

Loxahatchee River District

Water Reclamation | Environmental Education | River Restoration

2500 Jupiter Park Drive, Jupiter, Florida 33458-8964

Telephone (561) 747-5700 • Fax (561) 747-9929 • www.loxahatcheeriver.org

D. Albrey Arrington, Ph.D., Executive Director



MEMORANDUM

TO: D. ALBREY ARRINGTON, Executive Director

FROM: CLINTON R. YERKES, Deputy Executive Director

DATE: AUGUST 13, 2015

SUBJECT: ALT. A1A SUBAQUEOUS FORCE MAIN REHABILITATION/REPLACEMENT STUDY

This item is provided for Board approval since the cost exceeds the Executive Director's spending authorization.

The subject line runs under the River immediately west of the FEC railroad bridge over the Loxahatchee River. The ductile iron line is over 40 years old in a corrosive environment and is our only means of moving wastewater from the north side of the river to the south side. Staff is concerned about the integrity of the line and accumulations that may have occurred over the years, and is anxious to identify a method to either establish the integrity of the existing line or provide an alternative routing.

The subject Study will evaluate the feasibility of 5 Alternatives and make recommendation; provide a method of by-pass in the event of failure prior to construction of an Alternative; provide by-pass, issue descriptions and preliminary cost estimates for each Alternative.

This project was determined to require a level of experience and expertise beyond our Neighborhood Sewering projects. Upon review of Mathews' qualifications it was determined that they were well qualified to perform this study and provide recommendation. Staff has worked closely with MCI to develop a comprehensive scope and appropriate fee.

The following motion is suggested for approval of this contract:

"THAT THE DISTRICT GOVERNING BOARD authorize award of contract to Mathews Consulting Inc. for the Alternate A1A Subaqueous Force Main Rehabilitation/ Replacement Study, in accordance with their proposal dated August 12, 2015, in an amount not to exceed \$44,895.00."

Should you have any questions regarding this item, please contact me or Kris Dean, P.E.

V:/cip/proj/AltA1A SubaquesFM/Board Memo-Eng Award

Gordon M. Boggie
Board Member

Dr. Matt H. Rostock
Board Member

Stephen B. Rockoff
Chairman

Harvey M. Silverman
Board Member

James D. Snyder
Board Member

**AGREEMENT BETWEEN LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT
AND MATHEWS CONSULTING, INC.
FOR PROFESSIONAL ENGINEERING SERVICES**

"Alternate A1A Subaqueous Force Main Rehabilitation/Replacement Study"

DATE: August 12, 2015

BACKGROUND

The Loxahatchee River Environmental Control District (District) provides wastewater service to Jupiter, Tequesta, portions of Juno Beach, unincorporated northern Palm Beach County and unincorporated southern Martin County. The wastewater flow from the northeast service area is collected and pumped to an existing 24" subaqueous force main that crosses the Loxahatchee River (Refer to attached aerial map) and directs the flow south and ultimately flows west to the District's WWTP. The 24" subaqueous force main (approx. 1,200 LF) was constructed in 1977 and the material is DIP Ball & Socket. Based on past studies, it appears that the existing 24" subaqueous force main is oversized to handle the current and projected wastewater flows from this area. Also, downstream of the existing river crossing, the District has already replaced the old 24" DIP force main with a smaller 16" PVC force main.

The District has asked Mathews Consulting (MC) a Preliminary Design Report (PDR) that will investigate the following alternatives for rehabilitation/replacement of the existing 24" subaqueous force main:

- *Alternative 1* – use the existing 24" DIP force main as a casing pipe for a new smaller HDPE piping that would need to be pulled (sliplined) thru the existing piping.
- *Alternative 2* – construct a new smaller force main (on either the north or south side) of the existing bridge by directional drilling methods.
- *Alternative 3* – install a liner in the existing 24" force main.
- *Alternative 4* – construct a new smaller force main by directional drilling methods and also install a liner in the existing 24" force main for redundancy.
- *Alternative 5* – install a new force main on the existing bridge (on either the north or south side).

