Florida Ocean Outfall Legislation:
What it Means for Utilities and What They Are Doing to Comply

May 1, 2015

Monique Durand, PE

FIPA Spring Workshop
Outline

- Background
- Regulatory overview
- Implementation of compliance strategies for existing ocean outfalls:
  - Advanced wastewater treatment requirements
  - Reuse requirements
  - Eliminate discharge through outfall
- Future Considerations
What Are Open Ocean Outfalls?

- Discharge of treated wastewater (secondary effluent)
- Historically pretreatment programs limited by marine Surface Water Quality Standards
Location of Existing Ocean Outfalls in Florida

- SCRWTD WWTP (24 mgd)
  Outfall: 30-inch, 24 mgd

- Boca Raton WWTP (17.5 mgd)
  Outfall: 36-inch, 22 mgd

- BCOES NRWWTP (95 mgd)
  Outfall: 54-inch, 66 mgd

- Hollywood SRWWTP (55.5 mgd)
  Outfall: 60-inch, 42 mgd

- Miami-Dade WASD
  NDWWTP (120 MGD)
  Outfall: 90-inch, 112 mgd

- Miami-Dade WASD
  CDWWTP (143 mgd)
  Outfall: 120-inch, 143 mgd
Regulatory Overview – Outfall Rule

- Florida Statutes Chapters 2008-232 and 2013-31
- Effective July 1, 2008
- Amended in 2013
- Discharges through ocean outfalls determined (by Legislature) to:
  - “Waste valuable water supplies that can be used for beneficial purposes to meet public and natural system demands”
  - “Compromise coastal environment, quality of life and local economies that depend on those resources”
Regulatory Overview – Outfall Rule

- Prohibits construction / expansion of ocean outfalls
- Mandated nutrient reduction
- Mandated reuse
- Prohibited outfall discharge after, 2025
- Included reporting requirements
Rule Implementation

- Existing outfalls capped at capacity as of July 1, 2008
- FDEP established baseline and target nutrient loadings for each utility discharging to an outfall
  - Monitoring data from 2003 to 2007
- FDEP established “baseline flow” for each utility discharging to an outfall
  - Monitoring data from 2003 to 2007 of flows through the outfall
Nutrient Reduction Alternatives

- **Option 1** – Provide AWT – **December 31, 2018**
- **Option 2** – Achieve reduction in outfall baseline TN and TP loadings equivalent to AWT requirements
- **Option 3** – Achieve reduction in cumulative TN and TP loadings from 2009 - 2025 equivalent to AWT levels between 2019 – 2025
- **Option 4** - Install fully operational 100% reuse system
  - Wet weather discharges through ocean outfall after 2018 or 2025 are not restricted in terms of nutrient concentration or load
Reuse Compliance

- Functional reuse system fully operational by December 31, 2025
- ≥ 60% of baseline outfall flow converted to reuse
- Environmentally, economically, and technically feasible
- Irrigation of public access areas, residential properties or agricultural crops; aquifer recharge; groundwater recharge; industrial cooling
- Applies to all utilities discharging to an outfall regardless of outfall ownership
- Allows virtual reuse agreement between utilities - transfer of reuse credit
- Challenges associated with meeting the reuse requirements in largely built out municipalities
Effluent Disposal Compliance

- Outfall discharge prohibited after December 31, 2025 except as backup discharge for functioning reuse system
- Wet weather periods of reduced reclaimed water demand
- Required to meet AWT standards
Reporting Requirements

- Compliance Status Report
  - 2009, 2014, 2019 and 2024
- Detailed Compliance Plan Report
  - 2013 and 2016
South Central Regional Wastewater Treatment and Disposal Board (SCRWTDB)

- Meeting AWT requirements through reduction in outfall baseline TN and TP loadings – **Option 2**
  - Currently achieving AWT reductions
- 60 percent reuse goal = 7.7 mgd
  - Delray Beach = 3.923 mgd
  - Boynton Beach = 4.949 mgd
  - Combined 1.869 mgd provided between 2007 and 2013
  - Costs ~ $20.06 million to construct new reuse distribution facilities
- Meeting all report requirements
South Central Regional Wastewater Treatment and Disposal Board (SCRWTDB)

- Completely eliminated discharge through outfall
  - Limited use of Boynton/Delray ocean outfall since 2009
  - Deep injection wells installed to handle entire plant flow
  - Irrigation reuse
City of Boca Raton

- Meeting AWT requirements
- Installed 100% 17.5 mgd reuse system – **Option 4**
- Exceeds total amount of reuse required – 11.8 mgd
- Between 2006 and 2013 spent $12.4 million to expand reuse system
- Outfall is backup to 100% reuse system during periods of low demand
- Meeting all reporting requirements

Glade’s Road Utility Services Complex
Meeting AWT requirements through reduction in cumulative TN and TP outfall loadings – **Option 3**

