

# SUSTAINABLETAMPA

*A look at what the City of Tampa is doing to become a truly sustainable city*

## SEA LEVEL RISE AND RESILIENCY

The National Oceanic and Atmospheric Administration (NOAA) estimates that sea level rise will impact the Tampa Bay region in the next 25 years and provided four global mean sea level rise (SLR) scenarios. The Tampa Bay Climate Science Advisory Panel (CSAP), convened in 2015, studied these scenarios and concluded that the Tampa Bay region might experience sea level rise between 0.5 to 2.5 feet by 2050.



*Tampa Mayor  
Jane Castor*

*"We are aggressively pursuing solutions that will protect our citizens, create a more resilient city, and establish a more sustainable future to transform Tampa's tomorrow."*

THE CITY OF TAMPA HAS TAKEN STEPS TO MITIGATE AGAINST SEA LEVEL RISE IN SEVERAL AREAS OF INFRASTRUCTURE RESILIENCY:



Water

[VIEW PROGRESS](#) →



Wastewater

[VIEW PROGRESS](#) →



Stormwater

[VIEW PROGRESS](#) →

## Peril of Flood

In 2015 the Florida State Legislature passed the Peril of Flood Act. This legislation placed new requirements for local governments to address flooding, including flooding from sea level rise. As a result of that legislature the City, in January of 2017, amended 19 separate policies in our Comprehensive Plan Coastal Management (CM) Section, that speak directly to Sea Level Rise and infrastructure resiliency.



### CM Objective 1.3: Create a more disaster resistant community by mitigating the potential impacts associated with hurricanes and severe weather events

- **CM Policy 1.3.1:** Through implementation of all Land Development Regulations, continue to ensure that all new buildings or structures meet, or exceed, the flood-resistant construction requirements of the Florida Building Code and federal flood plain management regulations including flood proofing and storm surge protection.
- **CM Policy 1.3.2:** Continue its participation in the National Flood Insurance Program in conformance with Public Law 93-288 and the Community Rating System Program.
- **CM Policy 1.3.3:** Give priority to acquiring land in the Coastal High Hazard Area to increase open space, recreation opportunities, public access, and to reduce the risk of property damage from potential disasters.
- **CM Policy 1.3.4:** Any structure within the 100-Year Floodplain that is damaged in excess of the limits established by FEMA's definition of substantial damage (50% rule) shall be rebuilt to meet or exceed all current building code requirements, including those enacted since the construction of the structure.
- **CM Policy 1.3.5:** For new development, underground utilities, such as telephone, television, cable and electrical systems, are required except in those circumstances where the economics, physical constraints, and/ or the surrounding area make the provision of underground utilities impractical.
- **CM Policy 1.3.6:** Evaluate recommendations contained in Interagency Hazard Mitigation Reports and modify, where appropriate, the Future Land Use Map, land development regulations and/or building codes so that future development will better withstand natural disasters.
- **CM Policy 1.3.7:** Develop strategies to identify and address issues related to climate adaptation in cooperation with the EPC, the Planning Commission, and other agencies.
- **CM Policy 1.3.8:** In order to reduce flood risk from, or associated with, high-tide events, storm surge, flash floods, storm water runoff and the impacts related to sea-level rise, continue to promote the use of the development and redevelopment principles, strategies and engineering solutions contained in the Florida Building Code and the Land Development Regulations.
- **CM Policy 1.3.9:** Continue to evaluate and implement measures where feasible to flood proof coastal pumping stations and electrical facilities in vulnerable areas.
- **CM Policy 1.3.10:** Continue to line waste water pipes to mitigate infiltration and inflow, particularly in vulnerable areas.
- **CM Policy 1.3.11:** Mitigate increased inflow into the storm water system in vulnerable areas by installing flap gates, sleeve valves, and/or duckbill valves as appropriate.
- **CM Policy 1.3.12:** Continue to evaluate the need for new pumping stations in vulnerable areas.
- **CM Policy 1.3.13:** Monitor and mitigate increase in chlorides in wastewater effluent consistent with the City's wastewater discharge permit as necessary.
- **CM Policy 1.3.14:** Continue to ensure development and redevelopment utilize the best available data on minimum floor elevation, including FEMA flood zones.
- **CM Policy 1.3.15:** Utilize parks for episodic flood water attenuation in vulnerable areas.
- **CM Policy 1.3.16:** Plan for the retrofitting and/or relocation of public uses in vulnerable areas.
- **CM Policy 1.3.17:** Continue to inventory road segments at risk in vulnerable areas and develop mitigation plans as appropriate.
- **CM Policy 1.3.18:** New development, redevelopment, and infrastructure in vulnerable areas shall use best practices to address sea level rise.
- **CM Policy 1.3.19:** Maintain and periodically update emergency management plans for critical water and wastewater facilities to address best available data.