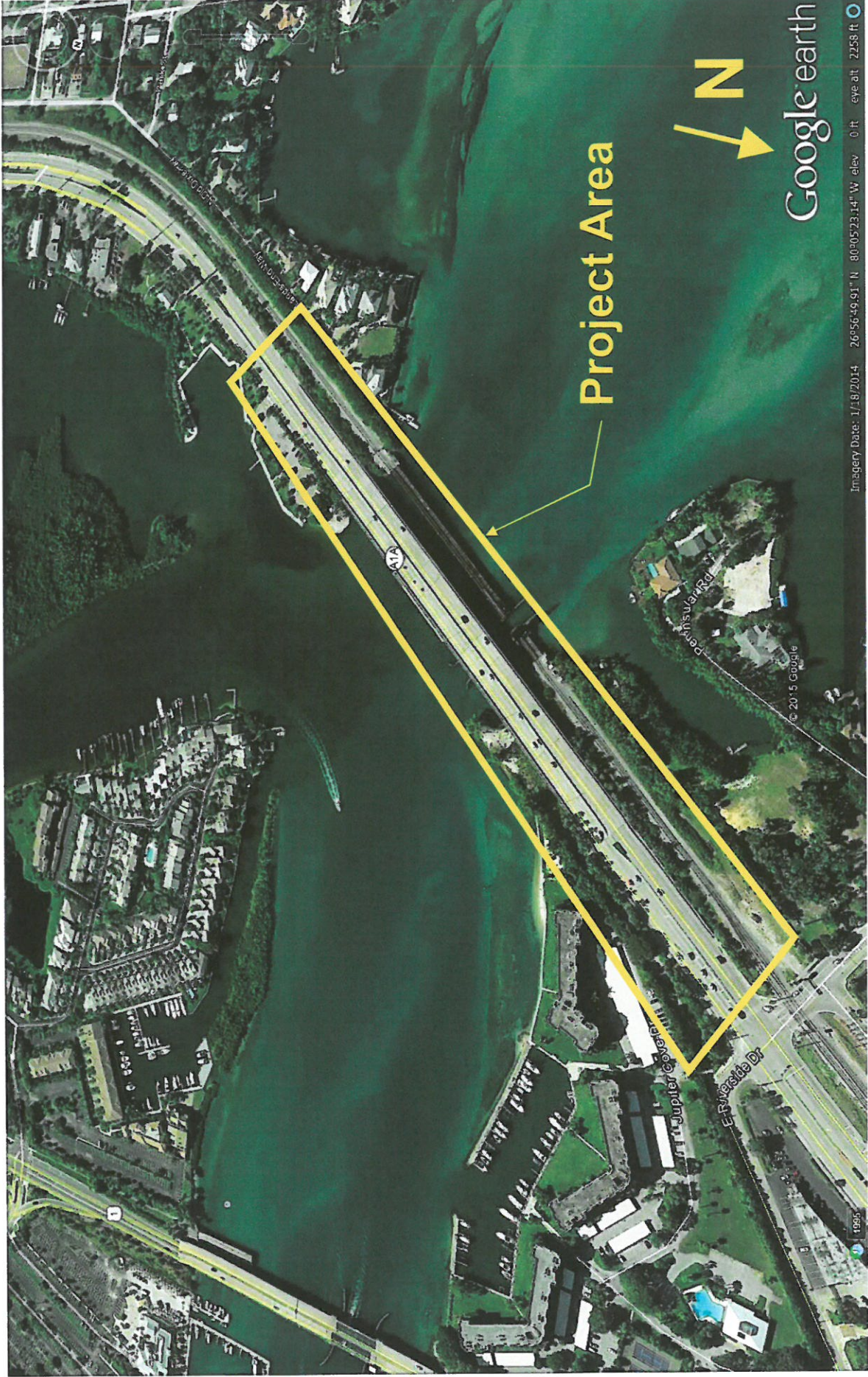
The Preliminary Design Report (PDR) will include: the development of base drawings for the project area; a pipeline coordination analysis; utility companies (FPL, ATT, TECO Gas, Comcast CATV, TOJ water) coordination; evaluation of five (5) alternatives for rehabilitation/replacement of the existing 24" force main, including by-pass pumping requirements; hydraulic modeling of the upstream pressure network; development of an emergency by-pass plan for the existing 24" subaqueous force main; and preliminary construction cost estimates for each alternative.

This Agreement is part of the **Continuing Contract** with the District, and the District has the right to stop work at any time being only responsible for costs incurred up to that time.

SCOPE OF WORK

Specific project elements include the following:

- Task 1 – Data Collection
- Task 2 – Preliminary Design Services



Project Area

N

Google earth

Imagery Date: 1/18/2014 26°56'49.91" N 80°05'23.14" W elev 0 ft eye alt 2258 ft

TASK 1 – DATA COLLECTION

Subtask 1.1 Develop Base Drawings

Consultant shall develop aerial base drawings of the project area in AutoCAD 13. The drawings shall be at a scale of 1" = 20' and will be printed on 11' x 17" half-size drawings.

