

# EPA Memorandum - Consolidation of South and Central Wastewater Treatment Plants in Baton Rouge, Louisiana

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## Purpose

The purpose of this memorandum is for the City of Baton Rouge/East Baton Rouge Parish (City/Parish) to present to the Environmental Protection Agency (EPA) and Louisiana Department of Environmental Quality (LDEQ) a plan for the future use or retirement of the Central Wastewater Treatment Plant (WWTP). As a result, the City/Parish requests no objection from the EPA/LDEQ for the retirement of the Central WWTP and therefore an increase in the South WWTP discharge capacity.

A summary of the plan and changes associated with the South WWTP and Central WWTP consolidation follows. Background information from the planning and engineering completed during the past year is also presented which identifies the reasoning behind this option. Finally, benefits and potential impacts with the South WWTP and Central WWTP consolidation are discussed.

## Summary

The City/Parish and its Program Management Consultant (CH2M HILL) recommend that the EPA/LDEQ approve consolidating the South and Central WWTPs as a part of the *Draft Wastewater Master Plan* for the collection and treatment system. The recommendation is to close the Central WWTP and divert/pump all current and future wastewater flow from the Central WWTP basin directly to the South WWTP for treatment. This project (South WWTP and Central WWTP consolidation) was identified and researched through the extensive master planning effort which was completed in May 2008 (note this is not required by the Consent Decree). In general, facilities at the South WWTP will include: larger reservoir storage, larger influent pumping station, solids processing enhancements, ultraviolet (UV) disinfection with sodium hypochlorite, secondary power source, and general upgrades to

buildings and structures, in addition to the wet weather improvements previously submitted/approved by the EPA in the report titled *Addressing Existing Noncompliance Issues and Future Wet Weather Flow Management Requirements for the South Wastewater Treatment Plant* (CH2M HILL, January 2007). The wet weather treatment capacity of the South WWTP as previously submitted will remain unchanged. The peak flows to be treated will be limited by larger storage at the South WWTP. The Central WWTP won't be demolished until the South WWTP critical process improvements are operational. The following bullets provide an overview of the main aspects for considering the elimination of the Central WWTP:

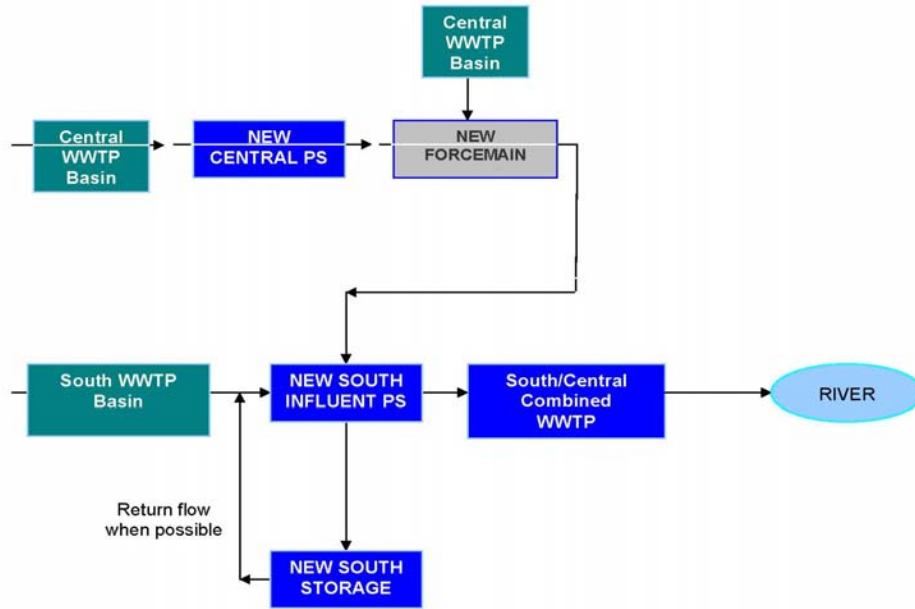
- Elimination of a point source (such as publicly owned treatment works) is a priority under the Clean Water Act. EPA and the states have encouraged and supported regionalization of facilities and elimination of point sources when possible.
- No impact on schedule/consent decree deadline – all work connected with the Central WWTP consolidation is scheduled to be completed by January 1, 2015.
- Once the consolidation work is completed, there will be two WWTPs for the City/Parish to maintain/operate, instead of three creating efficiencies and better operations opportunities.
- There will be two National Pollution Discharge Elimination System (NPDES) permits (for the North WWTP and South WWTP only) once the consolidation projects are completed.
- The South WWTP is capable of handling dry weather flow from the Central WWTP.
- South WWTP wet weather processes aren't changing due to consolidation of the plants. Additional wet weather storage and influent pumping will be required. The *Draft Wastewater Master Plan* includes additional enhancements to the processes and facilities at the South WWTP beyond those defined in the *Program Delivery Plan (PDP)* (CH2M HILL, February 2008).
- Consolidation of wastewater flows to the South WWTP will result in significant present worth savings in capital, and operations and maintenance (O&M) during the next 25 years.

