

CITY OF HIGH POINT

AGENDA ITEM



Title: Rich Fork Diversion Pump Station Evaluation
Black and Veatch International Company

From: Terry Houk – Public Services Director
Derrick Boone – Public Services Asst. Director

Public Hearing: N/A

Meeting Date: November 15, 2021

Advertising Date: N/A

Advertised By: On-Call

Attachments: Attachment A- Proposal for Engineering Services for the Rich Fork Diversion Pump Station
PER Project

PURPOSE:

To contract with the Black and Veatch International Company to evaluate the necessary capacity and site selection of a new sanitary sewer pump station that would divert flow from the Riverdale Pump Station.

BACKGROUND:

The City of High Point transfers wastewater flow to the Eastside WWTP via the Riverdale Pump Station from areas located on the north side of the City. The Riverdale Pump Station is High Point's largest pump station. Emergency repairs were performed on the pump station due to damage from Hurricane Florence in 2018. While the station was offline for the emergency repairs, it was expanded to a capacity of 30 Million Gallons Per Day (MGD) which included the installation of a new 10 MGD submersible pump and backup generator. A second force main is also currently under construction that will discharge to the Eastside Wastewater Treatment Plant from the pump station. The existing pumps, Variable Frequency Drive (VFD), electrical components, and controls in the station were not replaced as part of the expansion project and soon will have to be upgraded.

The intent of the Public Services Department is to divert additional flow from the Riverdale Pump Station to avoid a future expansion of the pump station, and instead upgrade the existing pumps, VFDs, electrical components, and controls within the existing footprint of the station. The scope of the Rich Fork Diversion Pumping Station Preliminary Engineering Report (PER) Project will be for Black and Veatch to evaluate the needed capacity and site selection of a new pumping station, hydraulic evaluations, gravity sewer and force main sizing and routing, and other system improvements needed to divert flow from the Riverdale Pump Station to the Westside WWTP.

BUDGET IMPACT:

Funds for this project are available in the 2021/2022 Budget.

RECOMMENDATION / ACTION REQUESTED:

The Public Services Department recommends approval and asks for the Council to award the professional engineering services to Black and Veatch International Company in the amount of \$163,000.



BLACK & VEATCH
Building a world of difference.®

BLACK & VEATCH INTERNATIONAL COMPANY

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October 21, 2021

City of High Point
211 S. Hamilton Street
High Point, NC 27260

Attention: Mr. Terry Houk
Public Services Director

Subject: Rich Fork Diversion Pumping Station PER Project

Dear Terry:

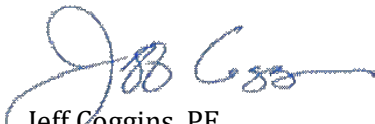
Attached for your approval is Attachment A Scope of Services and Attachment B Compensation for the subject Project. The City of High Point owns and operates the existing 30 MGD capacity Riverdale Pumping Station (PS) which is the largest PS upstream of the existing Eastside WWTP. As documented in the 2019 Sanitary Sewer Master Plan (SSMP), it was determined that the existing Riverdale Pumping Station is at capacity, cannot be expanded, and collection system improvements are needed to reduce peak flows to the PS. The SSMP identified several peak flow reduction improvements including a potential new pumping station to divert a portion of its influent flow upstream of the existing Waterview Pumping Station to the west via Rich Fork which would flow by gravity to the Westside WWTP.

The Rich Fork Diversion Pumping Station PER Project will evaluate the needed capacity and site selection of a new pumping station, hydraulic evaluations, gravity sewer and force main sizing and routing, and other system improvements needed to divert flow from the Riverdale PS to the Westside WWTP.

We appreciate and look forward to the opportunity to work with you and your staff on this important project.

Very truly yours,

BLACK & VEATCH INTERNATIONAL COMPANY


Jeff Coggins, PE
Associate Vice President


Mike Osborne, PE
Sr. Project Manager/Client Director

ATTACHMENT A SCOPE OF SERVICES

Owner: City High Point, North Carolina
Engineer: Black & Veatch International Company
Project: Rich Fork Diversion Pumping Station & Pipelines

This Scope of Services outlines the preliminary engineering for the Rich Fork Diversion PS & Pipelines Project (herein after referred to as “Project”). The Scope of Services for detailed design, permitting, bidding, and construction administration and inspection services are not included herein and are anticipated to be contracted later as an amendment to this Agreement.

The City of High Point (hereinafter referred to as “Owner”) owns and operates the existing 30 MGD capacity Riverdale Pumping Station (PS) which is the largest PS upstream of the existing Eastside WWTP. As documented in the 2019 Sanitary Sewer Master Plan (SSMP), Owner has determined that the existing Riverdale Pumping Station is at capacity, cannot be expanded, and collection system improvements are needed to reduce peak flows to the PS. The SSMP identified several peak flow reduction improvements including a potential new pumping station to divert a portion of its influent flow upstream of the existing Waterview Pumping Station to the west via Rich Fork which would flow by gravity to the Westside WWTP.

