

Ms. Wilhelmina Montero, PE
Project Manager, ECSD
City of Hollywood – Public Utilities
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Hollywood, FL 33022-9045

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Date: December 13, 2021
Our Ref: 30052497
Subject: Work Order Proposal: Water Treatment Plant Injection Well Mechanical Integrity Test and Detailed Emergency Response Plans for Hurricane Events and Catastrophic Electrical Failure

FL Engineering License #7917
FL Geology License #GB564
FL Surveying License #LB7062

Dear Ms. Montero,

Arcadis U.S., Inc. (Arcadis) is pleased to submit this Work Order proposal to assist the City of Hollywood (City) with the following activities:

1. Injection well IW-1 mechanical integrity testing (MIT) at the Water Treatment Plant (WTP).
2. Catastrophic Electrical Failure Response Plan (CEFRP) and Water System Hurricane Preparedness and Response Annex

This Work Order proposal shall be executed per the terms and conditions of the Professional Services Agreement (PSA) (Number 17-1324) executed by and between the City and Arcadis on November 11, 2017.

Background

MIT

Per the Florida Department of Environmental Protection (FDEP) Underground Injection Control (UIC) Permit No. 304444-002-UO/1X, an MIT demonstration is required for the Class I injection well IW-1 at the City's WTP. Injection wells are required to demonstrate the mechanical integrity of the well via testing a minimum of once every five years. MIT consists of internal testing of the well to demonstrate the absence of leaks in the injection well casing, and external testing to demonstrate the absence of fluid movement behind the injection casing. The last annular pressure test was performed on December 19, 2017, and therefore the next test must be performed by December 19, 2022.

CEFRP and Water System Hurricane Preparedness and Response Annex

As part of the recommendations provided during the recent Risk and Resilience assessment for compliance with America's Water Infrastructure Act (AWIA) of 2018, Arcadis proposes to work closely with the City to develop two documents that are intended to guide staff responses in emergency situations, described as follows:

1. Catastrophic Electrical Failure Response Plan (CEFRP)
2. Water System Hurricane Preparedness and Response Annex

Scope of Work

Task 1 MIT

Task 1A: Kick-off Meeting and Develop Testing Plan

Arcadis shall prepare for and conduct a kick-off meeting with the City, including preparation of an agenda for distribution via email prior to the meeting and meeting summary notes for distribution following the meeting.

Arcadis shall prepare a Testing Plan for submittal to the FDEP. Arcadis shall respond to and address one request for additional information from FDEP. This will be completed prior to preparing the bid documents and the City contracting with a drilling company to perform the work.

Deliverables

- Kick-off meeting agenda and meeting summary notes (electronic in Word format)
- Draft Testing Plan (electronic in Adobe PDF format)
- Response to one request for information from FDEP (via email or mail if required)
- Final Testing Plan (electronic in Adobe PDF format)

Task 1B: Preparation of Bid Documents and Bidding Assistance

Arcadis shall prepare technical specifications to be utilized by the City as bidding documents to procure the services of a qualified contractor to perform the required MIT and associated work. Arcadis shall provide draft technical specifications for the City's review in Word format. Final technical specifications will be prepared to incorporate the City's comments within two weeks of receipt of comments. The City shall be responsible for issuing and managing the solicitation to procure the services of a qualified contractor. Arcadis shall assist the City with its procurement as follows:

- Arcadis shall assist the City with the front-end documents of the specifications including bidding forms and instructions, and Division 00 Contract Forms and General Conditions.
- Pre-Bid Meeting Support: Arcadis shall prepare an agenda for the pre-bid meeting, attend the Pre-Bid Meeting, and prepare meeting minutes. For the purposes of this proposal, it is assumed the meeting will be conducted in person.
- Addendum: Arcadis shall assist the City in preparing one technical addendum during the bidding process.
- Conformed Documents: Arcadis shall prepare conformed documents based on the one technical addendum listed on the above bullet.
- Bidding Assistance:
 - Prepare a bid tabulation for cost comparison and validate the low bidder.
 - Call and email the references provided only by the low bidder to confirm the bidder's performance and qualifications.
 - Arcadis shall prepare a recommendation letter for award to the City based upon the review of the costs submitted with the bids, the low bidder references responses, and qualifications check.
- Class 5 Opinion of Probable Construction Cost (OPCC): Arcadis shall prepare a Class 5 OPCC to aid in the evaluation of bids.

The City shall be responsible for executing and administering the contract with the selected contractor.

Deliverables

- Front-end documents
- Draft technical specifications, including OPCC (electronic in Word and Excel format)
- Final technical specifications, including OPCC (electronic in Adobe PDF format)
- Pre-bid meeting agenda and minutes
- Addendum
- Conformed documents
- Bid tabulation
- Bid evaluation letter with award recommendation.

Task 1C: Field Services for MIT

Arcadis shall provide oversight services for one week (five business days) during the MIT activities to ensure proper implementation of the test by the selected contractor. Arcadis shall observe and document site activities as summarized below.

