



Memo

30 July 2020
To: Mayor and City Council members
Thorough write-up and analysis of process and respondent evaluation to expand and upgrade our Barry Rose Water Reclamation Facility. CMAR contract coming to you for consideration as described herein. Clay

To: Clay Pearson, City Manager
From: Cara Davis, Sr Project Manager – Engineering & Capital Projects
CC: Trent Epperson, Assistant City Manager
Robert D Upton, P.E., Director of Engineering & Projects
Skipper Jones, Assistant Director of Capital Projects
Clarence Wittwer, Director of Public Works
Date: July 30, 2020
Re: Barry Rose Water Reclamation Facility (BRWRF) Expansion

Purpose

This memo provides information about progress on the Barry Rose Water Reclamation Facility (BRWRF) Expansion project and associated work involved in decommissioning the Longwood Water Reclamation Facility (LWRF) and the proposed award of a Construction Manager at Risk (CMAR) contract for Pre-Construction Services for the project at the August 10th City Council meeting.

Background

The Barry Rose Water Reclamation Facility (BRWRF) was originally constructed in the late 1960s and uses a conventional treatment process based on aeration, digesters and clarifiers with a current capacity of 3.1 million gallons per day (MGD). Plant infrastructure is based on now outdated technology making it susceptible to equipment failures and shutdown or loss in high water events. A Preliminary Engineering Report was commissioned for BRWRF in October 2016 (MWH, 2016) to assess rate of population growth against existing plant capacity and to make recommendations regarding current (ten year) and future (build-out) capacity requirements. The study accounted for previous assessments of the Longwood Water Reclamation Facility (LWRF) that found Longwood to be unsustainable due to its location within the routine flood plain of Clear Creek. Based on the findings from the report, Staff formulated a plan to decommission the Longwood facility and replace it with a regional lift station and divert all flows to the BRWRF. The Barry Rose PER determined the plant would require a total capacity of 8.5 MGD to accommodate combined future population/development growth and the 2 MGD in Longwood plant flows.

In late 2018 flows to the Barry Rose plant exceeded the 75% of plant capacity requiring the initiation of design for expansion. Staff initiated an Inflow and Infiltration project within the service area which temporarily lowered these flows while growth in the area was continuing to allow for the budgeting of the project and for the design and construction to occur in a more controlled process. Another major factor that can only be remedied by completely decommissioning LWRF and expanding/reconstructing BRWRF is the flood risk and resulting equipment damage. LWRF

was completely inundated during Hurricane Harvey and BRWRF took on water which shutdown pumps in the plant. Decommissioning LWRF will reduce the operations and maintenance costs associated with the aged equipment and remove the risk of another catastrophic failure. Reconstructing BRWRF will raise vital equipment above the newly established base flood elevation and reducing the risk that flooding from another hurricane that could cause costly damage and service interruptions for residents. Growth plus the transfer of additional flows to BRWRF from LWRF will increase the capacity above the current permitted limits, triggering an expansion at BRWRF.

In November of 2018 Council awarded a contract to Stantec for final design service for the Barry Rose expansion, including the decommissioning of Longwood and the design of a 25,000-foot force main. The expansion is being designed to increase plant capacity from 3.1 million gallons per day (MGD) to 8.5 MGD. This expansion is planned to **utilize membrane bio-reactors as the primary treatment technology**, replacing the conventional treatment technology currently in use. Work included in the project consists of decommissioning of the 2 MGD Longwood WRF located on Dixie Farm Road and the construction of a regional lift station at the Longwood site. Flows will be diverted from Longwood to the BRWRF via approximately 25,000 linear feet of force main included in the project.

CMAR Selection

The project is planned to be delivered using the Construction Manager at Risk (CMAR) process as outlined in Texas Government Code, Title 10, Subtitle F, Chapter 2269.251. The process provides the City with the ability to rank the CMARs based upon their experience and qualifications prior to evaluating any costs or fees. The requirement to keep the two processes separated allows for the panel to evaluate the CMAR based upon the information provided, utilizing the scoring criteria and to score the qualifications without being biased with knowledge of the fees. After the qualifications are initially scored the cost proposals are considered and added to the overall score. From this ranking the top firms are interviewed and a score for the interviews is added to produce a total score to determine the firm that offers the best value to the City.

