<td>483</td>
<td>349</td>
<td>288</td>
</tr>
<tr>
<td>Poquonnock</td>
<td>457</td>
<td>119</td>
<td>98</td>
</tr>
<tr>
<td>Total:</td>
<td>6,683</td>
<td>3,703</td>
<td>3,055</td>
</tr>
</tbody>
</table>

Left: Nitrogen Performance and Permit Limits (pounds per day)
the design intention of 8 mg/L total nitrogen. With the completion of the two additional aeration tanks and final settling tanks, along with the other improvements in the BNR project, the HWPCF is projected to achieve a daily average of 1,948 pounds per day, which is below the 2014 limit of 2,377 pounds per day. The four District facilities can be viewed by the DEP as a "bubble" for nitrogen, with the District either purchasing credits or selling credits as the sum of the performance of all four facilities. The table above shows each facility’s 2014 permit limit and 2014 projected performance.

By reducing nitrogen at the HWPCF to 1,948 pounds per day, the District will generate 429 pounds per day of credits that can be utilized to offset the purchases required by the other three facilities. Because of the relatively small size of the Rocky Hill and Poquonock facilities, the District has no plans to install nitrogen improvements at either facility at this time. The East Hartford facility was modified in 2006 to provide partial nitrogen removal. Therefore, as shown in the table above, the four District facilities together are expected to be required to purchase about 271 pounds per day of nitrogen credits in 2014 – a significant improvement over 2008, when the four facilities collectively purchased about 2,980 pounds per day of nitrogen credits.

### Future Assessment of Nitrogen Performance

It is recommended that the District implement the BNR project as defined above prior to advancing any additional construction projects for nitrogen removal at any of the other three facilities. Operator skills, wastewater temperature and large variations in flows all affect the treatment facility performance. It is recommended that following construction of the BNR upgrades in 2012 the District operators seek to optimize the operations of the HWPCF along with the East Hartford facility that has partial BNR capabilities, such that no additional capital expenditures are necessary to meet the total nitrogen permitted for all four of the District treatment facilities.

<table>
<thead>
<tr>
<th>Facility</th>
<th>2014 Nitrogen Limit, lbs/day</th>
<th>2014 projected nitrogen removal performance, lbs/day</th>
<th>2014 Difference, lbs/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartford</td>
<td>2,377</td>
<td>1,948</td>
<td>(429)</td>
</tr>
<tr>
<td>East Hartford</td>
<td>292</td>
<td>416</td>
<td>124</td>
</tr>
<tr>
<td>Rocky Hill</td>
<td>288</td>
<td>512</td>
<td>224</td>
</tr>
<tr>
<td>Poquonock</td>
<td>98</td>
<td>450</td>
<td>352</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,055</strong></td>
<td><strong>3,326</strong></td>
<td><strong>271</strong></td>
</tr>
</tbody>
</table>

With construction of nitrogen removal capabilities at the HWPCF, the District may be able to avoid future capital expenditures at the East Hartford, Rocky Hill and Poquonock facilities for nitrogen removal.
The table below provides a summary of the costs and projected construction start dates for each of the wet weather, BNR and other projects at the HWPCF. The other projects not labeled as either wet weather or BNR include incinerator #3 Phase II & heat recovery, dry ash handling system, as well as a new maintenance building and new laboratory/administration building. Although not technically a wet weather project at the HWPCF, the SHCT project has been included since the outlet shaft and pumping station are proposed for construction on land immediately west of the current HWPCF property. More importantly, it is listed due to the fact that this project must

