

City of Satellite Beach

BEACHCASTER

YOUR OFFICIAL CITY NEWSLETTER • SPECIAL EDITION • OCTOBER 2014



Stormwater Management

PROTECTING OUR HOMES—SAVING OUR LAGOON (PART 2)

In June 1997, our City published its first special-edition *Beachcaster* on the challenges we face with stormwater management. That issue described in detail the extensive problems with street flooding and Indian River Lagoon pollution, proposed solutions, and projected costs. Since then, with the help of millions of dollars in grant funds, we have made notable improvements in flood control and stormwater quality. However, much more needs to be done to [1] prevent street flooding during customary storm events and [2] meet State-mandated requirements to improve water-quality in the Indian River Lagoon.

City staff recently updated the City Council on the current status of our stormwater infrastructure and water-quality needs. Discussed were drainage system infrastructure, equipment, needs (current and future), costs, funding (current and future), and water-quality mandates. Focusing on the system's dual challenges of flood prevention for our streets and homes, and water-quality improvements for our Lagoon, this *Beachcaster* summarizes the issues and Council's approach to addressing them.



This summer's heavy rains have added a sense of urgency to flooding on City streets. Locations pictured above are Jackson Avenue, the DRS Community Center parking lot, and Glenwood Avenue at Kale Street.

STREET FLOODING

How did we get here?

◆ Most of our City's stormwater drainage system was built in the 1960s and '70s. At that time, there was still a large amount of open land which allowed rainwater to percolate naturally into the sandy soil and reduced the volume of water being moved to the Indian River Lagoon. As Satellite Beach grew, so did the amount of impervious area and sod, preventing or hindering natural percolation.

◆ By the 1980s, much of the system was unable to handle the volume of water being conveyed during moderate to heavy rainfalls. Flooding in the courts off of Roosevelt Avenue blocked vehicular traffic for several days while children enjoyed boating in the street. Jackson Avenue, DeSoto Parkway, and other areas of the City had similarly-disruptive flooding.

◆ In the early 1990s, the City undertook the Roosevelt Avenue drainage project to alleviate flooding in the courts. With grant assistance from the St. Johns Water Management District, larger pipes were installed. This highly-successful project demonstrated the potential to alleviate flooding elsewhere.

◆ In 2001, the City Engineer developed a Stormwater Master Plan which identified the flooding areas and included a prioritized list of projects to address the problems. Estimated total cost at that time was \$11.5 million (\$16 million in 2014 dollars).

What's the problem?

◆ **Stormwater System Components.** Our stormwater drainage system consists of:

- Drainage Pipe:
 - 17.3 miles (91,158 feet) of corrugated steel or aluminum drainage pipe (including 7,240 feet more than 45 years old)
- Other Components:
 - 710 drainage inlets
 - ~50 miles of roadside gutters
 - 10 baffle boxes
 - 3 retention ponds

◆ **Drainage Pipe.** Since 2000, approximately 30% of our drainage pipe has been replaced. (Total cost was \$5.9 million, funded by \$3.6 million in federal grants administered by the State and \$2.3 million (39%) funded by bank loans to provide the required matching funds from the City.) This leaves 70% of the pipe still to be addressed. Many of these pipes are failing or so dilapidated and full of sand, roots, and debris that they no longer convey half of their initial water capacity. In addition, early subdivision developers installed portions of the stormwater system through the rear and side yards of private homes, making those pipes inaccessible for major repairs without harm to homeowners' landscaping. Approximately 10,400 feet of pipe need to be replaced now, while an additional 7,500 feet need to be slip-lined (flexible plastic lining inserted into the pipe, inflated, and cured to make the pipe hard and strong) to fix or avoid problems on private property. In all, about 20% (17,900 feet or almost 3.4 miles) of our in-ground pipes need attention now.

◆ **Other Components.** A good drainage system requires all components to be well-maintained and replaced as needed. Some may need to be upgraded to work under changed conditions, such as impervious-surface increases seen throughout the City. In addition, federal and State mandates sometimes require modified or additional components. During the economic downturn over the past few years, the City has lacked necessary funds to properly maintain its stormwater system on a regular basis. As a result, repairs and replacements have been made only when problems developed that could not be ignored. This is not sustainable.

Without sufficient funding, the system will become increasingly inadequate to prevent flooding, and the City will be unable to meet regulatory operation and maintenance (O&M) and water-quality mandates. Fortunately, the City obtained grant funds to purchase a trailer-mounted pump to clear flooded streets and help with repairs, as well as a **Vac-truck** (see photo) to remove sediment and debris from the system. Unfortunately, grant funding is not available for either regular operation (e.g., clearing the system) or maintenance (e.g., filling sinkholes caused by minor pipe failure).



