

CITY COMMISSION WORKSHOP
Wastewater Treatment Plant Expansion

City Hall Training Room
September 14, 2009 5:30 p.m.

I. Call to Order

Mayor Fred Costello called the meeting to order at 5:32 p.m.

Present were Mayor Fred Costello, Commissioners Lori Gillooly, Troy Kent, Ed Kelley, and Bill Partington, City Attorney Randy Hayes, City Manager Joyce Shanahan, Assistant City Manager Ted MacLeod, Acting City Engineer John Noble, Brad Blais of Quentin L. Hampton & Associates, and Mark Burgess and Brian Karmasin of Camp Dresser & McKee.

II. Wastewater Treatment Plant Rehabilitation and Expansion

Ms. Joyce Shanahan, City Manager, stated that tonight's workshop was to seek direction for proceeding, bidding, and financing the Wastewater Treatment Plant (WWTP) rehabilitation and expansion project.

Mr. John Noble, Acting City Engineer, stated that this project was for Phase 2 rehabilitation and expansion of the WWTP. He stated we were at the point to bid the project.

Mr. Noble stated that tonight they would discuss the master plan update and how it led them to go forward with the design recommendations within the report as well as Phases 1 and 2 rehab and the expansion plan. Mr. Noble stated that Mr. Brad Blais of Quentin L. Hampton & Associates (QLH), who performed the master plan update, and Messrs. Mark Burgess, Client Service Manager, and Brian Karmasin, Project Manager of Camp Dresser & McKee (CDM), who performed the design portion, were here tonight to present a powerpoint presentation.

Mr. Noble stated that the rehab portion of the project was about 65% of the cost. He stated that the rehab was the most important component as it had been 22 years since any significant improvements had been done. He stated that things deteriorated rather severely in the wastewater environment.

Growth

Mr. Noble stated that there were three items noted in the memorandum that had changed since the master plan update: Ormond Crossings, Hunter's Ridge development in Flagler County, and Consolidated Tomoka Land

Company (CTLIC). He stated the Ormond Crossings project was scaled down from the initial concept plan, which resulted in a reduction of the projected wastewater demand of about 0.5 million gallons per day (mgd) and a delay to 2012. He stated the city agreed to provide additional service to the Hunter's Ridge development in Flagler County, which at build-out will add an estimated additional 0.5 mgd of wastewater flow. He stated that CTLIC was looking to increase their density in Daytona Beach for the southwest service area which will have a significant increase of about 1.6 mgd beyond what was accounted for in the master plan update.

Mayor Costello inquired about expanding the WWTP enough to accommodate CTLIC's request for an increase in density, and if the service agreement would be nullified, and if Daytona Beach would service them; whereby, City Attorney Randy Hayes advised that Daytona had the capability to provide the service. Mayor Costello commented that this would have a significant impact on the decision of at least one member of the Commission, and he stated that he would like a definite answer on this question.

Committed Capacity

Mr. Noble stated that a significant component to support the expansion involved committed capacity, which represented flows that the city had identified and permitted for developments, such as subdivisions, that had not yet been fully constructed. He stated at the time of the master plan update the committed capacity was at 83% of permitted capacity and currently the committed capacity was at 93% of permitted capacity.

Flows

Mr. Noble stated that a comparison of the projected wastewater flows with current flows indicated that flows had not increased at the forecasted rate, but wastewater flows had begun to increase due to wet weather with average flows around 7 mgd in the last few months.

Commissioner Kelley asked how the capacity could be exceeded; whereby, Mr. Noble stated the plant was designed for maximum (peak) flows or 1.5 times the flow.

Mayor Costello commented that if there really was a 9.0 capacity, then we should lobby to the Florida Department of Environmental Protection (DEP) to change the threshold.

Mr. Dave Ponitz, Utilities Manager, stated the average concentration of pollutants to the river could not exceed the permit.

Mr. Mike Dunn, Utilities Engineering Manager, stated that capacity related to the ability to handle the hydraulic flows to the plant, not treatment capacity, which was a combination of the hydraulic flow plus the nutrients that had to be removed from the water.

Mayor Costello asked if the treatment capacity was really 9 mgd; whereby, Mr. Brian Karmasin stated that 2.5 was the peak hydraulic capacity. He stated on a nutrient level that permits were based on monthly averages, and typically 1.3 to 1.5 times the average daily flow was typically the safety factor to meet the maximum month condition.

