

FWEA Manasota Chapter

Vol 16 - November 2013

Happy Holidays from the Steering Committee

*By Lindsay Marten, EI, LEED AP, Stantec
Vice-Chair, Manasota Chapter*

In the midst of luncheon meetings and holiday socials, the FWEA Manasota Chapter's Steering Committee has been hard at work planning some fun events for the upcoming year. Here is a recap of some end of the year activities and upcoming events currently in the works.

The last luncheon of the year will be held on December 5th at FCCI. Steven Marshall with the City of St. Petersburg will be presenting on the topic, *Energy Recovery from Solids in St. Petersburg, FL: Biogas to Vehicle Fuel and CHP*. Please contact Linda Maudlin (941-378-3579/lmaudlin@greeley-hansen.com) or visit <http://mms.fwea.org/Calendar/moreinfo.php?eventid=22560> to access the event information page for event and registration information.

If you are unable to attend the December luncheon, you are in luck because there is still one more event left to finish off the year! FWEA will be joining forces with other local professional societies for a holiday social at Evie's Tavern on the Range on December 19th at 5:30 PM. We are looking forward to celebrating the holidays with all of you! Please contact Danielle Bertini (941-225-6171/danielle.bertini@stantec.com) for event and registration information. We are looking forward to celebrating the holidays with all of you!

The 11th annual AWWA Model Water Tower Competition has been moved from October 2013 to January 2014 to better accommodate the student's school schedule. The competition will be held in January 2014 at the new Manatee Technical Institute in Bradenton where water quality professionals from the community will join forces, including members from our very own Manasota Chapter to help plan and partake in this national event. This

event introduces students to water issues and water professionals from their community by challenging them to design and construct miniature water storage towers. Students creatively construct the models themselves while taking into account structural, hydraulic, and cost efficiency along with design

Matthew Woodham, Chuck Hlavach, Nicole Smith and Kristiana Dragash. The FWEA Manasota steering committee celebrates with the University of South Florida FWEA student design competition team at WEFTEC.



Continued from page 1

ingenuity. This event welcomes volunteers, so we hope to see you there!

The FWEA and AWWA joint Water For People Kayak and Picnic event has been moved from November 2013 to April 2014 at the Phillippi Creek Estate Park. A Silent Sports Outfitters of Nokomis will be providing kayaks and guides to ensure that participants have a safe and enjoyable time on Roberts Bay. Following the kayak tour, delicious food and cold beverages will be provided, accompanied by outdoor games and music. The event brings friends, families, and members of the water profession together while raising awareness and funds for Water For People. More event details and registration information to come!

Lastly, congratulations to the University of South Florida FWEA Student Design Competition teams on

their amazing win at the 2013 WEFTEC competition in Chicago! The Wastewater team took first prize and the Environmental team took second prize in their respective categories. The Manasota and West Coast chapters of FWEA showed a strong presence at the national event with presentations by Freddy Betancourt who spoke about the cost-effective application of peracetic acid for high-level disinfection in Largo, FL, and Kristiana Dragash who presented Hillsborough County's plan to eliminate surface water discharge.

The year 2013 has been packed with events and exciting updates. On behalf of the FWEA Manasota Chapter, we would like to thank all of the participants, volunteers, presenters, and sponsors for making these events possible. Be on the lookout for more great opportunities and occasions to come in 2014!

The Manasota Chapter is in search of Project Spotlight articles for future newsletter editions. Chapter sponsors are encouraged to submit an article highlighting a local project. Please contact Laura Baumberger at lbaumberger@carollo.com or 941-371-9832 for more information.