Also, as a result of retiring the Central WWTP there are additional projects that will need to be implemented to re-route and pump dry and wet weather flows from the Central WWTP basin to the South WWTP. These projects include:

- Demolition of the Central WWTP
- Addition of a new Central WWTP Basin Pump Station
- Modifications to existing Central WWTP basin pump stations
- New forcemain (routing wastewater from the Central area to the South WWTP)
- Expanded Influent Pump Station at the South WWTP
- Expanded Storage at the South WWTP

The flow diagram on the next page depicts the proposed process flow from the Central WWTP basin to the South WWTP.

FIGURE 1  
Flow Diagram



## Background

During the past year, the City/Parish and CH2M HILL have completed significant planning (including master planning) and engineering efforts in regards to defining the projects planned for sanitary sewer overflow (SSO) reduction. The master planning work specifically assessed projected population increases/changes in the next 25 years in the City of Baton Rouge/Parish of East Baton Rouge. There were two (2) major planning documents produced as result of these efforts:

- The *Draft Wastewater Master Plan* (CH2M HILL, May 2008), and
- The *Program Delivery Plan (PDP), Sanitary Sewer Overflow (SSO) Control and Wastewater Facilities Program* (CH2M HILL, February 2008).

Much of the engineering and modeling effort for these documents took part in parallel. The improvements described in the *Draft Wastewater Master Plan* were exclusive of ongoing projects described in the *PDP*, though they impacted some elements of the *PDP*.

## Draft Wastewater Master Plan

The City/Parish developed a *Draft Wastewater Master Plan* proactively planning for future flows/loads, regulatory requirements, and implementing projects associated with *Draft Wastewater Master Plan* to help prevent future SSOs throughout the City/Parish. Existing and predicted future regulatory requirements were evaluated to determine potential plant improvements needed to comply with the requirements throughout the 25 year planning period. Regulations that were examined include effluent limitations for BOD5, TSS, nutrients (nitrogen and phosphorus), and mercury, as well as biosolids stabilization requirements. The master planning effort was a significant undertaking, though it was not required under the Consent Decree with the EPA/LDEQ. CH2M HILL strongly recommended this master planning effort to properly plan for future needs of the City/Parish wastewater system including the future population increase.

The *Draft Wastewater Master Plan* describes a recommended series of improvements required for the 25 year period from 2008 to 2032. Wastewater collection and also treatment plant projects are included in these improvement projects. Population estimates for the City/Parish were determined based on the traffic analysis zone (TAZ) studies. The TAZ data were analyzed with respect to the WWTP basin in which they were located: North, Central, or South. After population projections were obtained, the flows and loads expected at the WWTPs in 2032 were calculated. Additionally, the *Draft Wastewater Master Plan* also included a condition assessment for the collection system and WWTPs that was not completed for the PDP. Some projects for the collection system and WWTPs that are included in the *Draft Wastewater Master Plan* are required due to deteriorating condition, rather than for capacity improvements. Many project recommendations were generated as a result of this detailed assessment. More specifically, the possibility of retiring the Central WWTP was analyzed during this process. Associated technical engineering and present worth cost evaluations were completed to determine the feasibility of implementing the project and develop the final recommendation.

Additional background about the master planning process can be found in the *Draft Wastewater Master Plan* (CH2M HILL, May 2008).