The process requires the contractor to work hand-in-hand with the Owner and designers during the design process to generate cost-efficient plans, resolve constructability issues and reduce the risk of costly and time-consuming change orders before presenting a Guaranteed Maximum Price (GMP) for the project. **The selection of the right CMAR is vital to both economic and operational success of the project.** In this role, the general contractor uses its construction experience as well as internal engineering staff to guide the design: the design engineer is no longer the sole party responsible for a successful design.

The CMAR makes critical decisions based on experience and running test-case scenarios to provide guidance based on what worked last time, what saved money, what resolved a problem, what improved performance, what products worked well and which ones did not. In many cases the decisions fall into the constructability category; how a complex system is put together or the sequence of those operations that make the difference between a costly component that requires a long time to assemble and one that went together quickly and efficiently and performed well. In

other cases, decisions fall into the selection of specific equipment and/or the manufacturer where a particular piece of equipment proved unreliable or problematic in the warranty phase. In this role the CMAR actually leaves behind the myopic perspective of a general contractor and moves into a role that is more protective of the owner's objectives. The CMAR now takes on more responsibility for the cost, the schedule and the ultimate operational success of the project because his reputation is now on the line, alongside that of the engineer. The Guaranteed Maximum Price process insures that they have skin in the game and that their decisions mean the difference between making money on the project and losing money. In summary, significant risk is shifted from the City to the contractor.

For these reasons Staff probes the working knowledge of CMAR candidates during the selection process very carefully and looks at each CMAR's team members very carefully. While the scores from a candidate's qualifications may get them to the interview, the in-depth technical discussions in the interview make the case for or against a particular firm. Experience from previous projects shows in the proposed team members and recognition of that experience is formed in the selection committee. Staff's procedures to make this selection have carefully sought to draw out this information from each candidate and made the interview process critical to this decision. In addition, Staff's process meticulously followed statutory guidelines for this process to ensure compliance with financing requirements from Texas Water Development Board (TWDB).

On January 22, 2020, Staff advertised the BRWRF RFP for CMAR. A pre-proposal conference was held on January 30 and proposals were opened on February 27. Four qualified CMAR firms responded:

- McCarthy Building Companies, headquartered in St. Louis, MO with 24 offices broken out among 5 regions in the US, including Houston, TX., a nationwide heavy construction firm who has completed 71 high-profile water/wastewater projects in excess of \$3.5 billion nationally, with close to \$2 billion of that in alternative delivery (mostly CMAR) projects;
- Garney Companies, Inc. headquartered in Kansas City, MO with 19 offices throughout the US, including Houston, TX., one of the largest U.S. civil contractors specializing in construction of water treatment facilities, pump stations, pipelines, and storage tanks who has completed 193 alternative delivery projects totaling about \$3.5 billion nationally, with close to \$1.5 billion of that in alternative delivery (mostly CMAR) projects consisting of buildings and water and wastewater facilities;
- Pepper Lawson Waterworks (PLW), a Texas firm with a long history in our region, a recent successfully completed project (Reflection Bay WRF) with the City of Pearland and the current CMAR contractor for the Surface Water Treatment Plant and John Hargrove Water Reclamation Facility. PLW has constructed over \$1.3 billion in water and wastewater facilities; and finally,
- Wharton-Smith, Inc. headquartered in Sanford, FL with 10 offices throughout the US, including Sugar Land, TX, whose core business is general contracting with work in the water/wastewater construction for Public sector clients has completed over a combined 300 CMAR projects totaling over \$2 billion.