<table>
<thead>
<tr>
<th>Project</th>
<th>Construction Start Date</th>
<th>Budgeted Cost ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compost Facility Demolition</td>
<td>2010</td>
<td>$1</td>
</tr>
<tr>
<td>Aeration and Final Settling Tanks</td>
<td>2010</td>
<td>$37</td>
</tr>
<tr>
<td>UV Disinfection</td>
<td>2010</td>
<td>$15</td>
</tr>
<tr>
<td>Incinerator #3 Phase II &amp; Heat Recovery</td>
<td>2010</td>
<td>$32</td>
</tr>
<tr>
<td>Second Phase BNR Secondary Treatment</td>
<td>2011</td>
<td>$15</td>
</tr>
<tr>
<td>Solids Handling Improvements</td>
<td>2011</td>
<td>$16</td>
</tr>
<tr>
<td>New Screenings/Grit Removal</td>
<td>2011</td>
<td>$50</td>
</tr>
<tr>
<td>New Influent Pump Station</td>
<td>2011</td>
<td>$85</td>
</tr>
<tr>
<td>New Primary Clarifiers</td>
<td>2011</td>
<td>$115</td>
</tr>
<tr>
<td>Dry Ash Handling</td>
<td>2011</td>
<td>$6</td>
</tr>
<tr>
<td>Wet Weather Treatment and Disinfection</td>
<td>2012</td>
<td>$35</td>
</tr>
<tr>
<td>South Hartford Conveyance Tunnel</td>
<td>2012</td>
<td>$200</td>
</tr>
<tr>
<td>Effluent Pump Station Improvements</td>
<td>2012</td>
<td>$6</td>
</tr>
<tr>
<td>New Maintenance Building</td>
<td>2012</td>
<td>$3</td>
</tr>
<tr>
<td>New Lab/Admin Building</td>
<td>2013</td>
<td>$5</td>
</tr>
</tbody>
</table>

Total Years 2010 through 2013: $612

Below: HWPCF Projects – Budgeted Costs and Estimated Construction Start Dates

- Total Year 2010: $123
- Total Year 2011: $287
- Total Year 2012: $244
- Total Year 2013: $5
be sequenced with the wet weather projects at the HWPCF such that the wet weather projects are completed in advance of the completion and start up of the SHCT. The SHCT cannot be operated until such time as the new influent pump station, screening and degritting system, new dry weather primary clarifiers and modification of the existing primary clarifiers into wet weather primary clarifiers have been constructed and placed into operation. The District needs to coordinate the construction of the wet weather system and the SHCT carefully so that both projects are completed simultaneously.

Given the large dollar value in both 2011 and 2012, the District must coordinate with the DEP on the ability of the State Clean Water Fund to be able to finance all or a portion of these projects. If the District cannot maintain the same pace as proposed by the District, the District will need to either proceed without Clean Water Fund financing or slow down the pace of the Clean Water Project. If the latter is chosen, the District may need to negotiate with the DEP a revision to the State Consent Order No. 5434 (which includes annual funding goals). As 2011 approaches and the District makes the decision to proceed with or without Clean Water Fund financing, the District will need to re-evaluate the affordability of the project.

In addition to those projects listed above, note that additional CSO and SSO projects are being developed simultaneously for which the costs are not included here.

Potential Clean Water Fund Financing

The Clean Water Fund is the State of Connecticut’s funding program for municipal wastewater infrastructure projects. A combination of state general obligation bonds and revenue bonds provide both grants and low interest loans (subsidized 2 percent rate) to municipalities. The grant component varies between 20 percent for basic wastewater improvements, 30 percent for nitrogen removal, and 50 percent for combined sewer overflow projects. All remaining project costs not covered by a grant receive the 2 percent loan payable over a 20-year period. All money from the Clean Water Fund is awarded to municipalities based upon a priority rating system. The higher the priority points awarded to a project, the greater the likelihood of receiving Clean Water Fund financing. Both the combined sewer projects of the District known as the Clean Water Project, as well as the BNR project are rated highly under the DEP’s priority list.

