



CITY OF NORTH PORT

**PROFESSIONAL ENGINEERING SERVICES FOR NPU
NO. 2016-23
THIS IS NOT AN ORDER**

Date: 10/13/16

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**CITY OF NORTH PORT
Utilities Department
6644 W. Price Blvd.
North Port, Florida 34291**

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Reply No Later Than: November 2, 2016 @ 2:00 p.m. (EST)

REQUEST FOR LETTERS OF INTEREST NO. 2017-03

**CITY OF NORTH PORT
CONSTRUCT CITY-WIDE CALIBRATED HYDRAULIC WASTEWATER MODEL**

The City of North Port Utilities Department is currently accepting Letters of Interest from all the firms within Contract No. 2016-23, Professional Engineering Services for NPU.

INTENT: It is the intention of NPU to secure the professional services of a qualified firm to build a calibrated hydraulic model of its wastewater collection system to use as a tool for analyzing the existing system, as well as for planning future expansions of the system. This model will encompass the entire wastewater system, which includes 1.14 million lineal feet of transmission and collection wastewater mains as shown in the City's GIS system. The entire system will be imported from the ArcGIS platform to the modeling software platform, SewerGEMS or equivalent (NPU is in the process of determining the chosen software). Information from all lift station records will also be input into the model to develop average daily flow, maximum monthly flow, and peak day flow scenarios, as well as 24-hourly extended time series scenarios. The model will be used to identify, develop and analyze alternatives for proposed piping/pump station facilities necessary for future conditions; identification of system bottlenecks; review of present operations and identification of facilities for improvements, including energy reductions and to aid in the sizing of replacement and expansion mains or lift stations; and to better predict the effects of repairs and addition of future developments on the system.

Additionally, this model will be used for confirmation of the available wastewater capacity in the existing 12-inch forcemain installed along the US41 corridor. This 12-inch forcemain currently serves the West Villages Improvement District (WVID) as agreed to in the 2007 Amended and Restated Utility Agreement, and will serve commercial properties as depicted in the Urban Service Boundary Area as "Future Annexation Area" between the western limit of the City platted lot area and the WVID. This portion of the scope is time sensitive, therefore, will be expedited as the first phase of the work.

BACKGROUND/SCOPE OF SERVICES:

BACKGROUND

The City of North Port (CITY) owns and operates an extensive wastewater collection system comprised of 64 miles of forcemains, 151 miles of gravity and 101 lift stations, but is growing annually. Sewage from the City's approximately 15,500 customers is collected and pumped into the City's Wastewater Treatment Facility (WWTF) where it is treated. After treatment, the plant produces highly treated reclaimed water that provides irrigation to over a thousand residential and commercial properties, including golf courses and residential communities. The

City has two Deep Injection Wells available for effluent during the rainy times of the year when reclaimed water for irrigation is not needed. The City limits encompass an area of approximately 103 square miles (mi²), of which approximately 45% is designated within the City's Urban Service Area Boundary. Currently the City's wastewater system extends to approximately 25% of the Urban Service Area, leaving a majority of the platted lots relying on on-site septic tank/drainfield systems for wastewater treatment and disposal. The wastewater system consists of lift stations, gravity sewers and forcemain, and other infrastructure ages that range from less than one-year to more than 50 years old.

The WVID installed a 12-inch diameter forcemain from Pan American Blvd. to their development, along the US41 corridor to serve their property. Pursuant to the 2007 Amended and Restated Utility Agreement, the City has agreed to maintain the capacity in the agreement (3,600 ERCs) to the WVID properties, however the City also has the challenge of serving the commercial properties directly on US41. In 2010, the US41 Corridor Study was conducted, which provided a capacity analysis and recommendations to ensure the City's ability to serve these commercial properties while maintaining capacity for WVID per the 2007 Amended and Restated Utility Agreement with the City. Analysis of current capacity availability in the 12-inch diameter forcemain to serve the US41 Corridor as well as maintain capacity for WVID is required. As noted above, this portion of the scope is time sensitive, therefore, will be expedited as the first phase of the work.