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### Vulnerability Assessment for the City of Tampa

- Tampa has already experienced an estimated 7 inches of sea level rise over the last 67 years of records, with the highest observed area flood of 4 feet occurring in 1985. In November of 2016 Tampa conducted the Sea Level Rise Vulnerability Assessment identifying how sea-level rise may impact the City of Tampa utilizing the projections to pinpoint potential areas at risk, as well as population, facilities, and infrastructure that might be affected by sea level rise. Activity by City utility departments, over the past several years prior to this assessment, has been substantial in the areas of Water, Wastewater and Transportation and Storm Water.



# WATER

Sea level rise does not impact Tampa's primary source of drinking water – the Hillsborough River. Saltwater intrusion cannot go beyond the Hillsborough River Dam which is what creates the Hillsborough River Reservoir. In this regard Tampa has a strong resiliency to protect our most precious resource. The City continues to ensure a superior sustainable supply of drinking water for residents by developing innovative projects and master plans for its facilities, continuing its efforts to protect its water supply source, and using reclaimed water.



## David L Tippin Water Treatment Facility

The Hillsborough River is the City's primary source of potable water supply. The Hillsborough River Reservoir, the stretch of river between the dam and the 40th Street Bridge, impounds more than 1 billion gallons of water. The adjacent David L. Tippin Water Treatment Facility, one of the largest surface water treatment facilities in Florida, has been treating the river water supply since 1926.



## David L Tippin Water Treatment Facility Master Plan

The Water Department is nearing completion of its master plan for the David L. Tippin Water Treatment Facility for a 15-year planning horizon that is directed at optimizing treatment, improving treated water quality, reducing operating costs, and enhancing the reliability of treatment and operations.

## Potable Water System Master Plan

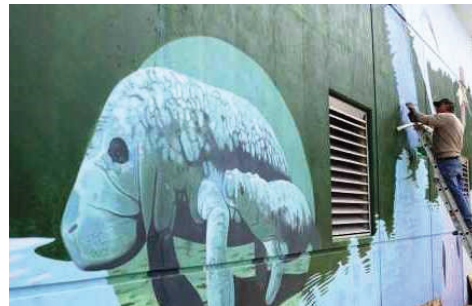
The Water Department continues to work on its 5-year update of the Potable Water System Master Plan. The main objective of the Potable Water System Master Plan is to provide a reliable and redundant potable water system with adequate capacity and accommodate future growth within the City.

## Full Redundancy

The Tampa Water Department is the only utility that has full redundancy with regard to its water supply. We self-supply up 82 mgd from the Hillsborough River. During drought conditions when river flow is low we buy from Tampa Bay Water (TBW). The Lower Hillsborough River and Sulphur Springs were considered priority waters. In 2007, SWFWMD adopted a minimum flow for these water bodies and a Recovery Strategy. The Recovery Strategy identified potential projects designed to achieve the minimum flow.