- Day 1: Mobilization and start-up activities of the contractor.
- Days 2 and 3: Pressure Test: A pressure test of the injection well will be performed by the selected contractor. An inflatable packer will be set near the base of the injection casing and the casing will be pressurized to at least 1.5 times the currently permitted wellhead pressure of 105 psi. A pre-test will be successfully completed before notifying FDEP to witness the pressure test. The test will be determined successful if the wellhead pressure does not deviate more than 5 percent over one hour. The test will be repeated in the presence of FDEP to obtain their approval of the test results.
- Days 4 and 5: Geophysical Logging: Geophysical logging will be completed by the contractor to demonstrate the internal and external mechanical integrity of the injection well. Logging will include a borehole television survey of the entire depth of the well. The video survey will be used to assess the condition of the well and will allow a visual evaluation of the cased portion of the injection well, the final injection casing, and the open hole injection zone. A static temperature log and caliper log will be run after the well has remained idle for at least 12 hours. A natural gamma-ray log will also be run in both the upward and downward direction. Finally, an external Radioactive Tracer Survey (RTS) will be performed in accordance with FDEP-approved guidelines for external mechanical integrity.

Arcadis shall also coordinate with the WTP operational staff to assist in minimizing the impact on facility operations.

Task 1D: MIT Report

Arcadis shall review data submitted by the selected contractor for the MIT. Arcadis shall assemble the MIT data, draw suitable conclusions as to the mechanical integrity of the well, compile and interpret any historical operational and water quality data that may be relevant and appropriate, and incorporate findings into a report. The report will also summarize the test methodologies used. A draft of this report shall be submitted to the City for review within thirty (30) days of completion of all fieldwork. Arcadis shall respond to one set of comments from the City and then submit the final report to FDEP. Following submittal to FDEP, Arcadis shall coordinate with FDEP and will respond to one request for additional information to address regulatory comments.

Deliverables

- Field Logs (electronic format where possible)
- Draft Report (electronic in Adobe PDF format)
- Final Report (electronic in Adobe PDF format)
- Response to one request for additional information from FDEP (via email or mail if required)

Task 2 Detailed Emergency Response Plans for Hurricane Events and Catastrophic Electrical Failure

Task 2A – Catastrophic Electrical Failure Response Plan

Regional or statewide power outages and disruption to energy systems and resources can occur due to hurricanes or other impairment to the electrical grid. Florida's electrical system is located in low lying areas and failure of this infrastructure can lead to major disruptions of production, transmission, and distribution of electricity. The power generation and distribution systems (including the transmission lines, substations, and transformers) are subject to outages due to various threats.

The CEFRRP to be prepared under this scope of work shall address operational impacts from an electrical failure or widespread power outage standpoint.

Task 2A.1 – Site Visit and Meetings

Arcadis shall conduct a virtual Kickoff Meeting to discuss and confirm project scope and schedule with the City's staff. City team members will be identified based on their role and responsibilities and will serve to provide information to Arcadis and input on the CEFRRP content.

Arcadis shall conduct a one-day field visit in coordination with City staff to gather and verify electrical asset data and information onsite. Arcadis shall also conduct two virtual meetings after the field visit to review the following information:

- A draft outline of the CEFRRP
- A review of critical City Department of Public Utilities (DPU) electrical assets and potential threats
- Procedures for staff to undertake in response operations to a catastrophic electrical failure
- Equipment and activities to return the system to normal operations after an event

Arcadis shall also contact stakeholders such as power providers, Broward County Emergency Management Division (EMD), state, and federal agencies to collect additional data.

Deliverables:

- Outline for CEFRRP contents.
- Kickoff Meeting Agenda, Materials, and Meeting Summary.
- Materials for two meetings (up to 2 hours duration for each meeting).

Task 2A.2 – Development and Submittal of Draft CEFRRP

The CEFRRP shall outline strategies to execute a response to a catastrophic electrical failure event to include current guidance and requirements provided by the following agencies:

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- U.S. Environmental Protection Agency (USEPA) *Power Resilience Guide for Water and Wastewater Utilities*.
- The National Infrastructure Advisory Council's (NIAC) *Surviving a Catastrophic Power Outage* study.

The areas of guidance for power loss shall include communications, power assessment, emergency/standby generators, fuel, energy efficiency, on-site power, "black sky" planning, and funding sources for preparedness and mitigation activities.

Arcadis shall work with our designated subconsultant team member, McKim and Creed, in the development of the CEFRP to identify vulnerable water system electrical components at the DPU's Water Treatment Plant (WTP) and in the distribution system. The CEFRP will provide recommendations for hardening the water system's power-reliant components, options to consider for supporting critical assets and services, and procedures to restore functionality following a catastrophic electrical failure.

The draft CEFRP shall include the following elements:

- Description of the current electrical configuration at the WTP and in the distribution system.
- Description of Florida's electrical system and grids, as information is available.
- Description of minimal water system needs including water pressure, quantity, and quality.
- Evaluation of single points of failure within the DPU electrical system (within the water treatment plant and distribution system).
- Summary of electrical system redundancy within the DPU network.
- Generator backup power and fuel supply available to or owned by DPU.
- Incident response roles and responsibilities of DPU staff in the event of a catastrophic electrical event, in alignment with the DPU ERP.
- Review of threat scenarios to assets and facilities, including electrical fire.
- Preparedness actions for catastrophic electrical power failure with response levels and corresponding actions.
- Review of lessons learned from Florida and other states' events regarding electrical resilience and restoration.
- Operations and Maintenance staff response actions during power outages.
- Recovery actions, restoration, and damage assessment for electrical outages.
- Internal and external communications and coordination.
- Mutual aid and resources.
- A phased approach that provides for an initial response, sustained response, and procedures for recovery following a catastrophic electrical failure.
- Checklist/procedure for DPU to undertake in the event of a catastrophic electrical power outage.
- Temporary power and restoration of power for essential services.
- General recommendations and contingencies for electrical resilience at the WTP and in the distribution system.