The Selection Committee reviewed each respondent's qualifications in early March 2020, scoring on a multi-point basis that included experience with previous projects of similar size and scope, quality of key personnel assigned, history of meeting or exceeding cost and schedule targets, safety records, project approach, and self-performance capabilities. Two contractors, Garney and McCarthy, were short listed to interview. Interviews were conducted via virtual teleconference on April 14th and scored based upon their responses. See table below for scoring results.

The interviews were scheduled and required the CMAR to include the project manager, project estimator, construction manager and construction superintendent. The interviews provided the opportunity for the companies to provide a presentation, respond to specific questions that were provided to answer in the presentation and then the panel had additional questions for the CMAR to respond. During the interview open discussion any additional questions were asked based upon the presentation and to also further explore the experience and capabilities of each person on the team. Both companies did well but the experience and knowledge of the CMAR process of McCarthy really stood out. The team presented deep knowledge and broad experience with wastewater projects and more specifically **experience in wastewater membrane bio-reactor projects**, a key factor in ranking the value of the firm's useful experience as it applies to the City's project. Additionally, McCarthy's construction superintendent for the project really stood out with his knowledge of working within and building/expanding a plant while it is still in operation. The superintendent is currently finishing up a wastewater expansion project and was able to elaborate in depth on the complexities of maintaining operations in a plant while constructing major improvements. Additionally, he expressed the level of detailed planning needed to maintain operations of the plant and the necessary communications required with the City's plant operators. The team talked about the level of communication, coordination, and scheduling required to make this happen. McCarthy provided detail discussion on cost estimating, value engineering, scheduling and about early work opportunities to find ways to control costs.

After the interviews were completed the panel discussed the level of detail and discussion that was provided in the interview process by both interviewed firms. The discussion revealed that McCarthy had done their homework and were already looking at the detailed planning ideas. It was noted that McCarthy also discussed the Longwood forcemain and pump station and its complexities, while Garney failed to cover this major portion of the project in any detail. This is a key factor in the selection committee's findings: McCarthy was looking at the entire project not just specific portions. They were thinking of how all components would tie together and how to sequence the work to ensure remote components were ready when the plant came on line. The interview and discussion impressed the panel and also how each of the panel members and McCarthy team members already seem to congeal together as a team during the interview.

The interview with Garney did go well. Garney is an impressive company and has the capabilities and the resources to do the work. However, during the interview and the review of the projects listed, the **project team did not show experience with membrane bio-reactors for a wastewater plant** and had utilized the company experience in their submittal. The Garney team did show extensive experience constructing pipelines, reservoirs, and traditional wastewater treatment facilities. However, they did not spend the level of detail discussing the challenges

associated with construction in an active plant as that is a vital component of this project. During the discussions regarding Garney, the panel did have some concerns with the team's level of experience and did not have that same reaction and level of comfort to the Garney team as the panel did with McCarthy.

During the panel discussion, the previous work history with Stantec was also discussed. Stantec has had a history with both companies but has more experience working with McCarthy. They have recently worked together on several projects throughout the country from water and wastewater to vertical construction and have been very successful working together and produced successful projects. The interview process impressed the selection committee with the value of these deeper information gathering discussions and their value in determining the best firm for the project. McCarthy's team earned full points for the interview sealing the recognition that the McCarthy team provides the best value to the City based on their demonstrated knowledge and experience.

Bid #0120-18 Barry Rose CMAR - Evaluation Recap				
	Garney Companies	McCarthy Building Companies	PLW Waterworks	Wharton-Smith
Past Exp, performance w/similar gov't projects, & perf on WWTS 15 pts	12.60	13.80	13.20	10.80
Quality of firm's key personnel 15 pts	12.60	13.00	11.60	11.00
History Meeting Cost & Schedule in Past 5 Years 10 pts	9.40	9.40	9.40	9.20
References 5 pts	5.00	5.00	4.60	5.00
Organization, Mgmt & Safety Record, QA Procedures 10 pts	9.00	10.00	7.80	7.20
Project Approach 20 pts	16.80	17.60	17.60	14.20
Self-perform Capability 10 pts	9.60	8.80	8.00	8.40
Subtotal Points	75.00	77.60	72.20	65.80
Billing Rates	\$ 1,086,554.00	\$ 1,077,920.00	\$ 998,000.00	\$ 952,800.00
% Construction Service Fee	5.10	6.50	5.00	4.85
Preconstruction Services Billing Rate 7 pts	6.14	6.19	6.68	7.00
Construction Phase Services Fee 8 pts	7.61	5.97	8.00	7.76
Evaluation Points	88.75	89.76	86.88	80.56
Interview Points	13.00	15.00		
TOTAL POINTS	101.75	104.76		