Subtask 1.2 Pipeline Corridor Analysis

Field reconnaissance of the pipeline corridor on both sides (north and south) of the bridge shall be performed to determine the best location for either directional drilling the new force main or attaching to the bridge. This will also include determining connection points on the north and south side of the bridge for connecting the new force main to the existing force main. Photograph log walk-through will be included. Potential existing conflicts will be identified.

Subtask 1.3 Utility Coordination

Coordination with utility agencies (electric, phone, gas, TOJ water and CATV) shall be performed to collect record information. This Subtask includes reconciling apparent discrepancies between record information and photographic and field-verification information.

TASK 2 – PRELIMINARY DESIGN SERVICES

Subtask 2.1 Project Meetings

MC shall attend "kick-off" meeting and one (1) draft PDR review meeting with the District and provide a written summary of the issues discussed.

Subtask 2.2 Coordination with FDOT

MC shall coordinate with FDOT in regards to determining what is required by FDOT if we attach the new force main to the A1A Bridge.

Subtask 2.3 Coordination with Town of Jupiter

MC shall coordinate with Town of Jupiter in regards to obtaining any easements that may be required for installation of the new force main.

Subtask 2.4 Review Existing Project Data/Reports

MC shall review available as-built data within the project area. MC shall also review the "Jupiter Inlet Colony Study Summary Technical Memorandum" prepared by AECOM.

Subtask 2.5 Evaluate Slip-Lining the Existing 24" Force Main

MC shall evaluate the pros and cons of using the existing 24" DIP FM as a casing pipe for a new smaller HDPE piping that would be pulled (sliplined) thru the existing piping. The evaluation would also include permitting requirements, difficulty of construction, developing a preliminary by-pass pumping plan and a construction cost estimate. A preliminary sketch of slip-lining the existing 24" Force Main would also be developed.

Subtask 2.6 Evaluate Directional Drilling a new Force Main

MC shall evaluate the pros and cons of constructing a new smaller force main (on either the east or west side) of the existing A1A Bridge by directional drilling methods. The evaluation would also include permitting requirements, difficulty of construction, developing a preliminary by-pass pumping plan and a construction cost estimate. A preliminary sketch of directional drilling a new Force Main would also be developed.

Subtask 2.7 Evaluate Installing a Liner in the Existing 24" Force Main

MC shall evaluate the pros and cons of installing a liner in the existing 24" force main. The evaluation would also include permitting requirements, difficulty of construction, developing a preliminary by-pass pumping plan and a construction cost estimate. A preliminary sketch of installing a liner in the existing 24" Force Main would also be developed.

Subtask 2.8 Evaluate Directional Drilling a new Force Main & Slip-Lining the Existing 24" Force Main

MC shall evaluate the pros and cons of constructing a new smaller force main (on either the east or west side) of the existing A1A Bridge by directional drilling methods and installing a liner in the existing 24" force main for redundancy. The evaluation would also include permitting requirements, difficulty of construction, developing a preliminary by-pass pumping plan and a construction cost estimate. A preliminary sketch of directional drilling a new Force Main and installing a liner in the existing 24" Force Main would also be developed.

Subtask 2.9 Evaluate Installing a New Force Main on A1A Bridge

MC shall evaluate the pros and cons of attaching a new force main on the existing A1A Bridge (on either the east or west side). The evaluation would also include permitting requirements, difficulty of construction, developing a preliminary by-pass pumping plan and a construction cost estimate. A structural detail shall also be prepared for attaching the force main to the bridge.

Subtask 2.10 Temporary/Emergency Bypass Pumping Plan

MC shall develop an Emergency Bypass Pumping Plan to be used by the District in the event of the unanticipated loss of use of the existing 24-inch subaqueous force main across the Loxahatchee River (River) prior to implementation of the recommended force main replacement alternative. The Emergency Bypass Pumping Plan shall clearly identify the average and peak hour wastewater flows to be conveyed and shall include points of connection to the existing force main system on the north and south sides of the River. The plan shall identify and provide sizing requirements for all temporary infrastructure required to implement the Plan including temporary pumping, piping, valves, etc. The layout of the proposed emergency infrastructure shall be clearly detailed on appropriate schematic figures which can be referenced by District staff in the event that the Plan is required to be implemented on short notice.

Subtask 2.11 Hydraulic Modeling

MC shall utilize the computerized hydraulic model developed by AECOM using WaterCad Software by Haestad Methods for each of the five (5) alternatives to evaluate what the upstream impacts would be to the District's force main system. The model will be run for the five (5) alternatives at peak flow conditions to establish conceptual design criteria for the necessary upgrades to all the upstream lift stations. Any upstream pump stations that will need to be up-sized will be documented.