Schedule:

- Draft CEFRP shall be submitted within eight (8) weeks of Task 2A.1 completion.

Deliverables:

- Draft CEFRP documentation in Microsoft Word and PDF.

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Task 2A.3 – Review Meeting and Final Catastrophic Electrical Failure Response Plan

Arcadis shall facilitate a virtual review meeting of the draft CEFRP and discuss comments received from the City staff. A review meeting will occur after draft CEFRP submittal and contingent on receiving comments from the City.

After the review meeting, Arcadis shall address comments and prepare the final CEFRP.

Schedule:

- Review meeting within three (3) weeks of draft CEFRP Submittal
- Final CEFRP within four (4) weeks of the review meeting and final comments received from the City.

Deliverables:

- Final CEFRP electronic delivery with all source files (e.g., Microsoft Word, Microsoft Excel, Visio, and PDF). The files will be posted on a secured SharePoint site.

Task 2B Water System Hurricane Preparedness and Response Annex

Arcadis shall support the City during the development of a Water System Hurricane Preparedness and Response Annex (Annex) incorporating current guidance and requirements provided by the following governmental agencies and professional organizations:

- USEPA
- National Oceanic and Atmospheric Administration (NOAA)
- Federal Emergency Management Agency (FEMA)
- U.S. Army Corps of Engineers (USACE)
- Department of Homeland Security (DHS)
- American Water Works Association (AWWA)
- Florida Department of Environmental Protection (FDEP)
- FDEP Water Assistance Tracking and Emergency Response (WATER Tracker) that combines Florida's Water/Wastewater Agency Response Network (FlaWARN) event tracker and FDEP's Storm Tracker.

The Annex will enhance the City's DPU Emergency Response Plan (ERP) developed in 2020 using the City's existing Hurricane Plan and incorporating updated guidance and lessons learned from hurricane events. The Annex will be an executable and operational response plan that addresses impacts from a hurricane. The Annex will outline preparedness strategies that can be executed prior to an event and assist in the response to catastrophic hurricane impacts. The tasks below outline Arcadis' proposed approach for developing the Annex.

Note that this task shall commence approximately two months after Authorization to Proceed (ATP).

Task 2B.1 – Meetings and Workshop

Arcadis shall conduct a virtual Kickoff Meeting to discuss and confirm the project scope and schedule with DPU staff. The DPU team members will be identified based on their knowledge in the subject area and their role and responsibilities. Team members shall provide information to Arcadis and review content in draft and final documents.

Arcadis shall conduct one virtual meeting and one virtual workshop to gather and verify information with DPU staff. The first meeting will be conducted to review a draft outline of the Annex and gain input into its content in

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consensus with DPU staff. The second meeting shall be conducted to collect additional data and required information. The workshop will be conducted with the water treatment plant operations staff and the water system distribution personnel to identify detailed procedures for staff to undertake in preparation for a named hurricane, response operations during a hurricane, and activities to return the system to normal operations in the aftermath of the hurricane.

The Annex shall address alternative water distribution, staff and family shelters, and other key planning elements to undertake in the aftermath of a hurricane. Arcadis shall contact the Broward County Emergency Management Division (EMD), and other local, state, and federal agencies to confirm preparedness and response activities and document in the Annex.

Deliverables:

- Outline for the Annex contents.
- Kickoff Meeting Agenda, Materials, and Meeting Summary.
- Materials for one meeting (one hour duration) and one workshop (up to two hours duration).

Task 2B.2 – Development and Submittal of Draft Annex

Arcadis shall develop the draft Annex based on meeting and workshop discussions and include the following elements:

- Review of the response roles and responsibilities in the DPU ERP (2020). Information will be included on how DPU will coordinate with local, state, and federal agencies in a disaster declaration.
- Coordination and protocols for various emergency response centers and tools including the Broward County EMD, WebEOC, the State of Florida Emergency Response Center (SERC), Regional, and National Response Coordination Center (activated by FEMA).
- Integration protocol with the National Hurricane Program.
- Hurricane threat levels and corresponding actions, including National Weather Service (NWS) hurricane category classification system and system notifications.
- Key information from the County Hazard Mitigation Plan on potential impacts to the City and County, including a description of potential impact to the City's water infrastructure.
- Review of potential impacts to critical fuel supplies and treatment chemical supplies.
- A phased approach that provides for an initial response, a sustained response, and procedures for recovery following a catastrophic hurricane event.
- Preparedness actions for DPU prior to hurricane landfall.
- Recovery Actions after a hurricane impact, including alternate water distribution in the event of loss of treatment and/or distribution, recovery protocols, and damage assessment forms.
- Internal and external communications and coordination, including information on communication equipment and emergency broadcast system, mobile emergency response, and the USEPA's online Water Utility Response On-The-Go Mobile application.
- Emergency equipment and generator power.
- Mutual aid and resources.
- Debris management.
- Three operational procedures with checklists for preparedness, response, and recovery.