Commissioner Kelley asked about the annual monthly average; whereby, Mr. Karmasin stated the permit required reporting monthly concentrations that went out to the river and a TMDL for the surface water discharge to the Halifax River, which was the yearly component.

Commissioner Gillooly asked if there was tighter control over the monthly average; whereby, Mr. Karmasin stated that there was the ability to divert more water from the river to the reclaimed water system, using Advanced Waste Treatment (AWT) standards. Mayor Costello stated he favored not dumping any water into the river.

Mayor Costello asked if the WWTP would be designed to meet the new DEP requirements; whereby, Mr. Noble stated that we would not be designing the plant for those requirements, and Ms. Shanahan stated the DEP was constantly changing their requirements and we would continue to change our methodology to meet them.

Mr. Burgess stated that they had received the permit from the DEP for the expansion and rehab, and the DEP would not require any changes under that permit.

Part 1 – Revisit of Utility Master Plan Update

Mr. Brad Blais, Quentin L. Hampton & Associates, stated in 2007 they revisited the Utility Master Plan revisiting construction history, service area, population and flow estimates, committed capacity, and WWTP capacity. He stated the last major plant rehabilitation and expansion occurred over 20 years and had surpassed the design life for mechanical equipment. He stated the rehab could not be put off any longer.

Mr. Blais stated that the population growth was less than 1% which was less than the 2.5% per year projected. He stated that as time moved on they would adjust the projections.

Mr. Blais stated that the projected peak month flows of 6.97 in 2010 were pretty much on track as far as peak month flows. As far as capacity was concerned, he stated that we should have capacity to treat a peak month; and as far as DEP was concerned, the capacity requirement kicked in as far as the average day which was discussed previously.

Mr. Blais stated that planning should begin five years after we hit the 80% mark. He stated that 80% committed capacity happened about five or six years ago, which was when we began the planning and preliminary design stage. He stated we were in compliance at this time.

Mr. Blais stated that the existing plant had a permitted capacity of 6.0 mgd. He stated that in 2006 committed capacity was 5.0 mgd or 83% of permitted capacity; and in 2009 committed capacity was 5.58 mgd or 93% of permitted capacity, and projections indicated capacity would be exceeded in 2014.

Ms. Shanahan asked about exceeding permitted capacity; whereby, Mr. Blais stated that the expansion was usually addressed during the permit renewal cycle, or the city would receive an Administrative Order/consent order at the very least relative to compliance.

Commissioner Gillooly asked about sanctions or fines; whereby, Mr. Blais stated that if the targets were not hit in the consent order, then there would be fines levied, court action, etc. Mr. Hayes commented that the fines were not negotiable. Mr. Burgess commented that a moratorium was the worst case scenario.

Part 2 – Wastewater Treatment Plant Rehabilitation and Expansion

Mr. Mark Burgess, Client Service Manager of Camp Dresser & McKee, stated that the first phase of the rehab was currently under construction, and should be completed in the next few months. He stated their estimate for the project was \$5.3 million but it was contracted at \$3.7 million.

Mr. Burgess stated they were nearing the completion of the design of Phase 2 which was estimated at \$17.1 million and contained both rehabilitative and expansion components of the project. He stated Phase 2 was expected to begin December 2009.

Mr. Burgess stated that there were four main components in Phase 1:

- 1) Rehabilitation of the Influent Pump Station;
- 2) Rehabilitation of the grit removal system;
- 3) Replacement of the centrifuges and polymer feed system; and
- 4) Replacement of the sludge transfer pump (see Phase 1 attachment).

Mr. Burgess stated the engineering drawings were prepared from the record drawings, but many times the structure was not the way it was on the record drawings, which resulted in change orders because more work was required.

Mayor Costello asked about the size of the components if the rehab and expansion were done at the same time; whereby, Mr. Burgess stated that some component sizes could be changed, preferably before the project was bid.

Mr. Burgess stated that Phase 2 contained both rehabilitation and expansion components (see Phase 2 attachment). He explained the equipment and different processes performed at the WWTP.

Commissioner Kelley asked about upgrading the plant to make potable water; whereby, Mr. Burgess stated that the site was very tight in terms of space for new processes, but that some of their clients were already doing indirect potable reuse where the water was discharged into a recharge area and then taken back up out of the ground or running it through wetlands and picking it back up.