Contract Negotiation

After completion of the interviews and tabulating scores, McCarthy was selected as the best value CMAR firm with an overall score of 104.76. Part One of the fee proposal was for Pre-Construction Services. McCarthy's fees totaled \$1,077,920.00. McCarthy has recommended, and Staff agrees, that this contract should include an Owner's Allowance of \$100,000.00 strictly for the

Owner's use in connection with any requested additional work or value-added services such as potholing, subsurface investigations, or geotechnical work that could assist in guiding value engineering during the preconstruction phase. The total contract award for Pre-Construction Services to McCarthy that will be submitted to Council for consideration is \$1,177,920.00.

Part Two of the fee proposal requested the provision of a Construction Phase Services Fee expressed as a percentage of the cost of construction based on an estimated \$90 million-dollar construction cost for the BRWRF and \$20.5 million for the Longwood forcemain and plant decommissioning. McCarthy initially proposed a fee of 6.50%. Although the fee is higher than recent experience, staff discussed this with McCarthy and they were considering risks of delays to the timely completion of the work are much higher on this project than any previous projects due to the close association within the Clear Creek corridor which is planned for widening. Harris County Flood Control (HCFC) has indicated they are willing to work with the City to allow the force main within the corridor but there are risks that HCFC work could delay that portion of the project impacting the schedule and prolonging general conditions costs. The fact that work will be going on in three different locations exposes the project, as a whole, to greater risks of delay of substantial completion if one or more major components are delayed for any reason. Although these concerns are relevant to all applicants, these higher risk factors were some of their basis of determination for McCarthy's proposed fee.

Per the Texas Government Code, Title 10, Subtitle F, Chapter 2269.254 regarding the selection of the Best Value CMAR, the rules provide the opportunity to further negotiate and partner together to share in the risk of a project, to enhance the team working relationship and come to a final contract. In the spirit of this process with McCarthy, Staff negotiated a fee reduction of 0.5% (approximately \$550,000 in fee reduction) by adding a Risk Sharing Contingency of \$250,000 to be used if unavoidable delays are encountered. Resulting in a total initial savings of \$300,000 assuming the total project (BRWRF and Longwood) is \$109.9 million and all the Risk Contingency is utilized. To reduce the risk of delays and incentivize keeping the contract on schedule, a 60/40 split (City/McCarthy) of any remaining funds in the Risk Sharing Contingency is provided in the contract, with all remaining funds saved outside of the Risk Sharing Contingency returning to the City. Thus, incentivizing the CMAR to avoid delay claims, minimize any delays encountered and/or find work-arounds to maintain the project schedule.

The differences in the Construction Phase Services fee and the pre-construction service fee between McCarthy and Garney results in less than a 0.9 % difference in the overall cost of the project. As indicated in the selection process discussion, the experience of the team that McCarthy is providing showed the understanding of the complexity of the project, detailed level of estimating, market analysis and understands the amount of coordination and communication required to construct a project of this complexity. Having a high performing and best value CMAR on-board that has the experience and detailed understanding of complex projects provides value over the life of the project (beginning to closeout) and the investment will ultimately provide the City with the best value project at an economic price while maintaining compliance with permit regulations.