Below is a preliminary outline of the Annex document. Note that the existing DPU Hurricane Plan does not currently include elements recommended by the governmental agencies and professional organizations listed

above. The elements with an asterisk (*) below are included in the existing DPU Hurricane Plan, however, additional information/details need to be incorporated. The scope of work under this work order will include the updating of these elements in addition to the development of the new elements without an asterisk (*) in the 2022 Annex as it relates to the water system.

- 1) Introduction and Background
 - a) Purpose and Objectives
 - b) Overview of DPU Services and Organization
 - c) Overview of DPU HR Policies for Disasters and Emergency Pay, Timekeeping, Tracking – Arcadis will develop an overview of policies and procedures that DPU aligns with in an emergency and provide policies and forms in the Appendices.
 - d) Relationship with Other Plans (Matrix Format)
- 2) Hurricane Command and Control Structure
 - a) National Incident Management System /Incident Command System (NIMS/ICS) – DPU ICS Organization Structure (Primary and Designees):
 - i) Response Roles and Responsibilities*
 - ii) Essential Staff for Hurricane Stages*
 - b) Emergency Response 4 Levels of Activation
 - i) EOC DPU EOC*
 - ii) Hollywood EOC*
- 3) Declared Disaster Financial Tracking
 - a) Federal, State, and Local Policies and Requirements
 - b) FEMA Reimbursement
 - c) FEMA Public Assistance
 - d) FEMA Cost Tracking
 - e) Mobilization Timesheet*
 - f) FEMA Mobilization Timesheet*
 - g) Pay Policy*
 - h) Timekeeping*
- 4) Hurricane Threat Levels, Hazards, and Impacts
 - a) Hazard Mitigation Plan Overview
 - i) Heavy Rain and Flooding
 - ii) Wind
 - iii) Tornados
 - iv) Storm Surge Maps from the County, Evacuation Zone Maps and Policies (Federal, State, and Local)
 - b) Hurricane Categories and Hazard Descriptions
 - i) National Weather Service, State, and Local Hurricane Categories and Hazard Descriptions*
- 5) Hurricane Preparedness, and Response
 - a) Phases of Hurricane Preparedness and Response Planning – The section will include specific instructions per City, County, State and Federal requirements per each phase listed below.
 - i) Update phases of hurricane preparedness and response actions across hurricane threat levels/categories.
 - (1) Phase 1 – Hurricane Preparedness*
 - (a) Hurricane Season Preparedness*
 - (b) Hurricane Preparedness, 72 to 96 Hours Prior to Possible Landfall*

- (c) Tropical Storm System Threat, 48 to 72 Hours Prior to Possible Landfall*
 - (2) Phase 2 – Hurricane Watch, 36 to 48 Hours Prior to Possible Landfall*
 - (3) Phase 3 – Hurricane Warning, 24 to 36 Hours to Possible Landfall*
 - (4) Phase 4 – Hurricane Landfall*
 - (5) Phase 5 – Damage Assessment and Repairs*
 - (6) Phase 6 – Post Storm*
 - (7) Phase 7 – Hurricane Operation Plan Assessment*
- b) Business Continuity
 - c) Alternate/Emergency Water and Points of Distribution (PODs)
 - i) Policies and procedures
 - ii) Role of DPU
 - d) Area Re-entry Policies and Procedures (non-essential and essential staff as applicable)
 - e) Post Event Sampling (Reference to the Sampling Points in the Existing Hurricane Plan)*
- 6) Hurricane Stage and Threat Category Planning (coordination, policies, procedures, safety, requirements, and resource integration at the DPU, Local, State, and Federal level) including the following:
- a) Damage Assessment
 - b) Transportation
 - c) Debris Management
 - d) Recovery Planning
 - e) Lessons Learned
 - f) FEMA Documentation
 - g) Hurricane Recovery (includes recovery policies, procedures, activities, and resources at the Federal, State, and Local level together with damage assessment forms).
- 7) Federal, State, and Local Resources and Policies
- a) Coordination protocols with County, State, and Federal agencies (not limited to Broward County EMD, Florida Emergency Response Center, National Response Coordination Center).
 - b) Mutual Aid – Federal, State, and Local Resources and Policies
 - i) Florida WARN Overview
 - ii) Mutual Aid Agreement for Water and Wastewater
- 8) Emergency Equipment and Supplies
- a) Generators Backup
 - b) Fuel Supplies
 - c) Treatment Chemicals and Other Supplies
 - d) Staging Areas, Pre- and post-landfall
 - e) Policies and Procedures for Resource Distribution
 - f) Supply Chain Management
- 9) Communication and Notification
- a) Internal and External Communications and Coordination
 - b) Communication Protocols, Policies, and Procedures (Role of DPU, Local, State, and Federal)
 - c) Notification and Information Dissemination Protocols
 - d) Pre- and Post-landfall Notification and Communication Stages (Federal, State, and Local level)
 - e) Public Communication Resources – Guidance and tools available including Florida Water Tracker
 - f) Staff Roster and Protocol for Accounting of Personnel
 - g) Communication Equipment (Interoperability of Communications, Roles, and Responsibilities at DPU, Local, State and Federal level)