## Minimum Flow Requirements

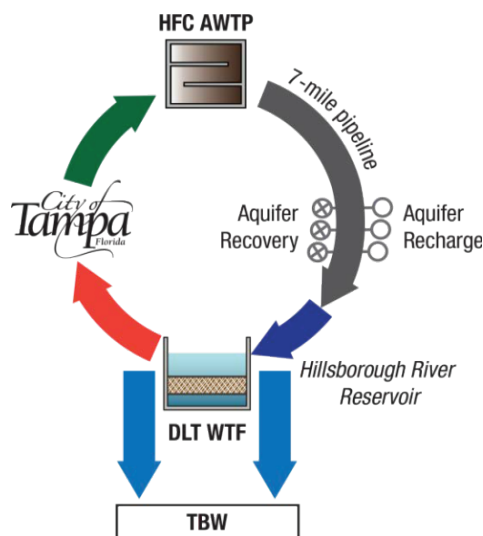
At this time, the City and SWFWMD have completed or are proceeding with five projects to meet minimum flow requirements resulting in ameliorating salt water incursions: Sulphur Springs Upper Weir and Pumping Station, Sulphur Springs Lower Weir, Blue Sink Pumping Station and Transmission Main, Tampa Bypass Canal Diversion Facilities, Morris Bridge Sink Pumping Station and Transmission Main. The five projects will be operated in coordination to provide for a freshwater zone downstream of the dam which creates a mini-estuary and spawning ground for Tampa Bay. This freshwater zone is 24/365 regardless of sea level rise.



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## Tampa Augmentation Project (TAP)

The TAP will cost over \$320,000,000.00 and serve over 600,000 in population. Under the Mayor's direction, the Water Department kicked off the Tampa Augmentation Project to evaluate the cost and feasibility of increased use of reclaimed water from the Howard F. Curren Advanced Wastewater Treatment Plant (HFCAWTP) to potentially augment the potable water supplies available for the region. This project will assure Conservation and quality of the City's water resources. If determined to be feasible, this project will enable continuous use of the reclaimed water during both dry and wet seasons, drought-proof our water supply, and reduce nitrogen loading to the bay. It can also be an additional option for meeting the Minimum Flow requirements for the Lower Hillsborough River.



## Infrastructure Upgrades

The Tampa Water Department continues with its Capital Improvement Program targeting aging infrastructure replacement. The replacement of old water mains reduce the volume of finished drinking water lost to leakage in the distribution system while realizing improvements in system reliability.



Water



Wastewater



Stormwater

# WASTEWATER

The City of Tampa's Wastewater Department receives and treats wastewater collected from the Tampa area and surrounding suburbs. On an average day, more than 50 million gallons of raw sewage flow into the Howard F. Curren Advanced Wastewater Treatment Plant (AWTP). This raw sewage is treated to an advanced level that meets or exceeds federal regulations, including National Pollutant Discharge Elimination System standards (NPDES). Historically, the AWTP's discharge effluent levels have remained well below established requirements.



Water



Wastewater



Stormwater

## Pump Station Rehabilitations, Upgrades and Infrastructure Improvements

- Wastewater Pump Station Rehabilitations and Upgrades has been ongoing since 2013. Pumping equipment, electrical improvements, and valve replacements were made to 26 pump stations to increase efficiency, ensure reliability, and provide long term protection of system assets. Newer pumps and electrical control systems reduce overall energy requirements. Currently, the city has 230 stations.
- The City is investing in its Coastal Pumping Stations and will construct all controls at elevation 11.0' and above to mitigate the impacts of sea level rise.
- To reduce infiltration of groundwater and inflow of storm water (I & I) into the system, we have implemented an extensive pipeline inversion liner program. Since FY13 we have lined approximately 10 miles of pipeline per year and will continue with this into the foreseeable future to help ensure a sustainable waste water treatment process.
- Tampa's largest pumping station is up and running. Tampa crews just completed a \$7 million upgrade to the city's largest and oldest pumping station. This upgrade will improve energy efficiency and environmental quality by avoiding sewage back-ups. Currently, the city has 230 stations. Work started in August of 2015 after record rainfalls. "We are investing in our wastewater infrastructure, as we should, because it causes health and safety concerns if you have overflows," Brad Baird. Tampa's largest pumping station is up and running.

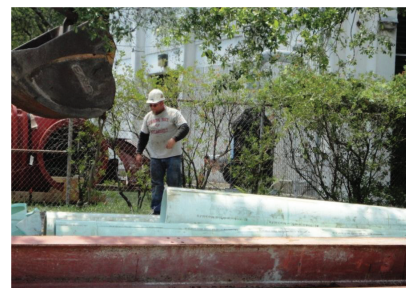


## Wastewater Electrical Co-Generation Program

- The Wastewater Department continues its program of electrical co-generation from the combustion of digester methane gas at its treatment plant. Currently the methane generators reached the end of their useful life. New generators are included in the City's Waste Water 20 year master plan.