The major components of the facilities anticipated to be evaluated under this project include a new pumping station upstream of the Waterview PS to divert flow to Rich Fork. The capacity of the new pump station will be evaluated and is assumed to be 4.5 MGD as indicated in the SSMP. Other facilities anticipated include gravity sewer extension to new PS and discharge force main to Rich Fork. Evaluations will also include Rich Fork gravity sewer improvements necessary to convey flow to the existing Westside WWTP.

The preliminary engineering for the Rich Fork Diversion PS & Pipelines Project will include evaluations of the following elements:

- Site selection for new pumping station
- Hydraulic/Pumping evaluation
- Sizing and routing of approximately 5,000 LF of influent gravity sewer
- Sizing and routing of approximately 33,000 LF of force main
- Necessary improvements to downstream receiving gravity sewer to convey flow to Westside WWTP

The Scope of Services is anticipated to be performed as follows:

Preliminary Engineering Services

Preliminary Evaluations 3.5 months

Preliminary Engineering Report 1.5 months

PHASE 1000. PROJECT MANAGEMENT AND ADMINISTRATION

A. Administration and Coordination.

1. Conduct a project initiation meeting to clarify Owner's requirements for the project; review available data and project organization and staffing; and present initial work plan and schedule.
2. Conduct consultations and meetings with State and Federal agencies concerning the project to determine their requirements. One meeting is anticipated.
3. Arrange for and participate in five monthly project meetings with Owner to review progress and exchange ideas and information.
4. Prepare and distribute the minutes for project meetings. Minutes for the project meetings will include a record of decisions made and why those decisions were made.

B. Provide project management and administration for a 5-month period to:

1. Correspond and consult with City,
2. Coordinate activities of the Engineer's project team,
3. Develop and implement specific work plans, procedures and a quality control and quality assurance plan, and
4. Provide overall project direction to Engineer's personnel to meet City's objectives.
5. Maintain a project filing system throughout the life of Project to use for storage and retrieval of project documents.
6. Prepare monthly invoices and status reports to document Project progress.

PHASE 2000. PRELIMINARY ENGINEERING

A. Preliminary Evaluations

1. Hydraulic/Pumping Evaluation. Utilizing the existing collection system model and the population projections from the 2019 City of High Point Sanitary Sewer Master Plan provided by Owner, Engineer will conduct evaluations of the existing and future collection system to determine the following pertaining to the new PS:
 - a. Identification of flow projections for the planning periods of existing model into the collection system serving the Waterview PS. Owner will be asked to confirm any new flows not captured in the 2019 Master Plan.
 - b. Selection of current and future pumping station capacities for the new Rich Fork and existing Waterview PSs. Capacities will be evaluated to determine the optimal Rich Fork PS diversion capacity which accomplishes the following:
 - 1) Sufficiently offloads flow to existing Waterview PS to minimize expansion or improvements throughout the planning period.
 - 2) Minimizes or defers to future any necessary improvements to the existing downstream receiving gravity sewer for conveyance to Westside TP.
 - c. Evaluate type, quantity, and capacity of the pumping units for new PS.
 - d. Develop system head curve data for current and future conditions. Select operating conditions of pumping units (flow, head, horsepower, speed).
 - e. Evaluate surge potential and associated surge mitigation measures needed at pumping station.

It is assumed the existing model is calibrated, additional calibration is not required, and no adjustments to population projections or planning period will be required.
2. Site Selection Evaluation. Engineer will identify and evaluate up to three potential site locations for the new PS. Engineer will visit the sites and develop one high level conceptual site layout which can be applied to all three sites. Engineer will present layout and summarize pros and cons of each potential site location considering available site area, topography, proximity to existing mains, new pipe routing, drive access, and proximity to other residential dwellings in the first preliminary evaluation workshop.