10) DPU Facility Staff and Families

- a) Essential Personnel Staffing Requirements
- b) Staff Resourcing at Hurricane levels (locations, transportation, communication, policies, and procedures)
- c) Health and Safety of Staff and Families
- d) Safety Assessment Coordination (including Hazardous Material Release)
- e) Evacuation / Shelter-in-Place
- f) Coordination Protocols with Response Centers
- g) Food Preparedness*
- h) Emergency Meal Plans and Shopping Lists (to be included in the Appendix)*
- i) Mass Sheltering and Food Supply
- j) Coordination and Procedures – DPU, Local, State, and Federal levels

11) Appendices

- a) A1 DPU Emergency Contact List (Annex will include updated lists)
- b) A2 Emergency Operations Centers (Locations and Contact Information)
- c) A3 External Contact List (Local, City, County, State, and Federal)
 - i) The only one currently included in the Hurricane Plan are: Broward County Utilities Emergency Phone Numbers, Local Emergency Phone Numbers, Public Relations contact information, and Kidney Dialysis Centers*
 - ii) Contact/communication needs and requirements by hurricane stage for Local, State, and Federal entities.
- d) A4 Critical Customer List – Hospitals, Dialysis Centers, Nursing Homes, and Industrial Users*
- e) B Policies and Procedures*
- f) C Emergency Water Distribution - POD Locations
- g) D Hurricane Evacuation
 - i) Transportation Routes and Maps
 - ii) Emergency Public Shelters
- h) Hurricane Preparedness Checklists
 - i) Preparedness Checklist
 - ii) Response Checklist
 - iii) Recovery Checklist
 - iv) Checklist of Hurricane Supplies
 - v) Hurricane Parking Map*
 - vi) Employee Sign in Sheet*
 - vii) Water Treatment Checklists*
 - viii) Family Preparedness and Emergency Supply Checklist
 - ix) Standard checklist and recommendations
 - x) Damage Assessment Forms
- i) F Mutual Aid Agreements for Water and Wastewater
 - i) HR-025:1 Disaster/Emergency Preparedness and Declared Emergency Pay Policy*
 - ii) City of Hollywood Mobilization Timesheet (ICS 214 Activity Log)*
 - iii) FEMA Mobilization Time Sheet (ICS 214 Activity Log)*
 - iv) Emergency Timekeeping Process (Tracking Expenses and P-card Purchases)*
 - v) Emergency Meal Plans/Shopping Lists – Water Plant*
 - vi) Other Forms, Policies, and Procedures

Schedule:

- Draft Annex submittal within six (6) weeks of Task 2B.1 completion.

Deliverables:

- Draft Annex documentation in Microsoft Word and PDF.

Task 2B.3 – Review Meeting and Final Annex

Arcadis shall facilitate a virtual review meeting of the draft Annex and discuss comments received from the City DPU staff. The review meeting will occur after the draft Annex submittal and contingent on receiving comments from the City.

After the review meeting, Arcadis shall address comments and prepare the final Annex.

Schedule:

- Review meeting within one (1) week of receipt of comments from the City on the draft Annex.
- Final Annex within three (3) weeks of the review meeting.

Deliverables:

- Final Annex electronic delivery with all source files (Microsoft Word, Microsoft Excel, Visio, and PDF). The files will be posted on a secured Sharepoint site.

Task 2C – Project Management

Arcadis shall provide administrative, management and oversight for this Work Order. The Project Manager shall manage project team and subconsultant, make staffing assignments, review work progress, coordinate quality assurance and review procedures, and communicate schedules and work progress to the City. This task assumes a project duration of nine (9) months.

Deliverables:

1. Monthly invoices and project status reports.
2. Schedule updates.

Assumptions and Limitations

Task 1 MIT

- The City shall pay for any applicable permit fees.

Task 2 Detailed Emergency Response Plans for Hurricane Events and Catastrophic Electrical Failure

- If the project schedule is extended for reasons other than caused by Arcadis, additional project management effort may be necessary. Arcadis will bring the issue to the attention of the City to discuss a resolution which may include expanding the effort of this project.
- An evaluation of the cybersecurity of the electrical equipment and networks is not included in the scope of work.
- Arcadis shall include existing AutoCAD (computer-aided design software) or GIS (Geographical Information System) electrical system drawings as needed to show key electrical system assets.
- Arcadis shall be able to reasonably rely on the City or its representatives for all materials, project data and access to personnel responsible for policy decisions.

- Arcadis shall be entitled to reasonably rely on the City or its representatives for timely and thorough review of any plan drafts and completion of interviews/meetings whether orally or via written comments included in document drafts.
- The plan is a living document that is updated annually. Arcadis shall make recommendations for further refinements to the document to address gaps in best practices and opportunities for improvement, changes needed to current protocols to support the plan and similar considerations. Throughout plan development, any gaps identified which require significant time or investment by the City will be documented as areas for improvement.

Schedule

Arcadis’ services shall commence upon receipt of written authorization from the City, which will constitute Authorization to Proceed (ATP).