Commissioner Kelley asked if there could be a cursory look at this time, as he felt St. John's River Management District would require something in the future; whereby, Mr. Karmasin stated that Miami Dade County was looking at reverse osmosis along with their wastewater plants and another source of disinfection, such as ozone. He stated that we would be looking at high pressure membrane treatment, similar to what the water plant used. He stated the cost of the water plant would be a relative comparison to membrane treatment at the WWTP.

Mr. Dunn stated the problem with treating sewage vs. water was that there were a lot of unknown constituents that might not be regulated, such as pharmaceuticals that were dissolved in the water, which would go to the water treatment process, unless they were somehow removed. He stated that there were a lot of things coming through the wastewater stream that may not be safe for direct use of potable water from the effluent treatment plant.

Mayor Costello stated he favored treating it enough to dump it back into an aquifer, rather than into the river; whereby Mr. Karmasin stated that Port Orange had been doing this for almost two years into a 175-acre recharge reservoir, which was about 2,000 feet from the city's ball fields in the Rima Ridge area. He stated that the Rima Ridge area was a recharge area. He stated that concept had been master planned from Ormond down to

Edgewater. He stated they were trying to move towards that in the next phase of reclaimed water.

Mayor Costello asked about the site and piping and what would be necessary to allow us to do the same thing; whereby, Mr. Karmasin stated that we would not need to do anything further than to provide public access down the line.

Mr. Burgess noted that building code upgrades were a challenge to do; whereby, Commissioner Kelley suggested it might be more economic to demolish the structure and rebuild it. Mr. Noble stated they had reviewed that option and kept what could be kept and demolished what could not feasibly be kept..

Mayor Costello stated he would like to know the cost to buy land and build the pipe to dump reclaimed water whenever there was not enough storage capacity, so the city was not dumping into the Halifax River. He suggested a five or ten year plan. Mr. Karmasin noted that the infrastructure was addressed conceptually in the master plan.

Mr. Burgess stated that the electrical rehab was the biggest part of the rehabilitation; whereby, Commissioner Kelley suggested that some of the processes could generate electricity to run part of the plant. It was pointed out that this process did not generate the gas needed to produce energy.

Mayor Costello asked if we would always be able to dispose of the sludge material; whereby, Mr. Karmasin stated that the County compiled their recommendations on collectively dealing with the bio-solid issue, but if the other cities did not want to participate, then the County would move forward on their own and charge a tipping fee to take the bio-solids. He stated the bio-solids would be used to create a synthetic gas which could be used as part of the process.

Expansion

Mr. Burgess stated that a new clarifier and a new filter would give them the expanded capacity from 6.0 mgd to 8 mgd. He stated a generator would be installed to run the entire plant with enough fuel storage to run the plant for five days. He stated that new switchgear and an additional electrical redundancy provided for backup for the influent and screw pumps.

Commissioner Kelley asked about using diesel vs. natural gas; whereby, Mr. Burgess stated that diesel fuel was on-site in storage. Commissioner Kelley stated that the natural gas lines were not interrupted during the hurricanes in 2004.

Mr. Blais stated that diesel was used because it had more torque capacity.

Mr. Burgess stated that it had been a long time since the stormwater system was designed and the stormwater treatment on-site needed to be expanded.

Bidding Climate

Mr. Burgess stated that pricing had been very volatile for the past 18 months, as their goal was to be within 10% of the average bid. He stated on the past 20 jobs their cost estimate was 27% higher than the average bid and 54% higher than the cumulative low bid.

Mayor Costello asked how quick we could get to bid; whereby, Mr. Burgess stated within a month. He stated that estimated construction costs would be \$14,600,000 with construction engineering services of \$1,200,000 for a total project cost of \$15,800,000.

Project Financing

Mr. Blais stated the city had a prepared facility plan which made the city eligible for a State Revolving Fund (SRF) loan for the \$3.7 million project, which will be pursued for this project. He stated the advantages of an SRF loan were low interest and low issuance costs. He stated the SRF fundable list for 2009 and 2010 had been established and no permanent SRF financing would be available until 2011 or 2012. He stated a bridge loan would be necessary to obtain interim project financing until we can get on the fundable list and get funded through the SRF program. He stated the bridge loans typically have a 20-year amortization period with a three or five-year balloon payment, which was funded when SRF funds become available. He stated the cap limit was \$10 million per year per entity, so we might have to apply for loans over two fiscal cycles. He stated that the Florida Rural Water Association would offer loan assistance for the SRF bridge loan.

Mr. Blais stated that short-term financing was another option to pursue through local lenders to obtain the best possible terms.