The City understands this is a cooperative project and is prepared to work with the selected firm to provide all necessary data such as; lift station FPL meter information, SCADA system information, Wastewater Plant MORs and daily flow information, the US41 Corridor Study final documents, up-to-date GIS files, record drawings of facilities as needed, database of existing water meters and water meter read information, as required.

As noted above, a portion of the work is time sensitive, and the final capacity analysis and recommendations regarding available capacity along the US41 corridor to serve the commercial properties should be received by the City of North Port Utilities Department by **January 6, 2017**. A final City-wide calibrated hydraulic wastewater model should be received by the City of North Port Utilities Department by **May 26, 2017**.

All references to number of days with respect to deadlines shall mean calendar days.

SCOPE OF SERVICES

Task 1.0 US41 Corridor Force Main Capacity

1.1 A minimum of two (2) existing conditions steady-state scenarios and four (4) future conditions steady-state scenarios will be performed using the existing conditions with pumping capacities at lift stations in WVID and along US41 Corridor to help determine the available capacity in the 12-inch diameter forcemain that will serve the commercial properties located immediately along the US41 Corridor between the western limit of the platted lot City limit and the eastern limit of the WVID prior to the new water and wastewater plants being constructed in the WVID. Demands for future scenarios involving development directly adjacent to US41 Corridor will be determined using the estimates provided in the US41 Corridor Study or as provided by the City. Single-node demands will be added to the closest transmission main for each future development.

1.2 A draft technical memorandum will be prepared and electronically submitted summarizing the findings from the steady-state modeling and providing a recommendation for US41 Corridor Force Main capacity. The draft report will be submitted as an electronic copy (MS Word doc).

1.3 A meeting will be held with City staff to review questions and comments on the draft technical memorandum. Following the meeting, agreed upon changes to the report will be incorporated in the document and a final technical memorandum will be developed and delivered to the City. Five (5) copies of the technical memorandum will be provided along with an electronic copy (MS Word doc and pdf).

Task 2.0 Construct Hydraulic Model Network

2.1 Prepare for, attend and prepare and summarize minutes for a project kick-off meeting with City staff to review the scope of work, schedule, and model preferences, and to formally request City-provided data.

2.2 The existing conditions model piping network will be constructed using Bentley's SewerGEMS V8i or equivalent. The piping network will be created by importing the City's current GIS line work for the existing wastewater collection system. This information will be imported into SewerGEMS or equivalent, and the piping network will be checked to ensure that there is no loss in pipeline connectivity during the conversion. Where available, the referenced pipe materials will be used to input pipe inner diameters to replace the nominal pipe diameters currently referenced in GIS. All pipeline C-factors will be set by the firm as appropriate to age and material. Record drawing information from the City's WWTF and from existing lift stations will be used to develop these model elements.

2.3 The City's GIS does not include elevation information for existing wastewater infrastructure. For the purposes of setting up a useful hydraulic model, record drawing elevations at the City's WWTF and lift stations will be input. Pipeline elevations for the collection system will be assigned using Light Detection and Ranging (LiDAR) general ground elevations across the City with an assumed depth of cover. Assigning true pipeline elevations from record drawings is not included in this scope of work.

2.4 Following the efforts outlined in tasks 2.2 and 2.3, a meeting will be held with City staff to review an overall map of the model elements. Staff will have the opportunity to correct any elements that are known to be inaccurately depicted. These items could include connectivity issues and pipeline diameters as well as known valve operations.

Task 3.0 Assign Model Demands

3.1 A lift station point file (to be provided in the form of a GIS shape file by the City) of all lift stations in the system will be provided. The file will identify each lift station by depth, pump sizing and type, run times, etc. Within the GIS, these lift stations will be grouped and assigned to wastewater model nodes. High demand large users (master lift stations) will be referenced to the land use or parcel file. An assumed lift station size-wastewater demand reference table will be developed that will attempt to balance the demands to the existing consumption. This GIS file will be imported into SewerGEMS or equivalent, and demands assigned to junctions by assigning lift station to the nearest junction in the model.

Task 4.0 Model Calibration

4.1 A suggested lift station flow testing plan for City staff to perform flow tests at selected locations in the collection system to develop representative friction/C-factors for various types of wastewater mains based on age, size, and material if applicable.