Subtask 2.12 Preliminary Design Report (Draft)

MC shall prepare a Preliminary Design Report (PDR) that will include information from the above subtasks 1.1 thru 1.3 and subtasks 2.1 thru 2.11. MC shall provide a recommendation on which Alternative is the best choice for the District. Four (hard copies) of the draft PDR shall be provided to the District for review.

Subtask 2.13 Preliminary Design Report (Final)

Final PDR shall incorporate District draft review comments and four (4) hard copies shall be provided to the District.

Subtask 2.14 Quality Assurance

MC shall provide internal QA/QC reviews on the draft Preliminary Design Report.

ADDITIONAL SERVICES

MC shall provide additional engineering as requested by the District for engineering services that are not covered under this Scope of Work. Services shall be reimbursed in accordance with Mathews Consulting's fee schedule included in **Exhibit B**. Services performed under this task will be on as-directed basis in accordance with a written Notice-to-Proceed from District. The Notice-to-Proceed issued shall contain the following information and requirements.

- A detailed description of the work to be undertaken.
- A budget establishing the amount of the fee to be paid in accordance with the Agreement.
- A time established for completion of the work.

ASSUMPTIONS

Work described herein is based upon the assumptions listed below. If conditions differ from those assumed in a manner that will affect schedule or Scope of Work, MC shall advise District in writing of the magnitude of the required adjustments. Changes in completion schedule or compensation to MC will be negotiated with District.

1. MC assumes that all existing and proposed infrastructure pipeline alignments are within the District's, Town of Jupiter, FEC Railway and FDOT rights-of-way.
2. District will be responsible for acquisition of easements (including temporary construction easements), if required. Surveying and legal work necessary to prepare document for and to secure easements (temporary and permanent) required for installation of the piping and improvements is the responsibility of the District.
3. District will provide MC available record drawings of all existing facilities and upstream pump stations in the project area.
4. District personnel shall assist in field verification (painting locations of existing force mains) that are in the project area.

5. District will provide tie-in pressures for the force main located just south of the A1A Bridge to be used as data input for the hydraulic model.
6. The hydraulic model developed by AECOM and provided to MC by the District is assumed to be accurate. MC will not be rebuilding the hydraulic model under this scope of work.

GENERAL CONDITIONS

1. MC will invoice the District on a monthly basis for services completed to date. Payment of all applicable costs will be made by District to MC within 30 days of receipt of invoice.
2. MC shall purchase and maintain insurance for coverages listed below:
 - a. Workers Compensation
 State Statutory
 Employer's Liability \$100,000 / \$500,000
 - b. Comprehensive General Liability
 Bodily Injury and Property Damage,
 Combined Single Limit \$1,000,000
 - c. Automobile Liability:
 Bodily Injury and Property Damage,
 Combined Single Limit \$1,000,000
 - d. Professional Liability:
 Errors and Omissions \$1,000,000

CONTRACT PERFORMANCE

COMPLETION DATES

The duration of major work tasks (calendar days) are as indicated on the Project Schedule shown in **Exhibit A** and are summarized below.

<u>Engineering Services</u>	<u>Timeframe per Task</u>
▪ Task 1 – Data Collection	45 days
▪ Task 2 – Preliminary Design Services	82 days *

* The schedule is based upon conducting a review meeting within 14 calendar days after District receives the Submittal. All review comments shall be provided to MC within 14 calendar days after District receives the submittal. An adjustment to the overall schedule will be required in case the review meeting takes longer to be conducted and/or obtaining comments takes longer to receive.

SUMMARY OF PROPOSED FEES

Proposed labor costs and associated expenses for engineering services are tabulated below and detailed in **Exhibit B**.

<u>ENGINEERING SERVICES</u>	<u>ENGINEERING FEE</u>
Task 1 – Data Collection	\$ 2,746.00
Task 2 – Preliminary Design Services	\$41,549.00
Reimbursables	\$ 600.00
TOTAL ENGINEERING SERVICES	\$44,895.00 (Lump Sum)

IN WITNESS WHEREOF, the parties have made and executed this agreement as of the date written below.

LOXAHATCHEE RIVER ENVIRONMENTAL
CONTROL DISTRICT


Witnesses:

Date
Executed: _____

By: _____
D. Albrey Arrington, Ph D, Executive Director, Date

MATHEWS CONSULTING, INC.

Witnesses:



Courtney Marshall

Date
Executed: 8-12-15

By: 

David L. Mathews, P.E., Executive Vice President, Date