Task 1 MIT

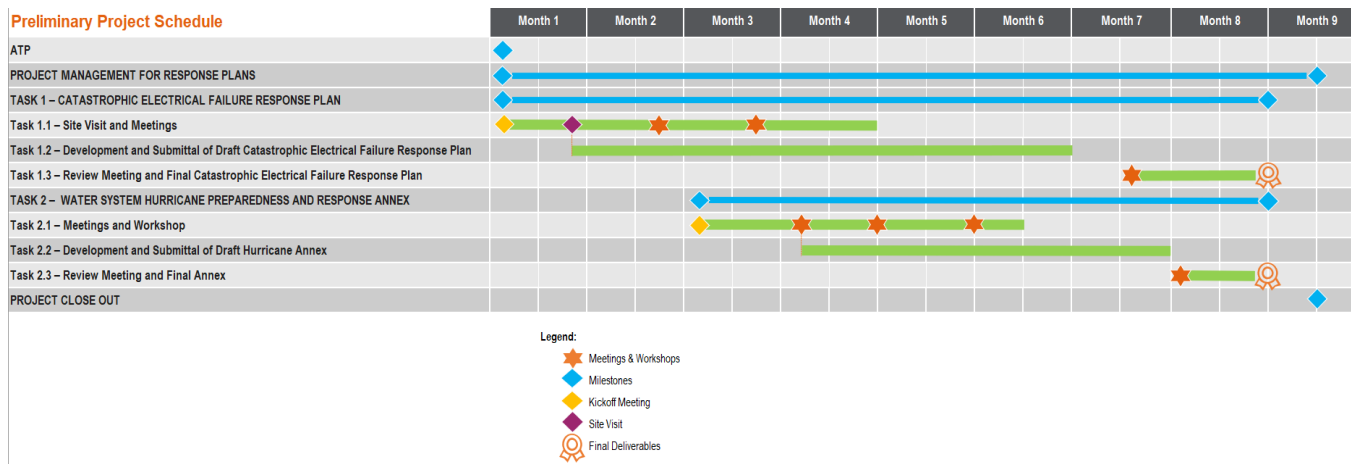
Project Tasks	Estimated Duration to Completion from ATP
Task 1A: Develop Testing Plan	
- Prepare Testing Plan (Draft)	2 weeks
- Review Period by City	3 weeks*
- Address City’s Comments	4 weeks
- Review Period by FDEP	8 weeks*
- Address FDEP’s Request for Additional Information	9 weeks
- Review Period by FDEP – RFAI / Acceptance of Testing Plan	13 weeks*
Task 1B: Preparation of Bid Documents and Bidding Assistance	
- Draft Bid Documents	13 weeks**
- Review Period by City	14 weeks*
- Final Bid Documents	15 weeks**
- Bidding Assistance	19 weeks**
Task 1C: Field Services for MIT	31 weeks***
Task 1D: MIT Report	
- Prepare Draft MIT Report	34 weeks
- Review Period by City	35 weeks*
- Address City’s Comments	36 weeks
- Review Period by FDEP	40 weeks*
- Address FDEP’s Request for Additional Information	42 weeks

Project Tasks	Estimated Duration to Completion from ATP
- Review Period by FDEP - RFAI	46 weeks*
- Final MIT Report	48 weeks

*Dependent upon City's and FDEP's review time.
 **Draft Bid Documents will be prepared parallel to the FDEP reviewing the Testing Plan. Preparation of the final bid documents are contingent on FDEP's approval of the testing plan.
 ***Note that the field services duration under this task is only 1 week. The 31 weeks included in the schedule assumes 3 months for Contractor's activities.

Task 2 Detailed Emergency Response Plans for Hurricane Events and Catastrophic Electrical Failure

Arcadis' services shall commence upon receipt of written authorization from the City, which will constitute ATP. Total estimated duration of project is approximately nine (9) months.



Budget

Task 1 MIT

The terms of compensation shall be in conformance with the Professional Services Agreement for General Engineering Consulting Services dated November 11, 2017 between the City and Arcadis. The proposed lump sum fee for this project is \$33,580 and reimbursables expenses up to \$1,600. A breakdown of this lump sum fee is enclosed as Attachment A.

Task 2 Detailed Emergency Response Plans for Hurricane Events and Catastrophic Electrical Failure

The proposed lump sum fee for conducting the Scope of Work described herein and detailed in Attachment B is \$145,616. This fee covers Arcadis labor and expenses. The task breakdown for the lump sum fee is as follows:

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Task	Fee
Task 2A.1 - Site Visit and Meetings (CEFRP)	\$11,660
Task 2A.2 - Development and Submittal of Draft CEFRP	\$69,626
Task 2A.3 - Review Meeting and Final Catastrophic Electrical Failure Response Plan	\$10,210
Task 2B.1 - Meetings and Workshops	\$6,360
Task 2B.2 - Development and Submittal of Draft Annex	\$36,540
Task 2B.3 - Review Meeting and Final Annex	\$11,220
<i>Total</i>	<i>\$145,616</i>

Arcadis is excited about this opportunity to assist the City with detailed emergency responses activities. Should you have any questions regarding this work order proposal, please do not hesitate to contact me via email (joan.i.fernandez@arcadis.com) or telephone (954.882.9566).

Sincerely,
Arcadis U.S., Inc.