In spite of the high-priority rating of the District’s projects, the District must recognize that the Clean Water Fund is one of many demands for bonding on the state’s capital budget. With expected project values at the HWPCF alone exceeding $287 million in 2011 and $244 million in 2012, combined with other SSO and CSO projects for the Clean Water Project, these dollar values will likely exceed the capacity of the Clean Water Fund. Therefore, the District will need to closely monitor the authorizations for additional funding for the Clean Water Fund in future fiscal years.
SCADA and Real Time Control and How the Wastewater Operators Will Use This Tool

SCADA (Supervisory Control and Data Acquisition) refers to a system of hardware, controllers, networks, communications equipment and software that collects data from various sensors throughout the treatment facility, pumping stations, and overflow monitors and sends that data to a central computer at the facility. This collected data is utilized to optimize the operation of distinct unit processes. Decisions on how the collected data is utilized for optimization may occur automatically through software programming or may require human input.

In addition to the Master Plan of Facility Improvements for the HWPCF, the District is preparing a separate master plan of the SCADA system for the HWPCF and wastewater collection system. In addition to the SCADA system review and recommendations for upgrades and improvements, the plan will also review and make recommendations for a real time control system (RTC) to optimize the operations of the collection system and treatment facility before, during and after storm events. The facility operation will be based upon knowledge of sewage flows at various points in the collection system. With real-time knowledge of how the collection system is responding during a storm event, the wastewater facility operators can adjust flow diversions into the tunnels and storage tunnel pump-out rates such that treatment of sewage flows received at the HWPCF can be optimized and CSOs are minimized.

The completion of the SCADA and RTC Study is expected by the end of 2010. The recommendations of this study will be incorporated into components of the overall Clean Water Project to provide improvements within the collection system and at the HWPCF as well as improvements for the SCADA system. The final design engineers for each project at the HWPCF will implement the various recommendations prepared in this supplemental master plan. Other work within the collection system will be a stand-alone project to be implemented and operational at the same time as the new wet weather treatment system is placed into operation. Any project costs for the real time control recommendations will be identified in the SCADA and Real Time Control Study and are not part of this Master Plan on the HWPCF. Therefore, costs for these potential control facilities are not included in this report.
Proposed Construction Schedule

Construction sequencing of the SHCT and the wet weather treatment processes is imperative.

The estimated construction start date for each project is specified below under a heading for each year. This presentation demonstrates the magnitude of the numerous projects to be undertaken at the HWPCF.

Projects by Calendar Year

2009—
- 2nd Quarter: Phase 1 – Incinerator #3 Upgrades (upgrades to be completed March 2010)

2010—
- 1st Quarter: Compost Facility Demolition
- 1st Quarter: First Phase BNR (New Final Settling Tanks and New Aeration Tanks)
- 2nd Quarter: New Heat Recovery Facility and #3 Incinerator Upgrade
- 3rd Quarter: UV Disinfection

2011—
- 1st Quarter: Dry Ash Handling System
- 1st Quarter: Second Phase BNR
- 2nd Quarter: Solids Handling Improvements
- 3rd Quarter: New Influent Pumping station
- 3rd Quarter: New Screenings/Grit Removal System
- 3rd Quarter: New Primary Clarifiers

2012—
- 1st Quarter: South Hartford Conveyance Tunnel
- 3rd Quarter: New Maintenance Building
- 3rd Quarter: Effluent Pump Station Improvements
- 4th Quarter: Conversion of Existing Primary Clarifiers into Wet Weather Treatment and Disinfection

2013—
- 2nd Quarter: New Laboratory/Administration Building
Sequencing of Projects

The sequence of construction recommended above was based upon several factors. First was the deadline of February 17, 2010, as the last date by which the heat recovery project could be awarded for construction and still retain ARRA funding. Second was the construction of the UV disinfection project necessary to comply with a permit condition of the NPDES permit for the HWPCF to eliminate chlorine toxicity caused by the use of chlorine gas. By converting to UV disinfection, no more chlorine residual will remain thereby eliminating the toxicity caused by chlorine usage in the secondary treatment system.