## Program Delivery Plan (PDP)

The PDP (CH2M HILL, February 2008), focused on improving the existing collection and conveyance system, storage, and treatment facilities with respect to the location and frequencies of SSOs, as well complying with the WWTP NPDES permits. The PDP is primarily made up of "newly planned" RMAP2 projects that have been identified through technical modeling, engineering, and planning efforts of the program during the past year. The PDP outlines the proposed RMAP2 projects (wet-weather improvements) planned to control SSOs throughout the City/Parish and describes the projects planned in order to continue meeting permit requirements at the WWTPs. Existing flows were modeled, and capacity issues were identified. Once a capacity issue was located, the capacity needed for existing and future flows was determined. If a capacity issue was observed for both the existing and future situations, then a project was delineated for the PDP (accounting for both existing and future flows with pipe or pump station sizing). If a capacity issue was only observed due to future flow conditions, then the project was delineated for the *Draft Wastewater Master Plan* (CH2M HILL, May 2008).

CH2M HILL is currently working on an annual *PDP Update* which will be submitted to the City/Parish in September 2008. The *September 2008 PDP Update* is necessary in order to present the results of new more sophisticated modeling and engineering effort from the completion of a new more accurate dynamic model and new information available. The results of this effort will include some RMAP2 project design refinements, in addition to some RMAP2 project additions and deletions from what was presented in the *February 2008 PDP*. Once the modeling efforts associated with the *September 2008 PDP Update* are completed and the report is submitted/approved by the City/Parish, the official *RMAP2 Submittal* to the EPA and LDEQ will follow.

## Flow Conditions/Planned Projects

Flow and loads at two of the three major WWTP's will change when consolidating the Central and South WWTPs. When consolidation takes place, the Central WWTP will be closed/demolished and all wastewater flow currently coming into the Central WWTP will be diverted/pumped directly to the South WWTP for treatment.

Therefore, assessments of the flows and loads at the WWTPs were made through the modeling and engineering that took place in conjunction with the development of the *PDP* (CH2M HILL, February 2008) and the *Draft Wastewater Master Plan* (CH2M HILL, May 2008). A brief summary is presented below. Additionally, the new loads at the South WWTP, once the Central WWTP is retired, are also provided. Refer to the *Draft Wastewater Master Plan, Draft* (CH2M HILL, May 2008) for engineering details on current and future flows and loads both now and after consolidation of the Central and South WWTPs.

### North Wastewater Treatment Plant

The North WWTP will not be affected by the Central and South WWTP consolidation project. The North WWTP has adequate capacity to serve the needs of its service area for the 25-year planning period, with the recommended renovations and improvements noted in the *Draft Wastewater Master Plan* (CH2M HILL, May 2008). Reservoir peak shaving storage will be distributed within the system provided in the North WWTP service area to reduce wet weather flows to levels consistent with current capacity, as identified in the *Program Delivery Plan (PDP), Sanitary Sewer Overflow (SSO) Control and Wastewater Facilities Program* (CH2M HILL, February 2008).

The North WWTP's design capacity is 54 million gallons per day (MGD), according to the NPDES permit. The projected dry weather flow (maximum month average daily flow) in 2032 at the end of the master planning period is 32 MGD.

### Central Wastewater Treatment Plant

The Central WWTP is the smallest of the three (3) major treatment plants in Baton Rouge. Currently the Central WWTP is in compliance with NPDES permits during dry weather. The design capacity of the Central WWTP is 31.6 MGD based on the NPDES permit and the projected dry weather flow (maximum month average daily flow) in 2032 at the end of the master planning period is 13 MGD. No significant increase in flow was projected for the Central WWTP service area as a result of the master planning efforts. Additionally, it was determined that the Central WWTP has insufficient capacity to handle future wet weather

flows received as a result of the SSO reduction program (RMAP2 projects highlighted in the *PDP* and eventual *PDP Update*), even though historically the Central WWTP is typically in compliance with its NPDES permit during dry weather due to very low loadings. Therefore, in the *PDP* (CH2M HILL, February 2008), peak shaving storage was planned at the Central WWTP to reduce flows to the Central WWTP during wet weather events. This storage at the Central WWTP will not be necessary once consolidation of the Central and South WWTP's is completed, as this storage capacity will be combined with storage planned at the South WWTP as outlined in the *PDP*. The Central WWTP will be demolished (only once the South WWTP critical process projects are operational) and a new Central pump station will be required, as well as a new force main, in order to divert/pump the Central area flows to the South WWTP for treatment is operational. The remaining improvements required at the South WWTP after consolidation occurs are detailed in the following section.