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Calendar of Upcoming Events

NOVEMBER

- 5** FWEA Wastewater Process Committee Seminar, Winter Haven
- 7** FSAWWA Region IV Fall Seminar, Tampa
- 13** FES Myakka Chapter Luncheon, Lakewood Ranch
- 14** FWEA West Coast Chapter Luncheon, Tampa
- 15** ASCE Sun Coast Chapter Meeting, Sarasota

DECEMBER

- 1-5** FSAWWA Fall Conference, Orlando
- 5** FWEA Manasota Chapter Luncheon, Lakewood Ranch; FWEA Southwest Chapter Holiday Social, Bonita Springs
- 11** FES Myakka Chapter Luncheon, Lakewood Ranch
- 13** FWEA/FBC Benchmarking Workshop, Orlando
- 19** Local Engineering Societies Holiday Social, Sarasota

November

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

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Consultant's Corner: Siesta Key to Casey Key Water Main Replacement

By Blake Peters, PE - McKim & Creed, Inc.

Sarasota County owns an 8-inch cast iron water main that connects Siesta Key to Casey Key and was constructed in the 1970s. The existing alignment is approximately 6,400-ft long and is almost entirely located within Little Sarasota Bay and the Jim Neville Marine Preserve. This water main provides an interconnect between the systems on Midnight Pass Road and Casey Key Road.

The water main started to leak during the late 1990s and remained unrepaired, due to the inaccessibility of the environmentally sensitive area in which it is located.

Three alternative alignments were considered to replace the water main: 1) pipe bursting along the existing alignment (6,000 lf), 2) performing a series of open cut and horizontal directional drill (HDD) segments (3,300 lf), and 3) performing HDD along the entire length (2,700 lf). Some of the concerns associated with the alternatives were land rights, construction access, sea grass, mangroves, dune habitat, hurricanes, local residents and cost.

After careful consideration of all the concerns, it was determined that the best chance at success was to construct a HDD across the entire length.

Figure 1 below shows the design horizontal and vertical alignment for the HDD. The entry point was located at

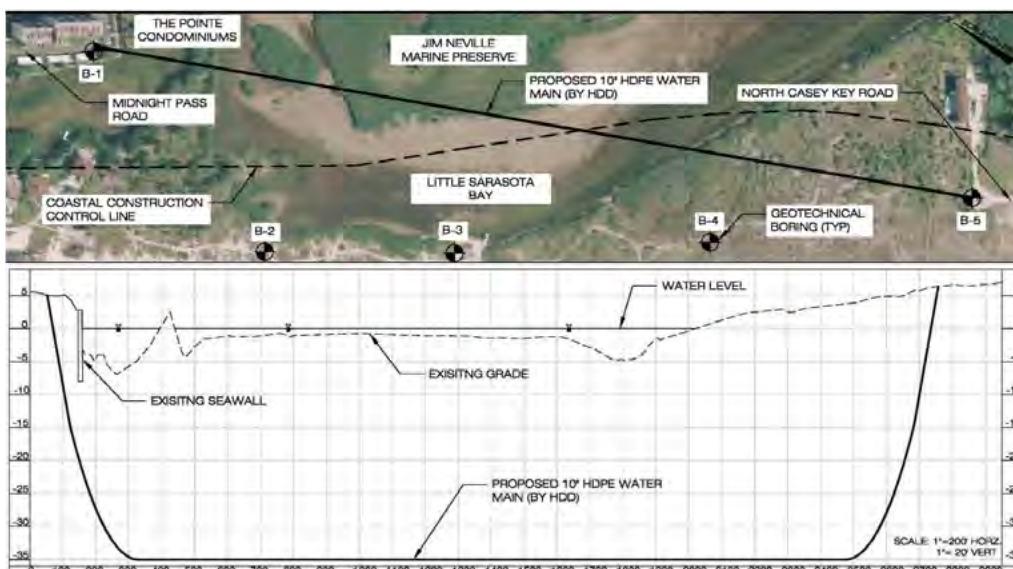


Figure 1. Design horizontal and vertical alignment for the HDD.

the south end of The Pointe Condominiums with the exit point of the HDD on Casey Key.

The selected pipe material was 10-inch HDPE DR 9, PE4710 pipe. HDPE pipe was selected for this application due to its flexibility, abrasion resistance, and the strength of its fused joint, as well as its capacity to withstand forces during pullback. To reduce the buoyant forces acting on the pipe and to keep the pullback forces below the allowable pipe stress of 1,100 psi, the pipe was required to be filled with water as it entered the bore hole.