Scope of Pre-Construction Services

The current contract includes Pre-Construction services only. The Pre-Construction Services contract will include provisions for project management and cost estimation personnel, continuous design review, constructability recommendations to ensure a complete set of plans. The design/review process will benefit from contractor input through on-going value engineering and use of best construction practices. The CMAR will assist in developing cost-effective design alternatives, construction methodologies, bidding and sub-contracting portions of the work not self-performed and the development of detailed cost estimates leading up to the provision of a GMP at completion of the 90% plans. The contract will include these services for the expansion of the BRWRF, the decommissioning of the Longwood facility and the construction of the force main along Clear Creek.

Current Status

A Project Information Form (PIF) was submitted and accepted by TWDB in March 2020, which is the initial step in the loan application process. Staff is currently awaiting the formal Invitation to file the Application, estimated to be released in late August 2020. These efforts are being coordinated internally with the Finance Department

Budget Information

Current budget information reflects very early construction costs estimated from the design engineer. This engineer's opinion of probable cost estimate was developed during an early 30% design and contains a significant contingency to cover unknowns. As with other CMAR led projects cost estimating and refinement of cost-effective design and construction methodologies are primary scope components for the CMAR. These figures will change as the project progresses and ultimately produces the CMAR's GMP at which time the City may accept that price and issue a contract for construction.

Barry Rose:

Funding Sources	Series	To Date	Future	Total Budget
General Revenue - Cash				-
Certificates of Obligation				-
W/S Revenue Bonds	2017C	400,000		400,000
W/S Revenue Bonds	2018B	2,990,000		2,990,000
W/S Revenue Bonds	2020B	620,000		
W/S Revenue Bonds			43,515,000	43,515,000
Impact Fee - Cash		3,753,396		3,753,396
Impact Fee - Debt			43,515,000	43,515,000
Other Funding Sources - Fund Balance		769,813		769,813
Total Funding Sources		8,533,209	87,030,000	95,563,209

Expenditures	To Date	Future	Total
PER	773,209		773,209
Land		750,000	750,000
Design	5,112,366	1,150,000	6,262,366

Construction		80,371,512	80,371,512
Construction Management/Inspection		2,000,000	2,000,000
Construction Materials Testing		450,000	450,000
FF&E		500,000	500,000
Total Expenditures		5,885,575	85,221,512

Project Balance/Contingency			4,456,122
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Longwood:

Funding Sources	Series	To Date	Future	Total Budget
General Revenue - Cash				-
Certificates of Obligation				-
W/S Revenue Bonds	TBS 2020	1,056,000		1,056,000
W/S Revenue Bonds			17,824,000	17,824,000
W/S Revenue Bonds				-
Impact Fee - Cash				-
Impact Fee - Debt				-
Other Funding Sources - Fund Balance				-
Total Funding Sources		1,056,000	17,824,000	18,880,000

Expenditures	To Date	Future	Total
PER			-
Land		1,500,000	1,500,000
Design			-
Construction		15,874,000	15,874,000
Construction Management/Inspection			-
Construction Materials Testing			-
FF&E			-
Total Expenditures	-	17,374,000	17,374,000

Project Balance/Contingency			1,506,000
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Recommendation

On August 10th, Staff will bring the final negotiated CMAR contract for the Barry Rose Water Reclamation Facility Plant Expansion to Council with the recommendation to approve the selection process and award the contract for Pre-Construction services to McCarthy in the Lump Sum amount of \$1,077,920.00 plus an Owner's Allowance of \$100,000 totaling \$1,177,920.00. The recommendation will also include approval of the 6.0% CMAR fee for construction. The Agenda Request will provide the full scope of work included and the proposed schedule of values for the contract.