What will it cost?

Operating and maintaining the City's stormwater system is expensive.

- **Short term**, the City will focus on the following immediate problems (total projected cost, not including inflation, of \$2.3 million):
 - \$1.5 million to replace failing stormwater pipes,
 - \$750,000 to slip-line inaccessible pipe, and
 - \$80,000 to \$260,000 to repair drainage inlets.
- **Continuing and long-term** costs will include:
 - \$140,000 needed each year for staff and supplies to perform routine O&M on the system.
 - \$300,000 (\$20,000 per year) to replace the pump and Vac-truck within 15 years.
 - \$23 million (\$200,000 to \$300,000 per year) to repair (e.g., slip-line) or replace the pipes and structures in the ground over the next 75 years to 100 years.

The total of these costs would require approximately \$360,000 to \$460,000 annually to keep up with O&M, repair, and replacement of the City's stormwater system.

STATE-MANDATED WATER-QUALITY IMPROVEMENTS

How did we get here?

The City has a Municipal Phase II Permit (referred to as an "NPDES permit") which is regulated by the **US Environmental Protection Agency**. This permit is required for us to discharge stormwater runoff into the Indian River Lagoon. Administered by the **Florida Department of Environmental Protection (FDEP)**, the following two regulatory programs impose mandatory requirements which must be satisfied to retain the permit.

1. **NPDES**. With a focus on operations and maintenance, the **National Pollution Discharge Elimination System** mandates annual inspections and maintenance of existing stormwater systems to prevent pollution from illicit discharge or illegal dumping. It also requires documented maintenance of installed **Best Management Practices** (e.g., baffle boxes, exfiltration systems, retention ponds, swales, and street sweeping) intended to reduce nutrients and other pollutants.
2. **BMAP**. With a focus on water-quality, the **Basin Management Action Plan** promulgated by FDEP mandates reductions in Total Maximum Daily Loads for nutrients (nitrogen and phosphorus) carried by stormwater into the Lagoon. Every permit holder is assigned reduction allocations which must be met within 15 years of BMAP implementation, divided into three five-year phases. Only 15% of the allocations are required to be met during the first five-year phase; the remaining 85% must be accomplished over the following 10 years.

What's the problem?

Mandates require the City to reduce its nutrient load by 63% (10,486 pounds) for nitrogen and 60% (1,898 pounds) for phosphorous each year. The \$5.9 million the City has spent on projects to improve flood control and stormwater quality since 2000 has allowed the City to meet its first-phase nutrient-reduction mandates (through 2018). However, this represents only the easiest and least-costly 15% of the mandated nutrient reductions, leaving the more-challenging 85% to be addressed in the near future.

What will it cost?

Based on the average cost of completed projects, the best conservative estimate to meet all nutrient-reduction allocations is \$34 million. This would total more than \$6,800 per City taxpayer, or \$455 per year per taxpayer over the 15-year BMAP. This would fund only capital expenses without addressing the O&M, repair, or replacement of any part of the system. It also would not include muck removal currently being suggested as a way to help restore the Lagoon; this would cost at least an additional \$2.7 million for the City's canals. Obviously, such exorbitant projects are not reasonable, so mandates must be adjusted to meet fiscal reality.

HOW DO WE FIX IT?

◆ In 1997, to begin funding urgently-needed drainage improvements, the City initiated a stormwater utility fee assessed at \$36 per year for single-family residences (referred to as \$36 per Equivalent Residential Unit (ERU)). Multi-family residences were assessed half that amount, and commercial property owners were assessed based on the amount of impervious surface on the property. Over time, two factors caused the City to increase this fee: [1] escalating costs to operate, maintain, repair, and replace the aging system and [2] increasingly-expensive federal and State mandates to reduce stormwater pollutants carried to the Lagoon. As a result, the fee increased to \$42 in 2006, \$54 in 2008, and \$65 in 2009.

◆ Now, facing an accumulation of problems exacerbated by insufficient funding for a changing stormwater environment, the City must generate additional funds to correct problems which can no longer be postponed or ignored. Consequently, the City Council has increased the assessment to \$104 per ERU starting in fiscal year 2014/15 (it will appear on next year's property tax bill). This is an increase of \$39 per year or \$3.25 per month. Multi-family residences will pay half that amount, and commercial properties will pay \$104 for each 3,000 square feet of impervious surface. (For example, a commercial property with approximately 17,000 square feet of impervious surface (a common size for a gas station) will pay \$560.14, an increase of \$210.05 per year or \$17.50 per month.) This will increase our Stormwater Fund revenue (which can be used only for our stormwater system) to \$520,000 each year for sustainable stormwater management (an increase of \$195,000 over the current \$325,000).