Mr. Blais stated that they were under contract with the city to provide SRF and alternate financing assistance, and would be preparing the bridge loans. He stated we would go to the front of the line for subsequent years, if we had a bridge loan.

Rate Impacts

Mr. Blais stated that annual debt service payments for this project would be approximately \$1 million. He noted that we had a lot of debt that would be

retiring in 2011-12 and we did not start paying back the SRF loan until the loan was completed, but we would start paying on the bridge loan the day it was received.

Mayor Costello asked about 2.5% and \$1 million per year; whereby, Ms. Kelly McGuire, Finance Director, stated that we would redirect the paid-off debt service and then need an additional 2-3% to make the payment.

Mayor Costello asked about the additional capacity needed to service the North Peninsula; whereby, Mr. Noble stated that the 8 mgd could service the north peninsula area. He stated that their long range forecast was to build a 2 mgd WWTP out west.

Mayor Costello stated he would like the City Commission to discuss with the County the removal of septic tanks from the barrier island and maybe coordinating any available grants with them.

Mr. Noble noted that we had received some grant money from SJRWMD for commercial property service on A1A.

Commission Comments

Commissioner Gillooly asked about preventative maintenance; whereby, Mr. Noble stated that a lot of the maintenance was done at the WWTP by employees, but there had not been anything performed that was significant in terms of rehabilitation of processes. He stated they had done a good job of keeping the plant running with the current equipment by replacing parts and components, but not anything of a significant nature.

Commissioner Gillooly asked if there was a maintenance schedule; whereby, Mr. Noble stated that a maintenance manual was compiled with recommendations and procedures to follow on a yearly basis as components wore down.

Commissioner Gillooly asked if the expansion created a requirement for new jobs or would eliminate jobs; whereby, Mr. Noble stated that staff would not be reduced as there were more components to operate.

Commissioner Gillooly asked if the new technology would allow operations with existing staff; whereby, Mr. Noble stated that two positions were already eliminated, and the new facility will be maintained with current staff. He stated the new processes should reduce some of the nightmare problems of the past.

Ms. Shanahan stated that staff was asking the Commission to bid the project in total, as well as in parts with the expansion as a separate alternative, and then to proceed with the application and financing.

Mayor Costello asked if there were any questions that the Commission wished to discuss at this time; whereby, Commissioner Gillooly asked if 8% engineering and construction services were customary; whereby, Mr. Noble stated they would be relying on their consultants for the inspection and construction administration for a project of this magnitude.

Commissioner Gillooly stated there was a significant difference in construction costs, and she suggested that the recession would deprecate a change in the percentage and we should be able to do better; whereby, Mr. Noble stated that for tonight's purpose they wanted to put out an average number for the total project.

Commissioner Gillooly asked about a comprehensive cost comparison relative to the impact fee charges; whereby, Ms. Shanahan stated that the impact fees should pay for the cost to expand for new development. She stated it was a 20-year process.

Mayor Costello concluded that the Commission basically supported the WWTP rehab and expansion project.

III. Close the Meeting

The meeting was adjourned at 6:46 p.m.

Transcribed by: Lois Towey

WWTP REHABILITATION – Phase 1

Phase 1 – Overview

1. Rehabilitation of the Influent Pump Station
 - Replacement of three influent pumps
 - Replacement of the piping, valves, and electrical equipment
 - Construction of a new electrical room
 - Rehabilitation of walls in the wet well and influent chamber
 - Building upgrades to current building codes
2. Rehabilitation of the grit removal system (at influent structure)
 - Rehabilitation of the three existing grit removal systems
 - Replacement of under piping
 - Replacement of grit conveyor/classifier
3. Replacement of the centrifuges (dewatering) and polymer feed system
 - Replacement of two existing centrifuges, drives, and controls
 - One centrifuge is presently removed, awaiting shipment of new units
 - Replacement of two polymer feed systems
 - New systems are installed and working well
4. Replacement of the sludge transfer pump
 - Replacement of the sludge transfer pump
 - Room for only one pump in the basement of the building
 - Design provided for additional “on the shelf” pump

