



City of Hollywood, Florida Southern Regional Wastewater Treatment Plant Ocean Outfall Compliance Report Update

December 2014

HAZEN AND SAWYER
Environmental Engineers & Scientists

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December 23, 2014

Jonathan P. Steverson
Secretary
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
3900 Commonwealth Boulevard, M.S. 10
Tallahassee, Florida 32399-3000

City of Hollywood Southern Regional WWTP
Permit Number FL0026255
Ocean Outfall Compliance Report Update

Dear Mr. Steverson:

On behalf of the City of Hollywood, we are pleased to submit the Ocean Outfall Compliance Report Update for the Southern Regional Wastewater Treatment Plant (Facility ID FL0026255). This document is intended to satisfy the reporting requirements outlined in Section 403.086(9f), Florida Statutes.

Should you have any questions or require additional information, please contact us.

Very truly yours,

HAZEN AND SAWYER, P.C.



J. Philip Cooke, P.E.
Senior Associate
No. 47137

Attachment

c: *L. Brien*
F. Domond
K. Myers
P. Davis
File No. 4321042



SRWWTP 2014 Ocean Outfall Compliance Report Update

1.0 Background

The Southern Regional Wastewater Treatment Plant (SRWWTP), a wastewater treatment facility operating faithfully under permit FL0026255-015-DW1P, has disposed of secondary effluent through an open ocean outfall since 1968 and through deep injection wells since 2003. Through revisions made to the Florida Statutes in 2008, the Legislature found that flow through outfalls “wastes valuable water supplies that should be reclaimed for beneficial purposes to meet public and natural systems demands”. As a result, Chapters 2008-232 and 2013-31, herein termed the Outfall Rule Change, required the City of Hollywood (City) to begin a process to largely eliminate use of the SRWWTP outfall by 2025. As part of this legislation, the City is also required to meet advanced wastewater treatment (AWT) requirements for the outfall discharge, implement 20.4 mgd of additional reuse “on an annual basis” as established on the calculated average base year flow rate (from 2003-2007) of the SRWWTP outfall discharge, and perform various reporting activities on the compliance approach. In accordance with Section 403.086(9f) of the Florida Statutes, this Ocean Outfall Compliance Report Update (Update) supplements the previous *City of Hollywood, Florida, Southern Regional Wastewater Treatment Plant Ocean Outfall Compliance Report, December 2009* and summarizes the City's efforts to date for compliance with the Outfall Rule Change.

2.0 AWT and Management Requirements

2.1 Plan

To comply with cumulative reduction requirements, total nitrogen and total phosphorus loads discharged through the outfall from 2009 through 2025 must be reduced to an amount less than or equal to the cumulative reduction in nitrogen and phosphorus baseline loads if AWT standards were met from 2019 through 2025.

Table 1 summarizes the maximum allowable cumulative total nitrogen and total phosphorus loads to the ocean outfall if the baseline nutrient load is maintained from 2009 through 2018 and then AWT standards are met from 2019 through 2025. Reducing the total cumulative 2009 - 2025 ocean outfall total nitrogen and total phosphorus loads to 21,885,774 lbs and 2,404,628 lbs, respectively, will meet the requirements for providing advanced wastewater treatment and management.

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TABLE 1
 City of Hollywood SRWWTP
 Maximum Allowable Cumulative Nutrient Loading – Years 2009 - 2025

| | Total Nitrogen | Total Phosphorus |
|--|-----------------------|-------------------------|
| Annual Load 2009 – 2018 | 1,932,247 lb/year | 155,019 lb/year |
| Annual Load 2019 – 2025 | 366,187 lb/year | 122,062 lb/year |
| Cumulative Load 2009 - 2018 | 19,322,470 lb | 1,550,190 lb |
| Cumulative Load 2019 - 2025 | 2,563,309 lb | 854,434 lb |
| Allowable Cumulative Load 2009 - 2025 | 21,885,779 lb | 2,404,624 lb |

The City began maximizing use of the two existing deep injection wells for effluent disposal commencing in January 2009 in order to achieve the required nutrient load reduction through the cumulative reduction approach. It is anticipated that the reduced use of the ocean outfall will result in the necessary cumulative reduction in total nitrogen and total phosphorus loads. Since compliance is achievable through this method of nutrient load reduction, the construction of AWT facilities will be avoided.

2.2 Status

As presented in correspondence earlier this year (dated February 28, 2014) in compliance with AO 11-006 DW 06 SED, actual nutrient loadings discharged from 2009 through 2013 amounted to 2,742,255 lbs of total nitrogen and 262,348 lbs of total phosphorus. These loadings represent approximately 13% of the maximum allowable total nitrogen and 12% of the maximum allowable total phosphorus meanwhile approximately 29% of the compliance period has elapsed. Thus it is demonstrated that nutrient loadings are within the loadings allowable under the cumulative reduction approach outlined in 403.086(9b) and the SRWWTP is on track with meeting the advanced wastewater treatment and management requirements of the Outfall Rule Change.

3.0 Effluent Disposal Compliance

3.1 Plan

As presented in the *City of Hollywood, Florida, Southern Regional Wastewater Treatment Plant Ocean Outfall Compliance Report, December 2009*, the City analyzed alternatives for the treatment and disposal of wastewater beyond the year 2025 when discharge of domestic wastewater through the outfall would be prohibited. It was initially determined that a total of six deep injection wells and associated high-level disinfection (HLD) facilities and monitoring wells would be required to accommodate peak hour flows. However, a rule modification embodied in Chapter 2013-31 allows use of the out-

fall for peak flow discharges not to exceed “5 percent of a facility’s baseline flow measured as a 5-year rolling average”. An analysis performed using 5 years of flow data from the period 2006-2010 and assuming the implementation of 20.4 mgd of reuse (also required by the Outfall Rule Change) determined that a total of two additional deep injection wells would be required to accommodate peak hour flows without exceeding 5 percent of the outfall baseline flow of 36.472 mgd.