◆ **Covered Costs.** For the next five years, stormwater revenue will fund:

- O&M, repair, and any needed replacement of stormwater pipes and inlets, and
- The five remaining annual loan payments for the previously-mentioned matching funds (\$2.3 million) required for grant-funded stormwater projects.

◆ **Costs Not Covered.** To be addressed after immediate system problems are fixed:

- O&M, repair, and replacement of other system components and equipment, and
- Additional staff needed to implement increasingly-stringent stormwater mandates.

◆ **Rain Check.** Also not funded are future nutrient-reduction mandates and major water-quality or muck-removal projects to help restore the Lagoon. With Brevard County assistance, the City is working with State regulators to address unrealistic mandates before we're required to undertake additional improvement projects four years from now (for the second five-year phase of BMAP mandates).

Creating a Resilient Community

How did we get here?

The design and installation of our stormwater system more than 40 years ago did not account for the impact that full development (impervious surface) and our corrosive salt environment would have on the system over time. Made of materials that have badly deteriorated, pipes were used which are too small to handle today's runoff.

Today we find ourselves in a similar situation facing natural-hazard impacts, some of which may not become obvious for another 40 years. As we repair and replace our stormwater infrastructure, we want to plan with those impacts on our beach, homes, facilities, streets, and tax base in mind.

What's the problem?

Due to our coastal location between the ocean and the lagoon, water is the major environmental threat to our City. Depending upon their location, properties within our City are vulnerable to differing natural hazards. Properties on the low-lying western side are more vulnerable to flooding, while properties on the ocean coastline are vulnerable to erosion. Until now, City planning has not directly addressed our increasing vulnerability to **natural hazards**, including:

- **Storm surge from hurricanes**, which can flood City streets and low-lying western areas;
- **Coastal erosion** from strong currents and surf which can threaten or destroy beachside homes;
- **Rising sea level**, which exacerbates the impacts from major storms and coastal erosion and creates other problems (e.g., raises the water table, which in turn increases the risk of flooding and salt-water intrusion into our ground water);
- **Increasingly-intense rainfall and accompanying winds**, which can cause flooding and power outages.

What can we do?

Because we all benefit from making Satellite Beach a sustainable and **resilient community** (i.e., one which can recover quickly from natural-hazard damage), our City has undertaken a lengthy, **three-pronged process** to determine how to address these challenges.

1. **Gather Information.** In 2009, the City used a \$25,000 EPA grant administered by the Indian River Lagoon National Estuary Program to fund a scientific assessment of the **sea-level-rise threat** to our City. This project provided professional planning assistance and produced an in-depth report (*Assessing Municipal Vulnerability to Predicted Sea Level Rise: City of Satellite Beach, Florida*, published in 2011) which identified at-risk City assets, a projected timeline for anticipated impacts, and possible responses to the threat. The full report can be viewed on our City's website (www.satellitebeachfl.org).
2. **Seek Residents' Input.**
 - a. Since 2009, more than a dozen **public meetings** have been held by our **Comprehensive Planning Advisory Board (CPAB)**, its Sea Level Rise Subcommittee, and our **City Council** where City residents could learn about the issues, ask questions, and provide their input.
 - b. During one of those meetings, Council approved \$15,000 in matching funds for our City to participate with the **East Florida Regional Planning Council (RPC)** in a \$32,000 grant project to seek residents' input on **community resiliency**. These funds cover **two public workshops** (the first held on September 23, the second to be held in the spring of 2015), costs for City and RPC staff involved in this project, out-of-town speakers' lodging expenses, signs and mailing costs to notify all City residents and business owners of the workshops, an **online survey** to be conducted in November/December (the second workshop will seek additional input on the survey results), and a **final report** on residents' input.

- c. The **online survey**, which will be available mid-November following notice mailed to all City addresses, will allow City residents and business owners to provide their input on priorities and strategies. Respondents may take the survey on their own computers, on a computer at City Hall, or on a hard copy they may request from City Hall (773-4407).
- d. Then, our CPAB will conduct **additional public meetings** to prepare new Comprehensive Plan policies based on survey results, and City Council will consider their recommendations in two more public meetings after our residents have had further opportunity for input. Notice of these meetings will be mailed to every City address.