3. Pipeline Evaluations. Engineer will evaluate sizing and routing of new influent gravity sewer, force main, and downstream receiving gravity sewer. The evaluations will include the following:
 - a. Review any existing inspection data such as CCTV data, but no new inspection is included in this scope.
 - b. Conduct a site visit to evaluate routes of proposed pipelines. One day is budgeted for this effort.
 - c. Review record drawings of existing pipelines provided by the Owner to verify sizes, materials, and easement widths.
 - d. Routes will be evaluated and compared in terms of cost, easement needs, environmental impacts, and constructability. Two to three alternative routes will be evaluated.
 - e. GIS maps will be provided for the alternatives.
 - f. Environmental work will be limited to desktop analysis utilizing readily available information from various government sources such as US Fish and Wildlife, State Historical Preservation Office, and local GIS data. Field surveys for threatened and endangered species or wetland and stream identification are not included in this scope.
4. Pumping Station Facilities Evaluation. The PS is anticipated to utilize submersible pumps in a pre-cast manhole assembly. An adjacent pre-engineered building will house the electrical gear (constant speed starters, step-down transformers, power panels, lighting panels, and communications panels). No interior plumbing is planned. Standby power generator and antenna for remote communications are included. Odor control system is included anticipated to consist of carbon adsorption system for treatment of the submersible pump wetwell headspace. No provisions for screenings removal are included. The evaluation will include the following:
 - a. Develop preliminary site plan with conceptual building floor plans.
 - b. Develop basic utilities services concepts, including standby power or redundant power supply.
 - c. Develop I/O and future CCTV requirements of new pump station for use in the evaluation and development of the communication infrastructure requirements between new pump station and existing SCADA system.
5. Preliminary Evaluation Workshops. Two Workshops will be conducted with Owner to review and discuss the Preliminary Evaluations, obtain feedback, and select improvements to be designed. Engineer will prepare and distribute meeting minutes for the workshops which will include a record of decisions

made. The selected improvements will be documented in the Preliminary Engineering Report described below.

B. Preliminary Engineering Report

1. A Preliminary Engineering Report (PER) will be prepared to provide a summary of design data and other information to be used for a basis of design for the facilities. Tabular format will be used where practical. The PER will include pertinent information from the preliminary evaluations and detailed information as required to provide the following information:
 - a. Horizontal and Vertical Datum.
 - b. Applicable codes and standards.
 - c. General site and new facilities layout.
 - d. GIS mapping of selected pipeline routing.
 - e. Process equipment listings, including size and type.
 - f. Major electrical, instrumentation and control systems description.
 - g. Description of emergency standby power provisions.
 - h. Auxiliary systems descriptions, e.g., sampling systems, security systems.
 - i. Special instructions from Owner, e.g., standardized equipment.
 - j. Permitting log.
 - k. Opinion of Probable Construction Cost.
2. Conduct quality control review and revise as required.
3. Review workshop. Conduct a review workshop with Owner to review and discuss the design memorandum and obtain feedback. Engineer will prepare and distribute minutes for workshop which will include a record of decisions made.

PHASE 3000. OWNER'S RESPONSIBILITIES

- A.** The Owner will be responsible for the following in support of this project.
1. Provide all information on existing facilities.
 2. Provide access to existing facilities as appropriate.

3. Operation of all valves, pumps, and other equipment.
4. Easement negotiations and acquisitions.

PHASE 4000. SUPPLEMENTAL SERVICES

- A. Any work requested by Owner that is not included in one of the items listed in any other phase will be classified as supplemental services.
- B. Supplemental services shall include, but are not limited to:
 1. Additional meetings with local, State, or Federal agencies to discuss the project.
 2. Supplemental engineering work required to meet the requirements of regulatory or funding agencies that become effective subsequent to the date of this agreement.
 3. Special consultants or independent professional associates required by Owner.
 4. Changes in the general scope, extent, or character of the project, including, but not limited to:
 - a. Changes in size or complexity.
 - b. Owner's schedule, design, or character of construction.
 - c. Revision of previously accepted studies, reports, design documents, or construction contract documents when such revisions are required by changes in laws, rules, regulations, ordinances, codes, or orders enacted subsequent to the preparation of such studies, reports, documents, or designs; or are required by any other causes beyond Engineer's control.
 5. Additional permitting or regulatory meeting assistance.
 6. Value engineering reviews or services.
 7. Coordination of and expenses for trips with Owner to other facilities to review facility features and operation and maintenance requirements of process.
 8. Hazardous materials testing and subsequent provisions for hazardous materials handling and disposal.
 9. Any additional development, calibration or population projections of Owner's existing collection system model.
 10. Hydraulic evaluation and flow projections of other pumping stations beyond the new Rich Fork Diversion PS.
 11. Land acquisition assistance for new pump station site and pipeline easements.

12. Field investigations including site survey and geotechnical for new pump station and pipelines.
13. Environmental investigations for new pump station and pipelines.
14. Inspections of existing pipes.

ATTACHMENT B

Owner: City of High Point, North Carolina
Engineer: Black & Veatch International Company
Project: Rich Fork Diversion PS & Pipelines

COMPENSATION

For services covered by this Contract, the Owner agrees to pay Engineer as follows:

- A. For Phase 1000- Project Management and Administration and Phase 2000-Preliminary Engineering as defined in Attachment A of the contract, a lump sum amount of \$163,000.00.
- B. For Phase 4000-Supplemental Services as defined in Attachment A of the contract, Owner and Engineer will negotiate a written amendment to this contract prior to beginning work on Supplemental Services.