A more detailed description as to the justification of flows and loads at the plants both now and after the Central WWTP consolidation is included in the *Draft Wastewater Master Plan* (CH2M HILL, May 2008).

## South Wastewater Treatment Plant

In 2006/2007, a plan was developed to implement improvements at the South WWTP bringing the plant into permit compliance. First, the most urgently needed projects, also known as Immediate Action Plan (IAP) projects, were identified. The IAP projects were planned/designed so that the South WWTP will consistently meet permitted effluent water quality limits under dry weather flow conditions. The IAP projects are described in more detail in the *South Wastewater Treatment Plant Immediate Action Plan Basis of Design Report* (CH2M HILL 2007), as well as in the *Program Delivery Plan (PDP), Sanitary Sewer Overflow (SSO) Control and Wastewater Facilities Program* (CH2M HILL, February 2008). The design work related to these projects is completed and construction is scheduled to begin in third quarter of 2008.

The *Program Delivery Plan (PDP), Sanitary Sewer Overflow (SSO) Control and Wastewater Facilities Program* (CH2M HILL, February 2008) also identified some wet weather treatment projects at the South WWTP that would need to be completed to assure compliance with the NPDES permit under wet weather conditions. These projects will still be executed at the South WWTP in conjunction with the projects required for consolidation of the Central and South WWTPs.

Currently, the South WWTP's design capacity is 54 MGD based on the NPDES permit. This will change once the Central and South WWTP consolidation is completed. More details can be found in the sub-section below summarizing the consolidation of the Central and South WWTPs. Details summarizing the consolidation of the Central and South WWTPs follows.

## Consolidated Central and South WWTP

For Central and South WWTP consolidation to be effective, both the wet weather improvements identified in the *PDP* (CH2M HILL, February 2008) and the additional projects associated with the Central WWTP elimination described in the *Draft Wastewater Master Plan* (CH2M HILL, May 2008) will need to be constructed in order to handle the

increased flow from the Central WWTP service area. These projects provide a wet weather treatment train, storage, and other improvements which will assure compliance with the NPDES permit under wet weather conditions. After these projects are implemented, there is sufficient capacity to treat both the 2032 projected flows and biological loads. Note that the Central WWTP won't be demolished until the critical South WWTP process improvements are completed and the South WWTP is on-line and operational.

When the Central WWTP flows are diverted/pumped to the South WWTP, the flow conditions at the South WWTP would be as follows:

- Projected combined dry weather flow (maximum month average daily flow) would be 58 MGD in 2032
- Wet weather treatment capacity would be 200 MGD after improvements
- Storage of 64 million gallons (MG) (located at the South WWTP) to reduce the peak flow to the South WWTP to the process design flow of 200 MGD

## Benefits

There are several benefits of retiring the Central WWTP, which are as follows:

- Two WWTPs to maintain and operate
- Two NPDES permits to comply with, manage, and report on
- Improves environment in the area of the Central WWTP
- Financial – two (2) plants are more efficient and less costly to maintain and operate
- There is a present worth savings of \$20M during the 25 year planning period

## Potential Impacts

There were some concerns with eliminating the Central WWTP that were assessed and resolved, such as:

- Future NPDES permit modifications will be necessary
- More wastewater treated at the South WWTP
- Minor impact to neighborhood in area of South WWTP
- Possible modification of Consent Decree (due to wording around Central WWTP in the Consent Decree, etc.)

## Summary

The elimination of the Central WWTP was assessed as part of the *Wastewater Master Plan, Draft* (CH2M HILL, May 2008) and was identified as the technically and financially preferred option to meet long term service needs in the City/Parish wastewater collection and treatment system. Therefore, the City/Parish requests EPA/LDEQ no objection of the retirement of the Central WWTP and the increase in permitted capacity of the South WWTP.