4.2 Flow testing information will be used to adjust initial C-factors and or unit demands assigned to lift stations in the existing conditions model to better match the hydraulic characteristics present in the system. Calibration efforts will achieve a level of calibration deemed acceptable by the selected firm and City staff.

4.3 A technical memorandum will be prepared and electronically submitted documenting the work completed to build the existing conditions model. The memo will include existing conditions model results, a log of information used in model development, and other pertinent information deemed useful for future model development efforts.

Task 5.0 Extended Period Simulation

5.1 Nine (9) extended period simulations using historic wastewater demand diurnal flow. There will be a demand scenario for maximum, minimum and average day demands.

Task 6.0 Engineering Evaluation of Model Results

6.1 Based on the analyses described, the results will be summarized in the form of maps and data tables. The results will be reviewed to identify areas of high pressure, excessive pump run times, system bottlenecks, areas of inflow & infiltration concern and flow reversal.

6.2 Based on identified areas of concern, changes to the wastewater system including operational adjustments to lift station operating pressures, air release valves, valve operation, or physical changes such as adjustments to pump sizes, piping sizes, diverting of flows, sizing of on-site plant piping or changing the intake design at the plant will be considered.

6.3 A meeting will be held with City staff to discuss the model outcomes and discuss the potential changes or improvements to be considered.

6.4 Based on the staff meeting additional model runs (up to 5) will be performed to determine effectiveness in addressing potential issues.

Task 7.0 Report of Findings

7.1 A report will be prepared summarizing the assumptions made in developing the model, the results of the model calibration, and summary tables and maps of the scenario outputs of the model.

7.2 The report will also provide a summary of the engineering evaluation of the model outputs and will discuss the pressures and opportunities for system improvement analysis. Recommendations for potential operational changes will be provided along with potential physical improvements such as adjustments to pipe or pump sizes, diverting of flows, sizing of on-site plant piping or changing the intake design at the plant.

7.3 The report will be provided in draft form to the City for review in advance of a meeting to discuss the model results and recommendations. Five (5) copies and an electronic copy of the draft report will be delivered.

7.4 A meeting will be held with City staff to review questions and comments on the draft report. Following the meeting agreed upon changes to the report will be incorporated in the document and a final report will be developed and delivered to the City. Five (5) copies of the report will be provided along with an electronic copy and an electronic version of the model.

DELIVERABLES

The deliverables to be provided for this project include the following:

- An draft electronic version (MS Word doc) of a Technical Memorandum summarizing the findings from the steady-state modeling and providing a recommendation for US41 Corridor Force Main capacity by December 20, 2016.
- A final Technical Memorandum summarizing the findings from the steady-state modeling and providing a recommendation for US41 Corridor Force Main. Five (5) copies and an electronic copy (MS Word doc and pdf) of the draft report will be delivered by January 6, 2017.
- An electronic version (MS Word doc) of a Technical Memorandum documenting the work completed to build the existing conditions model.
- A draft report of findings summarizing the assumptions made in developing the model, the results of the model calibration, and summary tables and maps of the scenario outputs of the model. Five (5) copies and an electronic copy (MS Word doc) of the draft report will be delivered by April 28, 2017.

- A final report of findings summarizing the assumptions made in developing the model, the results of the model calibration, and summary tables and maps of the scenario outputs of the model. Five (5) copies and an electronic pdf copy of the draft report will be delivered by May 26, 2017.
- A working, calibrated wastewater hydraulic model for City's use in SewerGEMS or equivalent by May 26, 2017.

BUDGET

The City has a budgeted amount of \$100,000 to perform this model.

PROPOSAL REQUIREMENTS

It is the responsibility of the Engineer to be knowledgeable of the City's wastewater transmission and collection system, the facilities, and plans for future potential wastewater plants. Engineer shall include in their proposal information to ensure deadlines set forth herein are met.

Proposals shall include a project plan which specifies the firms' understanding of project and required deliverables; ability and relevant expertise/qualifications of the firm's personnel to be used in performing the service; availability of staff and ability to meet project schedule; the firms' proposed cost saving measures for the project; and provide a schedule that will meet the timeline requirements of this project.