## Wastewater Treatment Plant Improvements

- The Wastewater Department has completed projects for the rehabilitation of the High Purity Oxygen Generator Facility, De-nitrification Filter Media Rehabilitation, Final Sedimentation Tank Rehabilitation, and currently conducting a treatment plant master plant study to determine improvements to increase reliability and operating efficiency. The Wastewater Department completed the installation of catalytic converters on diesel generators at the standby power facility to reduce the emission of greenhouse gases.





# STORMWATER

Stormwater Services falls under the umbrella of the City of Tampa Transportation and Stormwater Services (TSS) Department. Stormwater Services encompass the planning, design, construction, operation, and maintenance of Tampa's Stormwater system. Activities are geared towards the prevention of flooding and reduction of pollution. TSS has been implementing methodologies to stem tidal influence onto City right-of-way and private property for over 15 years.



Water



Wastewater



Stormwater

## Reduction of Impervious Area

- Current City of Tampa Technical standards promote reduction of impervious surface by reducing proposed pond requirement size and providing a mitigation credit on the Stormwater fee for commercial development.
- Other opportunities such as tiered credit reduction in Stormwater fee if development meets a higher Stormwater design standard is being looked at by the administration.

## Green Infrastructure - Stormwater

Green infrastructure is a resilient approach to managing wet weather impacts and provides many community benefits. This approach to water management protects, restores, and mimics the natural water cycle. Types of green infrastructure include but are not limited to bioinfiltration, permeable paving, subsurface retention systems, storm water harvesting and reuse systems, and green roofs.



## Bioswales

The Facilities Management Division has incorporated bioswales into the storm water retention system currently being used in the redesign of the major streets in Drew Park to provide runoff quality enhancement. Bioswales and other runoff water quality enhancement systems are more and more being used throughout Tampa by the City as well as private developers alike.



## Projects for Stormwater and Flooding Improvement

The City of Tampa's storm water fee has funneled \$251 million toward drainage improvements throughout the City. Here's a breakdown of improvements since Oct. 2016:

- Outfalls inspected and maintained: 463
- Outfall tonnage removed (tons): 606.2
- Stormwater pipe maintained (miles): 246.1
- Stormwater inlets maintained: 19,398
- Stormwater pipe & inlet tonnage removed (tons): 1,986
- Ditches maintained (miles): 52.2
- Ditch material tonnage removed (tons): 42,908
- Street sweeping maintained (curb miles): 49,135
- Street sweeping tonnage removed (tons): 10,216
- Pond trash removed (tons): 1,500.9



Water



Wastewater



Stormwater

## Minimize the Effects of Sea Level Rise

- The Stormwater Engineering division has been implementing the usage of valves at certain locations within the City limits, and continues to look for opportunities for locations that make an improvement to minimize Sea Level Rise into the neighborhoods.
- The Stormwater Engineering division pursues the construction of Pump Stations at locations to provide relief from tidal influences.
- We have installed flap gates, sleeve valves and duck bills at different locations to minimize saltwater intrusion onto the roadway during high tides, and continue to explore opportunities to install more of these valves around the City where feasible.
- Pump stations have been constructed in low lying areas and have had flooding due to high tides and/or extreme rain events.
- Opportunities for construction of additional pump stations and upgrading existing pump stations are being considered.

The Stormwater Engineering Division is currently working with a consultant to reduce our CRS rating, thus providing a reduction in flood insurance for citizens of Tampa.

The Stormwater Engineering Division Environmental section provides training to all Departments in managing pollutants loadings into the SW conveyance system.

The Stormwater Engineering Division aggressively pursues property acquisitions specifically in areas of closed basins. This allows for the reduction of pollutant loading to the River and bay.

The Stormwater Engineering Division also partners and collaborates with other agencies such as Tampa Bay Estuary Program, Keep Tampa Bay Beautiful, and Hillsborough County Environmental Protection Commission to enhance water quality and improve the general ecosystem of the bay area.

The City of Tampa implemented the fertilizer ban for the months of June to November in order to minimize nitrogen and phosphorus deposition in the bay, to further enhance the ecosystem of the bay area.