Leah Richter, PE
Vice-President



Joan Fernandez, PE
Project Manager

Email: joan.i.fernandez@arcadis.com
Direct Line: 954-525-6174

CC. Wilhelmina Montero (City)

Ms. Montero, PE
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Enclosures:

Attachment A – Lump Sum Fee Breakdown for Task 1 MIT

Attachment B – Lump Sum Fee Breakdown for Task 2 Detailed Emergency Response Plans for Hurricane Events and Catastrophic Electrical Failure

Attachment C – Subconsultant Proposal

This proposal and its contents shall not be duplicated, used or disclosed — in whole or in part — for any purpose other than to evaluate the proposal. This proposal is not intended to be binding or form the terms of a contract. The scope and price of this proposal will be superseded by the contract. If this proposal is accepted and a contract is awarded to Arcadis as a result of — or in connection with — the submission of this proposal, Arcadis and/or the client shall have the right to make appropriate revisions of its terms, including scope and price, for purposes of the contract. Further, client shall have the right to duplicate, use or disclose the data contained in this proposal only to the extent provided in the resulting contract.

Contract Labor Category		Hours	Billing Rate (\$ / hr)	Cost	Fee / Task	Total Fee
						\$ 35,180.00
					Arcadis Labor	\$ 33,580.00
					Subconsultant Costs	\$ -
					Other Direct Expenses	\$ 1,600.00
1A Develop Test Plan						\$ 5,970.00
Labor Subtotal						\$ 5,920.00
Leah Richter, P.E.	Company Officer	1	\$ 240.00	\$ 240.00		
Marc Killingstad, P.E.	Technical Expert	4	\$ 240.00	\$ 960.00		
Joan Fernandez, P.E.	Project Manager	4	\$ 220.00	\$ 880.00		
Estefania Pilar	Scientist 2	28	\$ 130.00	\$ 3,640.00		
Mindy Mondesir	Administrative 3	2	\$ 100.00	\$ 200.00		
Subcontractor Labor Subtotal						\$ -
None						\$ -
Other Direct Expenses						\$ 50.00
Travel	(airfare, hotel, mileage, etc.)		\$ -	\$ -		
Miscellaneous Expenses	(reproduction, FedEx)		\$ 50.00	\$ 50.00		
1B Preparation of Bid Documents and Bidding Assistance						\$ 11,360.00
Labor Subtotal						\$ 10,160.00
Leah Richter, P.E.	Company Officer	2	\$ 240.00	\$ 480.00		
Marc Killingstad	Technical Expert	12	\$ 240.00	\$ 2,880.00		
Joan Fernandez, P.E.	Project Manager	6	\$ 220.00	\$ 1,320.00		
Estefania Pilar	Scientist 2	36	\$ 130.00	\$ 4,680.00		
Mindy Mondesir	Administrative 3	8	\$ 100.00	\$ 800.00		
Subcontractor Labor Subtotal						\$ -
None						\$ -
Other Direct Expenses						\$ 1,200.00
Travel	(airfare, hotel, mileage, etc.)		\$ 1,200.00	\$ 1,200.00		
Miscellaneous Expenses	(reproduction, FedEx)		\$ -	\$ -		
1C Field Services for MIT						\$ 6,460.00
Labor Subtotal						\$ 6,160.00
Marc Killingstad, P.E.	Technical Expert	4	\$ 240.00	\$ 960.00		
Joan Fernandez, P.E.	Project Manager	0	\$ 220.00	\$ -		
Estefania Pilar	Scientist 2	40	\$ 130.00	\$ 5,200.00		
Subcontractor Labor Subtotal						\$ -
None						\$ -
Other Direct Expenses						\$ 300.00
Travel	(airfare, hotel, mileage, etc.)		\$ 200.00	\$ 200.00		
Miscellaneous Expenses	(reproduction, FedEx)		\$ 100.00	\$ 100.00		
1D MIT Report						\$ 11,390.00
Labor Subtotal						\$ 11,340.00
Leah Richter, P.E.	Company Officer	1	\$ 240.00	\$ 240.00		
Marc Killingstad, P.E.	Technical Expert	8	\$ 240.00	\$ 1,920.00		
Joan Fernandez, P.E.	Project Manager	8	\$ 220.00	\$ 1,760.00		
Estefania Pilar	Scientist 2	54	\$ 130.00	\$ 7,020.00		
Mindy Mondesir	Administrative 3	4	\$ 100.00	\$ 400.00		
Subcontractor Labor Subtotal						\$ -
None						\$ -
Other Direct Expenses						\$ 50.00
Travel	(airfare, hotel, mileage, etc.)		\$ -	\$ -		
Miscellaneous Expenses	(reproduction, FedEx)		\$ 50.00	\$ 50.00		

Contract Labor Category	Hours	Billing Rate (\$ / hr)	Cost	Fee / Task	Total Fee
					\$ 145,616.00
				Arcadis Labor	\$ 105,680.00
				Subconsultant Costs	\$ 39,486.00
				Other Direct Expenses	\$ 450.00