WWTP REHABILITATION – Phase 2

Rehabilitation Components of Phase 2

1. Rebuilding of the existing mechanical bar screens
 - a. Screens are close to 20 years old
 - b. Performance has deteriorated, as they are needed to remove large objects from waste stream
 - c. Screens will be refurbished
2. Replacement of the mixers in the fermentation, pre-anoxic, and post-anoxic mixers
 - a. Mixers needed to keep mixed liquor in suspension
 - b. Platform mixers are difficult to clean
 - c. Platform mixers to be replaced with submersible mixer
3. Demolition of the pre-aeration surface aerators
 - a. There are two surface aerators that will be replaced
 - b. Area will be converted to a zone where it can either be aerated or unaerated
 - c. New mixers and a new diffused aeration system to allow operational flexibility to meet permit conditions
4. Replacement of the existing mechanical surface aerators
 - a. Four 75 horsepower aerators and variable frequency drives replaced
 - b. Aerators will provide air at current flows
5. Rehabilitation of the three final clarifiers
 1. Rehabilitating Clarifier 2 damage to upper sweeper
 2. Adding items to improve performance
 1. Baffles
 2. Inlet structure and feed well
6. Replacement of the existing screw pumps
 - a. Two existing screw pumps will be replaced
 - b. Third screw pump (spare) being installed
 - c. Overhead canopy being replaced
7. Rehabilitation of the two sand filters
 - a. New support plates, backwash shoes, and sand media
 - b. New backwash and wash water pumps
 - c. New rails
8. Plant pump station modifications
 - a. Return Activated Sludge/Waste Activated Sludge Pump Station
 1. Replacing all pumps and adding an additional pump;
 2. Building code modifications (new duckwork, louvers, fans, roof membrane)
 3. Painting interior of building

- b. Internal Recycle Pump Station
 - 1. Replacing all pumps and adding an additional pump
 - 2. Building code modifications (new ductwork, louvers, fans, roof membrane)
 - 3. Painting interior of building
 - c. Dewatering Pump Station
 - 1. Replacing existing pumps with larger units
 - 2. Will allow for bypass of all force mains around Influent Pump Station, if needed
 - d. Effluent Transfer Pumps
 - 1. Presently used to pump reclaimed water to storage tanks
 - 2. Modified to allow pumping to either storage tanks or to Halifax River to supplement plant surface water discharge
9. Upgrades to sodium hypochlorite building
- a. Adding fire protection to building
 - b. Removing hydro pneumatic tank and pumps
 - c. Replacing existing storage tanks
 - d. Adding leak detection capabilities to storage tank
10. Structural upgrades/repairs to process tanks
- a. Operations Building First Floor Renovations
 - 1. Making bathrooms ADA compliant
 - 2. Adding new control room
 - b. Alum/Polymer Building Modifications
 - 1. Converting portion of building to a new electrical room
 - 2. Will house switchgear serving large motors on west side of facility

WWTP EXPANSION – Phase 2

Expansion Components

1. Addition of diffused air system at
 - a. Swing zones at end of the first anoxic zone for operational flexibility
 1. Swing zones will have both mixers and aeration to allow operational staff flexibility to operate in either mode
 - b. Carrousel to provide air at future requirements/will have additional aeration capacity installed
 1. Fine pore diffused air was selected due to long term power savings
 2. Facility designed with operational flexibility to meet current requirements as well as future demands
2. Acetic acid feed system for enhancing nitrogen removal
 - a. Acetic acid acts as a food source for microorganisms to improve nitrogen removal
 - b. Will give plant staff additional flexibility during high load conditions to meet permit conditions
3. Construction of an additional clarifier
 - a. Expanding capacity from 6 to 8 mgd requires a new clarifier
 - b. Clarifier will be 80 feet in diameter to match existing
 - c. Clarifier will be 16 feet deep to allow staff to hold more solids
 - d. Foundation will be ballasted such that a well point system will not be needed if the tank is drained
4. Construction of an additional sand filter
 - a. Expanding capacity from 6 to 8 mgd requires a new filter
 - b. Filter will give facility additional redundancy during wet weather events
5. Upgrade of electrical system
 - a. New fuel storage tank and generator system
 1. New 1500 kVA diesel generator will be installed to run the entire plant
 2. Five days of fuel storage
 - b. New Main Electrical Building
 1. New switchgear will be built in a new electrical building
 2. Additional electrical redundancy provided by generator at Influent Pump Station to be “backup to the backup” for influent and screw pumps
6. Upgrading facility stormwater system
 - a. Existing stormwater system is in need for an upgrade
 - b. Since construction of existing system (1990), rain storage requirements have changed
 - c. Pond getting significantly larger
 - d. New road and culverts provided at site
7. Pipeline and structure modification to enhance gravity hydraulic capabilities