3. Develop Strategies.

- a. The properties in our City **most vulnerable to natural hazards** are located:
 - Along the ocean beach (a FEMA-designated **Special Flood Hazard Area**), and
 - In small areas on our western side (east of South Patrick Drive) that are susceptible to flooding from a Category 1 hurricane (a State-designated **Coastal High Hazard Area (CHHA)**).
- b. Our Comprehensive Plan identifies the CHHA as an **Adaptation Action Area (AAA)**, a State designation intended to help our City prioritize funding for infrastructure needs and plan strategies to adapt to natural-hazard impacts.
- c. **Adaptation planning** can provide a variety of short- and long-term strategies tailored to our needs and resources. Examples could include stormwater system improvements, beach renourishment, strengthening sea walls, installing pumps, elevating roadways, changing building codes, limiting development and expenditures for infrastructure in areas with particularly high risks, and others.
- d. In choosing strategies, residents will consider these questions:
 - What natural hazards concern you?
 - How and when should we respond to them?
 - What City assets should we preserve?

Conclusion

◆ While some have already mischaracterized our efforts to prepare for the impacts of natural hazards (some of which are already evident through recent flooding and extensive beach erosion), the fact is that many federal agencies and state and local governments (large and small) are already engaged in these efforts to manage their assets and protect their communities from damage. To appreciate how extensively the State of Florida is involved in “community resiliency” issues, see www.floridajobs.org/community-planning-and-development/programs/technical-assistance/community-resiliency.

◆ While we cannot stop hurricanes, currents which remove sand from our beach, or changing sea levels, we can take actions to lessen their impacts on our City and preserve our property values and way of life. We still have time to discuss strategies and plan the approach which matches the character and resources of our City. While postponing planning and taking no corrective action at this time are also an option, we must recognize that costs will increase, and time for action will decrease, as we wait.

◆ To address the impacts of natural hazards, our City is implementing a process which encourages **input from our residents** to determine a course of action. As with every major issue facing our City over the years, planning will be based on direction from our residents. In addition to participating in the **upcoming online survey**, public **workshop**, and CPAB and City Council public **meetings**, residents can also:

- **Meet individually** with our City Manager or Public Works Director, and
- **Email comments** at any time to resilient@satellitebeach.org.

◆ This is a challenge we must all meet together. The dialogue has just begun.

This October 2014 Special Edition Beachcaster was prepared by Vice Mayor Lorraine Gott from information provided by City and Regional Planning Council staff and advisors.

**GFWC Satellite Beach Woman's Club &
The City of Satellite Beach Present**

**Parade steps
off at 11AM!**

**Family Fun
For All!**



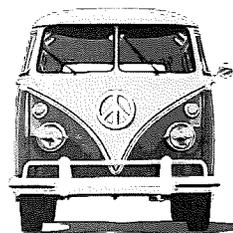
**39th
Annual**

FOUNDERS' DAY

Parade and Craft Show

SATURDAY, NOVEMBER 1, 2014 · 9AM-3PM

**Craft Booths
Festival Food
Kids' Activities**



**Bake Sale
Live Music
Flea Market**

David R. Schechter Community Center
1089 S. Patrick Drive, Satellite Beach 32937
 Call 321.773.6458 for more info. | or visit www.satellitebeachrecreation.org

Satellite Beach City Hall
565 Cassia Boulevard
Satellite Beach, FL 32937
www.satellitebeachfl.org
(321) 773-4407

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Upcoming Events...

October 19 - Vintage VW Show, Arts & Crafts

Enjoy a day of really cool cars, food trucks, raffles, arts and crafts, and more! Presented by the Friends for Life of the Indian River Lagoon at the DRS Community Center from 8am-4pm. Proceeds from this car show will benefit the Brevard Zoo Oyster Restoration Program. Call Phil at 508-4332 for vendor information.

October 25 - Skateboard Contest

The Satellite Beach skateboard contest is known for awesome prizes and giveaways. Plan to enter the contest, or come watch at the Satellite Beach Skate Park starting at 10am. Skaters pay the \$12 entry fee and sign up at the Park beginning at 9am. A waiver signed by a parent or skater 18 years or older must be on file. All skaters MUST wear a helmet.

November 1 - Founders' Day Parade & Marketplace

The Satellite Beach Woman's Club and our Recreation Department will host this annual event at the DRS Community Center from 9am-3pm. This year's theme is "Back to the 60s." The Marketplace will feature music, plant sale, farmers market, and unique arts and crafts. Call Cassie at 773-6458 for craft/artist booth rentals. There will also be the annual parade starting at 11am from DeLaura Middle School. To participate in the parade, call 773-6458.