Construction commenced in July 2012. To accurately monitor the position of the drill string, the contractor (Arrow Directional Boring, Inc. of Coral Springs, Florida) utilized a gyroscopic steering tool called DrillGuide GST from SlimDril International. The contractor selected this tool to provide continuous drill-tool tracking, which avoids the risk of magnetic interference when drilling in a marine environment, and to realize time savings by not having to install a wireline tracking system.

During preparation of the bore plan and because of concern over possibly damaging the seawall, the contractor opted to increase the vertical separation of the pipe below the seawall on the north end of the project by increasing the entry angle from 16.5 degrees

to 17 degrees. The entry and exit bend radii were also increased to 1,500 feet and 2,000 feet, respectively, to allow more flexibility when making the vertical bends. The result of these modifications was a deeper bore, from the projected 40 feet depth to 80 feet. Since the modified profile extended below the 50-ft deep geotechnical borings, the contractor had to mitigate the risks by increasing the vertical bends to allow more leeway in making the bends and by using

Consultant's Corner: Siesta Key to Casey Key Water Main Replacement (cont.)

By Blake Peters, PE - McKim & Creed, Inc.

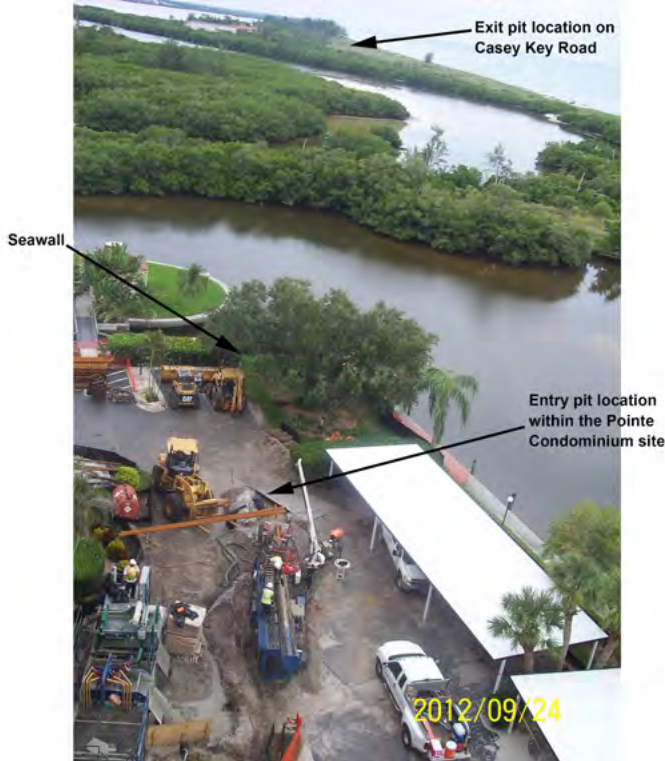


Figure 2. Pipe layout along Casey Key Road

a mud motor in case limestone was encountered at the increased depth.

The contractor utilized an American Augers DD210 drill rig with a maximum pullback force of 210,000 lbs. This drill rig provided sufficient pullback force, given that the expected and actual maximum pullback force was about 33,000 lbs. The contractor carefully monitored pullback forces to ensure the pipe did not exceed its allowable stress, which could cause the pipe to creep or potentially yield. Figure 2 shows the construction site and drill rig location facing south toward the exit location.

Two hydro-fractures occurred during the HDD process: one during the pilot drill a few feet away from the exit pit and a second within The Pointe Condominiums near the entry pit. The contractor immediately implemented containment measures as required in the contingency plans. No drilling fluid was observed entering the bay during the HDD process.

To minimize the forces during pullback, the HDPE pipe was pulled in two strings of approximately 1,380 ft. Also, the product pipe could not be assembled into a single length because of layout constraints on Casey Key Road.