The third fast track project, the construction of the two additional aeration tanks and two additional final settling tanks, brings with its completion a cost savings for the District. As more nitrogen is removed from the discharge as a result of this project, the District will need to purchase fewer nitrogen credits, thereby saving an expected $803,183 per year from the operating budget (based upon 2008 nitrogen credit purchase costs for the HWPCF). The composting demolition project needs to be completed prior to the aeration and clarifiers project, to make room for those new facilities.

Following the fast track projects mentioned above, the next priority is the refurbishment of the remainder of the HWPCF not being affected by other construction projects. With the fast track projects plus the wet weather projects, some portions of the HWPCF will have been updated while leaving other portions of the facility untouched. To alleviate this situation, the addition of second-phase BNR along with solids handling improvements will result in the HWPCF being significantly refurbished. This will minimize future capital improvement projects to be funded solely by the District. In addition, this work of refurbishing the remainder of the facility would also likely receive Clean Water Fund financing.

The next projects in the latter part of 2011 include the beginning of the modifications of the HWPCF to accommodate the future wet weather flows. Close coordination between the influent pump station, the new screening and degritting system, the construction of new primary clarifiers and the conversion of the existing primary clarifiers into the wet weather treatment system will need to be followed as all must be placed into operation at the same time. Each of these processes is dependent upon the other three and cannot be operated independently. If one unit process was to proceed ahead of the others, it would sit idle until all of the other three were operational, which is undesirable.

As is the case with the wet weather processes discussed above, the SHCT also must be closely coordinated with the wet weather processes as the SHCT cannot be utilized until such time as the treatment capability exists. As the design of each of the projects is undertaken and the length of the construction contract is determined for each, the start date of construction for each project can be fine-tuned such that completion of the projects is virtually simultaneous. The preliminary schedule as presented in this document is expected to be modified as projects progress.

Inadequate laboratory space is one of several reasons to replace the current 42 year old laboratory/administration building.
Implementation Steps

Final Design Engineer Task Orders

The District conducted a wastewater on-call engineer selection process in June 2007 (Request for Qualifications #6) from which seven engineering firms were selected as qualified for future engineering work at the HWPCF. Contracts with the selected firms were signed in May 2008. As the need for additional engineering evaluations and design occurs at the HWPCF, the Program Management Unit (PMU) matches the qualifications of the firms to the task at hand and selects the most capable firm for the particular task with the goal of achieving the best engineering services possible.

Completed and On-Going Task Orders and Request for Services

Prior to RFS #6, the District issued two other requests for services (RFS) related directly to the HWPCF. RFS #2 was for incinerator upgrades and a waste heat recovery project, which resulted in the selection of Black & Veatch to design the project. This project is being finalized with final design and bid advertisement completed on December 2, 2009. It is funded with grants and loans from the Clean Water Fund as an ARRA project (American Recovery and Reinvestment Act of 2009) and as such must be awarded to the contractor by February 17, 2010. This award date will be met.

The second RFS was RFS #4 for the HWPCF Master Plan evaluation. Woodard & Curran was the engineer selected to conduct the master plan evaluation of the HWPCF.

Prior to the completion of the HWPCF Master Plan, it was evident that certain projects need not wait for the results of the master plan and therefore task orders were issued for these projects from RFS #6. Known as fast track projects, these projects included the Real Time Control and SCADA evaluation, dry ash handling, the addition of the two new aeration tanks and final clarifiers, the UV disinfection, and compost pad demolition. The aeration, UV and compost demolition fast track construction contracts will be awarded no later than April 2010, which takes advantage of extremely competitive pricing (due to the downturn of the economy and the resultant favorable bidding climate), with expectations for the District to secure costs less than the engineer’s estimates.
Future Task Orders

The implementation of the HWPCF Master Plan for 200 MGD total dry and wet weather capacity will require additional engineering evaluations and additional final design contracts. The District’s PMU will be undertaking the following actions for implementation:

Secondary Treatment Design: A final task order for this project will be negotiated by the end of February 2010 with Malcolm Pirnie.