- 60 percent reuse goal = 22.4 mgd
  - Pompano Beach; Large Users in Broward County; Large Users in Palm Beach County
  - Ongoing negotiations with Palm Beach County for 15 mgd reuse flow
  - Broward County costs = $77 million
  - Palm Beach County costs = $40 million
Plans to completely eliminate discharge through ocean outfall:

- Divert all flow to deep injection wells
- Handle entire NRWWTP flow, expect for peak discharge
- Six deep injection wells installed
- Two additional injection wells under construction
- Booster pumps for all eight injection wells under construction
- Estimated construction costs = $30 million

Meeting all reporting requirements
City of Hollywood

- Meeting AWT requirements through reduction in cumulative TN and TP outfall loadings – **Option 3**
  - Maximize use of existing deep injection wells
  - Plan incorporated into daily operating strategy – January 1, 2009
  - On track with meeting AWT requirements
City of Hollywood

- 60 percent reuse goal = 20.4 mgd
- Alternatives evaluated
  - Environmental impacts
  - Economically infeasible

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Construction Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floridan Aquifer recharge through direct injection</td>
<td>$182 - $282 million</td>
</tr>
<tr>
<td>Biscayne Aquifer recharge through canal discharge</td>
<td>$676 - $833 million</td>
</tr>
<tr>
<td>Biscayne Aquifer recharge through direct injection</td>
<td>$715 - $872</td>
</tr>
<tr>
<td>Public access reclaimed water system expansion</td>
<td>$933 million</td>
</tr>
</tbody>
</table>
City of Hollywood

- Revised multi-pronged strategy to meet 60 percent reuse requirement
  - Maximize existing 4 mgd SRWWTP reclaimed water treatment capacity
  - Virtual reuse
  - Reuse credit through conservation
  - Reuse credit for City’s Floridan Aquifer supply and RO treatment
  - Reallocation of reuse capacity to backup disposal classification
  - Exclude brackish groundwater from baseline flow calculation
Plan to eliminate discharge through ocean outfall:

- Diverting all flow to deep injection wells
- Expand deep injection well capacity to handle existing plant capacity of 55.5 mgd
- Estimated ocean outfall closure costs totaling $93.4 million

Meeting all reporting requirements
Meeting AWT requirements through reduction in outfall baseline TN and TP loadings – **Option 2**

Commencing 2009 effluent disposed through City’s deep injection well

- 1.7 mgd to supply Hollywood reuse program

Minimal nutrient loadings to Hollywood ocean outfall
60 percent reuse goal = 0.9 mgd
- Continue to supply City of Hollywood reuse system
- For additional reuse credit nine alternatives evaluated
- Partnering with City of Sunrise for 1 mgd reuse credit top ranked alternative
- Ongoing discussions with other utilities
Meeting AWT requirements through reduction in cumulative TN and TP outfall loadings – **Option 3**

- Divert flows to newly constructed 3.5 mgd Water Reclamation Facility
  - Two deep injection wells

---

Water Reclamation Facility (AECOM)
60 percent reuse goal = 1.1 mgd
  - New 2.0 mgd public access reuse system

Alternatives under review to completely eliminate discharge through Hollywood’s ocean outfall
  - Continue to supplement Hollywood reuse program
  - Construct new deep injection well at existing wastewater treatment facility
  - Evaluate reuse feasibility at existing Wastewater Treatment Facility
Meeting AWT requirements through reduction in cumulative TN and TP outfall loadings – **Option 3**

- Maximize existing deep injection well at North District plant
- Construct new pumping station and deep injection well system at Central District plant
  - Disposal of sludge dewatering centrifuge concentrate
60 percent reuse goal = 117.5 mgd

- Construct pipeline from South District plant to supply 90 mgd reclaimed water to FPL Turkey Point facility
  - Estimated cost $95 million
- Existing treatment plant upgrades
- Construct 9.2 mgd injection well systems at Central District, South District and West District to recharge Floridan Aquifer
  - Estimated cost $77 million
Plan to eliminate discharge through ocean outfall through combined reuse and deep injection well disposal systems:

- Construct new West District plant with new deep injection wells and aquifer recharge reuse system
- Construct new injection wells at North District plant
- Construct new deep injection well system and aquifer recharge system at Central District plant
- Increase treatment capacity of existing South District plant; new deep injection well system and aquifer recharge system

Estimated costs for ocean outfall compliance = 3.32 billion
Future Considerations

- FDEP and SFWMD to continue working with City of Hollywood and Miami-Dade County
  - Challenges with meeting 60 percent reuse requirement
  - Technically feasible options to be identified before December 31, 2015.
- Potential to review and adjust pretreatment program local limits for pollutants limited by Surface Water Quality standards
Monique Durand, PE
Senior Principal Engineer
Hazen and Sawyer, Hollywood Office
(954) 987-0066
mdurand@hazenandsawyer.com