Figure 3. Pipe layout along Casey Key Road

Figure 3 shows a segment of the pipe layout along Casey Key Road. The pullback process was completed without any complications as a result of the intermediate weld.

The decision to replace the existing 8-inch cast iron water main with 10-inch HDPE by HDD proved to be a successful methodology to restore the functionality of this critical water infrastructure for Sarasota County. Upon conclusion of the project, fire flow availability more than doubled to at least 1170 GPM at 20 psi, as tested on both Keys. By boring under the environmentally sensitive areas, the project team was able to reduce the construction time, cost, and potential adverse impacts to the environment. Advancement in HDD technology, such as the gyroscopic steering tool used for this project, along with careful planning and execution, provided Sarasota County Utilities with a successful solution to this long-time operational challenge.



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Energy Recovery from Solids in St. Petersburg, FL: Biogas to Vehicle Fuel and CHP

by Steven Marshall - City of St. Petersburg

Abstract

Steven Marshall with the City of St. Petersburg's Engineering and Capital Improvements Department, will present the Biosolids and Waste to Energy Project and the associated benefits to the City's wastewater and sanitation operations through reduced energy and fuel costs.

The City of St. Petersburg, FL (City) produces an average of 41,000 wet tons per year (WTpY) of Class-B biosolids. The City operates four Water Reclamation Facilities (WRFs): Albert Whitted WRF, Northeast WRF, Northwest WRF, and Southwest WRF. Plans are underway to decommission the Albert Whitted WRF and pump that service area's wastewater to the Southwest WRF for treatment. The City initiated a Biosolids and Waste-to-Energy Feasibility Study two years ago; driven by the State of Florida's "effective ban" on Class-B biosolids land application (Florida Administrative Code Chapter 62-640) and the City's desire to produce renewable power from currently under-utilized resources.

From this study, the City and its engineering consultant Brown and Caldwell developed a Biosolids to Energy Program of upgrades, which will consolidate all solids processing at the SWWRF through a combination of sludge forcemains and the existing collection system. A series of improvements are proposed at the SWWRF; adding primary clarifiers to "catch" the conveyed solids and other settleable solids and upgrade the digestion process at that facility to meet Class-AA, temperature-

phased, anaerobic digestion (TPAD) to meet regulatory compliance. In addition to the wastewater process, the City will collect digester gas to be treated and converted to vehicle fuel (renewable compressed natural gas, rCNG) for the City's sanitation truck fleet reducing their demand for diesel fuel and greatly reducing the City's carbon footprint. The program also includes new natural gas fueled CHP engine generators for production of power (fueled by either purchased natural gas or treated digester gas created onsite) and waste heat recovery to supplement the TPAD digestion process.

Steven Marshall

Steven Marshall started his career with the City in 2000 as a member of the Engineering and Capital Improvements Department. As a senior energy efficiency project manager, his work involves the planning, design, evaluation, construction, and creative engineering solutions to a variety of major engineering and energy projects that promote the City's "Green City" initiatives. Prior to working with the City, he worked in the pharmaceutical and manufacturing industry as a plant engineer and machine design engineer. Steve is an active member of the U.S. Green Building Council (USGBC) and the Association of Energy Engineers (AEE) and holds several professional certifications including; Certified Energy Manager, LEED AP Building Design + Construction, Building Commissioning Professional and Certified Energy Auditor.

FWEA MANASOTA CHAPTER LUNCHEON MEETING

FCCI Insurance Group Catering Facility

6300 University Parkway, Sarasota, FL 34240
Registration - 11:30 • Lunch and Program - 12:15

Members: \$15 • Non-members: \$20

Menu: Vegetarian Pasta Salad, Grilled Chicken, Grilled Vegetables, Chicken Wings, Green Salad, Burger Sliders, Grilled Cheese Sliders, Cookies, Soda, and Water

You can register online at www.fwea.org or register by phone, fax, or e-mail to Linda Maudlin
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