3.2 Status

Planning for the necessary additional deep injection wells and effluent disposal system modifications are scheduled to begin by October 2019.

4.0 Reuse Compliance

4.1 Plan

The Outfall Rule Change requires that a functioning reuse system with the capacity of 60% of the baseline outfall flow (2003-2007) be operational by December 31, 2025. According to FDEP, the SRWWTP reuse system must provide for an additional 20.4 mgd of reuse. As outlined in the *City of Hollywood, Florida, Outfall Rule Compliance Plan, June 2013*, the City evaluated alternatives for reuse and their associated costs. Based on the preliminary evaluation, an expanded treatment and dual distribution irrigation system was estimated to cost approximately \$1,000,000,000. Floridan Aquifer recharge through direct injection was identified as a potentially more viable method of compliance. However, because local regulatory standards outlined in the Broward County Code are substantially more stringent than those of the State of Florida, the advanced treatment technology required (i.e. MF/RO/UV-AOP) was not only overly costly, it was also accompanied by substantial carbon emissions. In an attempt to reduce both the cost and environmental impacts, the City piloted, at a cost of approximately \$3,000,000, an alternate treatment strategy specific to recharge of the brackish Floridan Aquifer. However, while results from the alternate treatment strategy seem promising for the removal of emerging contaminants, the stringent requirements of the Broward County regulations still leave it economically infeasible to remove or significantly lower the levels of other regulated parameters.

Therefore, the City formulated a revised compliance initiative that integrates reuse into other existing water supplies, future anticipated need, and other circumstances that are unique to the City. This initiative was based on the following limiting conditions with respect to expanding reuse:

1. The City’s coastal collection system is located within a low-lying area with a high brackish groundwater elevation that results in over 90% of the collection infrastructure being perpetually submerged. This creates tidally influenced surcharge

conditions that elevate influent chloride levels, rendering the combined effluent unsuitable for conventional reuse applications.

2. The 20.4 mgd reuse requirement, estimated under current interpretation of the baseline flow, exceeds the annual average potable water consumed within the City of Hollywood. Consequently, if 100% of existing water use in Hollywood was replaced with reclaimed water, sufficient demand would not exist to meet the requirement of the Outfall Rule Change with the exclusive use of reuse water.
3. When adjustments are made for wholesale water supplied to other utilities (forecast to be approximately 7 mgd in 2025) and the fact that irrigation is typically approximately 50% of residential demand, the estimated maximum irrigation demand within the City that is theoretically available to be replaced by reclaimed water is an estimated 9.1 mgd, in 2025.
4. The City has made significant investments in other alternative water supplies (AWS). Existing permitted traditional and alternative water supplies established in conformance to the Water Availability Rule (promulgated in 2007) provide adequate capacity to support forecasted water supply needs beyond the year 2030.
5. Aggressive conservation measures implemented since passage of the Outfall statute have successfully decreased water demand and thereby reduced opportunities for reclaimed water to further offset surficial water supply withdrawals.

4.2 Status

Based on the above considerations, the City is currently formulating a more feasible strategy for compliance with the reuse portion of the statute which may involve the following:

1. Maximize utilization of the existing 4 mgd SRWWTP reclaimed water treatment capacity (target an additional 0.5 to 1.0 mgd).
2. Virtual reuse arrangement with a western community in Broward (target 1 to 2 mgd).
3. Recognizing the fact that conservation measures deliver equivalent benefits as reuse, credit water demand reduction achieved through conservation measures, implemented since passage of the Outfall Rule Change, across all outfall Large Users to provide an equivalent reuse benefit on a 1:1 basis (combined credit for all Large Users to be determined, estimated to be 3 mgd for Hollywood).
4. Credit the City's 8 mgd Floridan Aquifer supply and reverse osmosis treatment capacity as providing equivalent reuse benefit on a 1:1 basis.
5. Given the limited need for reclaimed water by the year 2025, allocate 30% of required reuse capacity to backup disposal classification (subject to filtration, disinfection and DIW disposal) as allowed under F.S.403.086(7) and subject to future use only as need emerges and where feasible relative to other AWS options (estimated backup disposal capacity is up to 6 mgd).

6. Exclude brackish groundwater not derived from a useful source of water supply, which results from tidal surcharging of the collection system, where its impact is determined to impair effluent quality so as to limit conventional reuse and produce continuous surcharge conditions that increase base condition flow beyond a level that can be feasibly utilized by reuse applications. Excluding brackish groundwater influence from the base condition flow would reduce the reuse requirement by an estimated 4.7 to 7.3 mgd.

Pertinent documentation and meetings with the FDEP will be forthcoming.

5.0 Reporting

Implementation of the Outfall Rule Change requires detailed plans and periodic updates to be developed and submitted by each outfall utility. To date, all required documentation has been timely submitted as presented in Table 2:

TABLE 2
City of Hollywood SRWWTP
Outfall Rule Change Document History

| Document | Submittal Date | Rule Reference |
|--------------------------|----------------|----------------|
| Compliance Report | December 2009 | 403.086(9f) FS |
| Detailed Compliance Plan | June 2013 | 403.086(9e) FS |
| Compliance Report Update | December 2014 | 403.086(9f) FS |

6.0 Compliance Schedule

The City of Hollywood remains on track to meet the compliance schedule for the Outfall Rule Change.



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