Solids Handling System: The PMU will select a firm for this work from a new request for qualifications/proposal (RFQ/P) in order to secure the most qualified firm for the task. The RFQ/P will be issued by February 2010, with a date of task order signing for final design being the end of April 2010.

Wet Weather Influent Pump Station, New Screenings/Grit Removal, New Primary Clarifiers and Conversion of Existing Primary Clarifiers into Wet Weather Treatment and Disinfection: These four facilities will require an integrated design; therefore, it is recommended that all four designs be completed by the same engineer. To match the most qualified engineering firm to the task, the PMU will issue a new RFQ/P with selection of the most qualified firm being based upon both the project team qualifications along with the specialty subconsultant’s qualifications. The RFQ/P will be issued in March 2010 with a negotiated task order completed by the end of June 2010.

Outfall/Effluent Pump Station Evaluation: The final task order for this evaluation is scheduled for May 2010.

Facility Water System Evaluation: This evaluation will be led by facility engineering and wastewater operators with the assistance of CDM under their on-call contract. Subsequent to this evaluation, the final design of the system improvements will be split into two final designs with the first to be included in the second-phase BNR design and the second in the dry ash handling system.

SHCT: The preliminary design of the SHCT is to conclude in 2010. Upon acceptance of the preliminary design, a new task order for the final design will be signed with a scheduled completion date for final design of late 2011.

The schedule for duration of the design contracts will be negotiated with each consultant based on the complexity of the contract with the expectation that each contract will allow for a construction start date as shown in the table below.

<table>
<thead>
<tr>
<th>Project</th>
<th>Task Order Date</th>
<th>Construction Start Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Phase BNR</td>
<td>February 2010</td>
<td>2011</td>
</tr>
<tr>
<td>Solids Handling Improvements</td>
<td>April 2010</td>
<td>2011</td>
</tr>
<tr>
<td>Wet Weather Influent Pump Station, New Screening/Grit Removal, New Primary Treatment</td>
<td>June 2010</td>
<td>2011</td>
</tr>
<tr>
<td>Outfall/Effluent Pump Station Evaluation</td>
<td>May 2010</td>
<td>Undetermined until after evaluation</td>
</tr>
<tr>
<td>Facility Water System Evaluation</td>
<td>Summer 2010</td>
<td>2011</td>
</tr>
<tr>
<td>South Hartford Conveyance Tunnel</td>
<td>Summer 2010</td>
<td>2012</td>
</tr>
<tr>
<td>Conversion of Existing Primary Clarifiers Into Wet Weather Treatment and Disinfection</td>
<td>June 2010</td>
<td>2012</td>
</tr>
</tbody>
</table>
Within each of the individual construction contracts, the contractor will be required to provide, through the equipment manufacturer, the appropriate training to HWPCF facility operators. In addition, the Real Time Control and SCADA project will also have a key component of training for the operators as the operational control of pumping facilities from the SHCT and the North CSO Storage tunnel along with any automated CSO weirs will need to be the responsibility of the wastewater operators. Whereas the final effluent quality of both the secondary treatment side of the facility as well as the wet weather treatment side is the responsibility of the wastewater operators, these operators must assume the responsibility of any facilities that can affect treatment capabilities. In addition, the Wastewater Operator Certification Program conducted by the DEP will require that any individual or individuals responsible for the operations of the SHCT, the North CSO storage tunnel and any automated CSO weirs be certified wastewater operators. Therefore, the primary control units for the two tunnels and any automated gates must be located at the HWPCF where the certified operators are located. Other reporting devices on these facilities may be located elsewhere in addition to the control units at the HWPCF.

Hartford WPCF Quick Facts

- **90 MGD** capacity for dry weather flows
- **110 MGD** capacity for wet weather flows
- Capable of achieving nitrogen removal to meet 2014 permit limits
- Capable of achieving all effluent limitations in the discharge permit
- Will produce approximately one third of the power demand through the heat recovery system
The Metropolitan District
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Hartford, CT 06142-0800

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