Engineers are to provide references for at least three (3) similar projects within the last 5 years. Name, email and phone numbers are required for appropriate contact for each reference.

Proposals are to include the names of all subcontractors to be used on this project.

Conflict of Interest and Disclosure for Consultant, Engineer, Architect forms must be submitted with proposals for consideration.

Any questions concerning this project must be submitted via email to both Rick Newkirk and Anna Duffey at rnewkirk@cityofnorthport.com and aduffey@cityofnorthport.com, respectively no later than November 1, 2016.

All firms within Contract No. 2016-23 are encouraged to submit a letter (not to exceed three single-sided pages) that provides the above information and adequately expresses why it would be in the City's best interest to select the submitting firm(s).

**LETTERS OF INTEREST ARE TO BE DELIVERED TO THE UTILITIES DEPARTMENT
ON OR BEFORE NOVEMBER 2, 2016 AT 2:00 P.M. (EST) VIA EMAIL TO:**

**RICK NEWKIRK: [RNEWKIRK@CITYOFNORTHPORT.COM](mailto:rnewkirk@cityofnorthport.com)
AND
ANNA DUFFEY: [ADUFFEY@CITYOFNORTHPORT.COM](mailto:aduffey@cityofnorthport.com).**

DISCLOSURE FORM FOR CONSULTANT/ENGINEER/ARCHITECT

Please select (only) one of the following three options:

☐ Our firm has no actual, potential, or reasonably perceived, **financial*** or **other interest**** in the outcome of the project.

☐ Our firm has a potential or reasonably perceived **financial*** or **other interest**** in the outcome of the project as described here: _____.

☐ Our firm proposes to mitigate the potential or perceived conflict according to the following plan: _____.

☐ Our firm has an actual **financial*** or **other interest**** in the outcome of the project as described here: _____.

***What does “financial interest” mean?**

If your firm, or employee of your firm working on the project (or a member of the employee’s household), will/may be perceived to receive or lose private income depending on the government business choices based on your firm’s findings and recommendations, this must be listed as a financial interest. An example would be ownership in physical assets affected by the government business choices related to this project. The possibility of contracting for further consulting services is not included in this definition and is not prohibited.

****What does “other interest” mean?**

If your firm, or employee of your firm working on the project (or a member of the employee’s household), will/may be perceived to have political, legal or any other interests that will affect what goes into your firm’s findings and recommendations, or will be/may be perceived to be affected by the government business choices related to this project, this must be listed as other interest.

BUSINESS NAME: _____

NAME (PERSON AUTHORIZED TO BIND THE COMPANY): _____

SIGNATURE: _____ **DATE:** _____

CONFLICT OF INTEREST FORM

F.S. §112.313 places limitations on public officers (including advisory board members) and employees' ability to contract with the City either directly or indirectly. Therefore, please indicate if the following applies:

PART I.

☐ I am an employee, public officer or advisory board member of the City
_____ (List Position Or Board)

☐ I am the spouse or child of an employee, public officer or advisory board member of the City
Name: _____

☐ An employee, public officer or advisory board member of the City, or their spouse or child, is an officer, partner, director, or proprietor of Respondent or has a material interest in Respondent. "Material interest" means direct or indirect ownership of more than 5 percent of the total assets or capital stock of any business entity. For the purposes of [§112.313], indirect ownership does not include ownership by a spouse or minor child.
Name: _____

☐ Respondent employs or contracts with an employee, public officer or advisory board member of the City
Name: _____

☐ None of The Above

PART II:

Are you going to request an advisory board member waiver?

☐ I will request an advisory board member waiver under §112.313(12)

☐ I will NOT request an advisory board member waiver under §112.313(12)

☐ N/A

The City shall review any relationships which may be prohibited under the Florida Ethics Code and will disqualify any vendors whose conflicts are not waived or exempt.

BUSINESS NAME: _____

NAME (PER AUTHORIZED TO BIND THE COMPANY): _____

SIGNATURE: _____ **DATE:** _____