EXHIBIT A PROJECT LOCATION MAP



Barry Rose Water Reclamation Facility



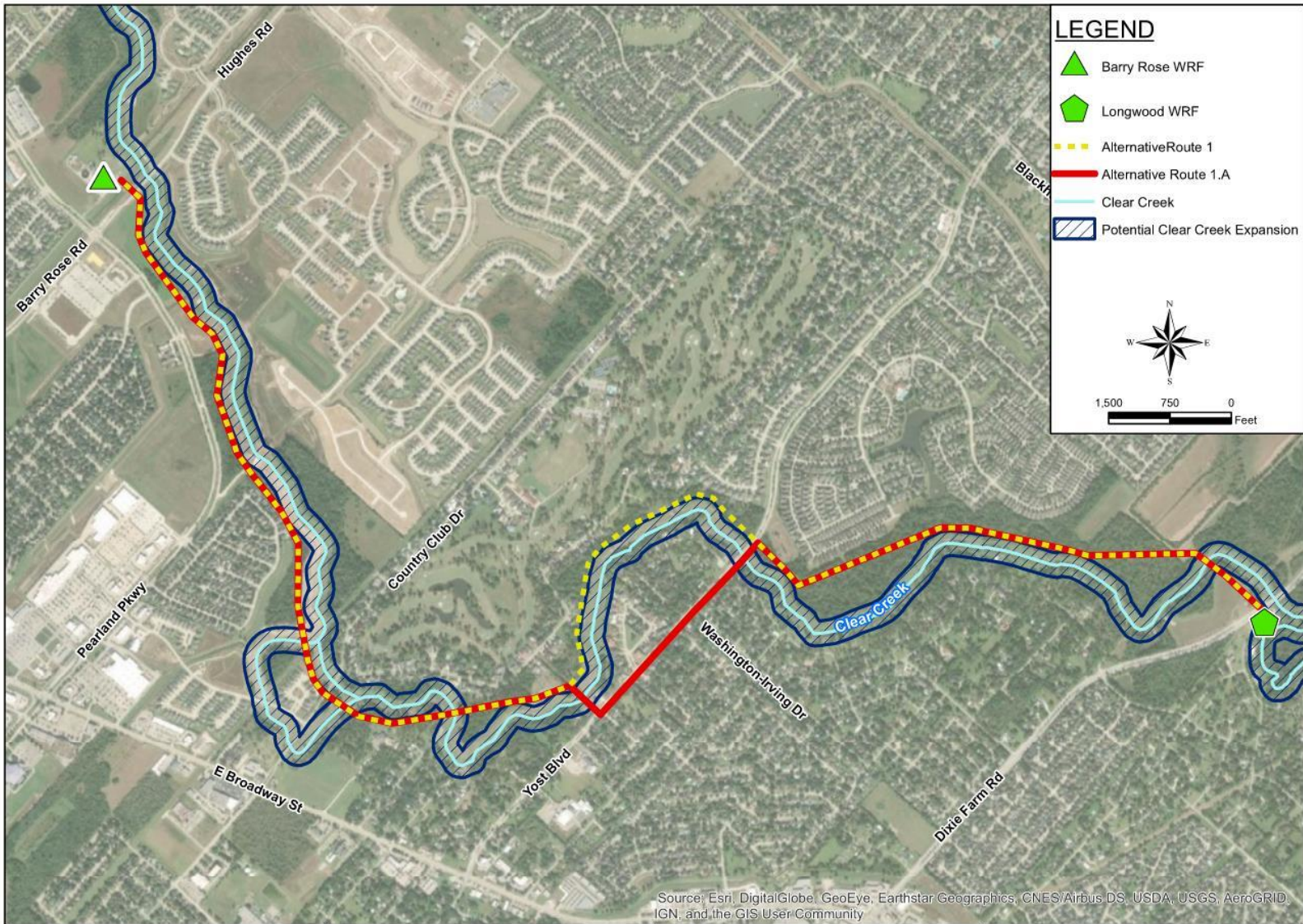
1:4,800
1 inch = 400 feet



This product is for informational purposes only and may not be prepared or be suitable for legal, engineering, or surveying purposes.

MWP PREPARED: SEPTEMBER 15, 2014
GIS DEPARTMENT

Alternative Force Main Routes in Consideration Showing location of Longwood and Barry Rose Facilities



**Longwood WRF
Force Main Route Study**

Preferred Alternatives