Task 2A - Catastrophic Electrical Failure Response Plan

2A.1 Site Visit and Meetings **\$ 11,660.00**

Labor Subtotal				\$ 11,560.00	
Leah Richter, P.E.	Company Officer	6	\$ 240.00	\$ 1,440.00	
Joan Fernandez, P.E.	Project Manager	6	\$ 220.00	\$ 1,320.00	
Mary Jacques	Technical Expert	18	\$ 200.00	\$ 3,600.00	
Lia Dombroski	Project Engineer 2	40	\$ 130.00	\$ 5,200.00	
Subcontractor Labor Subtotal				\$ -	
McKim and Creed				\$ -	
Other Direct Expenses				\$ 100.00	
Travel	(airfare, hotel, mileage, etc.)		\$ 100.00	\$ 100.00	
Miscellaneous Expenses	(reproduction, FedEx)		\$ -	\$ -	

2A.2 Development and Submittal of Draft CEFRP **\$ 69,626.00**

Labor Subtotal				\$ 30,040.00	
Leah Richter, P.E.	Company Officer	8	\$ 240.00	\$ 1,920.00	
Joan Fernandez, P.E.	Project Manager	16	\$ 220.00	\$ 3,520.00	
Mary Jacques	Technical Expert	32	\$ 200.00	\$ 6,400.00	
Lia Dombroski	Project Engineer 2	100	\$ 130.00	\$ 13,000.00	
Mindy Mondesir	Administrative 3	52	\$ 100.00	\$ 5,200.00	
Subcontractor Labor Subtotal				\$ 39,486.00	
McKim and Creed				\$ 39,486.00	
Other Direct Expenses				\$ 100.00	
Travel	(airfare, hotel, mileage, etc.)		\$ -	\$ -	
Miscellaneous Expenses	(reproduction, FedEx)		\$ 100.00	\$ 100.00	

2A.3 Review Meeting and Final Catastrophic Electrical Failure Response Plan **\$ 10,210.00**

Labor Subtotal				\$ 10,160.00	
Leah Richter, P.E.	Company Officer	4	\$ 240.00	\$ 960.00	
Joan Fernandez, P.E.	Project Manager	6	\$ 220.00	\$ 1,320.00	
Mary Jacques	Technical Expert	20	\$ 200.00	\$ 4,000.00	
Lia Dombroski	Project Engineer 2	40	\$ 130.00	\$ 5,200.00	
Subcontractor Labor Subtotal				\$ -	
None				\$ -	
Other Direct Expenses				\$ 50.00	
Travel	(airfare, hotel, mileage, etc.)		\$ -	\$ -	
Miscellaneous Expenses	(reproduction, FedEx)		\$ 50.00	\$ 50.00	

Task 2B - Water System Hurricane Preparedness and Response Annex

2B.1 Meetings and Workshops **\$ 6,360.00**

Labor Subtotal				\$ 6,360.00	
Leah Richter, P.E.	Company Officer	2	\$ 240.00	\$ 480.00	
Joan Fernandez, P.E.	Project Manager	4	\$ 220.00	\$ 880.00	
Mary Jacques	Technical Expert	12	\$ 200.00	\$ 2,400.00	
Lia Dombroski	Project Engineer 2	20	\$ 130.00	\$ 2,600.00	
Subcontractor Labor Subtotal				\$ -	
None				\$ -	
Other Direct Expenses				\$ -	
Travel	(airfare, hotel, etc.)		\$ -	\$ -	
Miscellaneous Expenses	(reproduction, FedEx)		\$ 100.00	\$ -	

2B.2 Development and Submittal of Draft Annex **\$ 36,540.00**

Labor Subtotal				\$ 36,440.00	
Leah Richter, P.E.	Company Officer	8	\$ 240.00	\$ 1,920.00	
Joan Fernandez, P.E.	Project Manager	16	\$ 220.00	\$ 3,520.00	
Mary Jacques	Technical Expert	48	\$ 200.00	\$ 9,600.00	
Lia Dombroski	Project Engineer 2	140	\$ 130.00	\$ 18,200.00	
Mindy Mondesir	Administrative 3	32	\$ 100.00	\$ 3,200.00	
Subcontractor Labor Subtotal				\$ -	
None				\$ -	
Other Direct Expenses				\$ 100.00	
Travel	(airfare, hotel, mileage, etc.)		\$ -	\$ -	
Miscellaneous Expenses	(reproduction, FedEx)		\$ 100.00	\$ 100.00	

2B.3 Review Meeting and Final Annex **\$ 11,220.00**

Labor Subtotal				\$ 11,120.00	
Leah Richter, P.E.	Company Officer	4	\$ 240.00	\$ 960.00	
Joan Fernandez, P.E.	Project Manager	8	\$ 220.00	\$ 1,760.00	
Mary Jacques	Technical Expert	16	\$ 200.00	\$ 3,200.00	
Lia Dombroski	Project Engineer 2	40	\$ 130.00	\$ 5,200.00	
Subcontractor Labor Subtotal				\$ -	
None				\$ -	
Other Direct Expenses				\$ 100.00	
Travel	(airfare, hotel, mileage, etc.)		\$ -	\$ -	
Miscellaneous Expenses	(reproduction, FedEx)		\$ 100.00	\$ 100.00	

**WORK AUTHORIZATION
for Electrical Services**

Date: **5/19/2021**

McKim & Creed Proposal Number: **2011708**

Arcadis Project Number: _____

1. PROJECT TITLE:

Catastrophic Electrical Failure and Response Plan (CEFRP)

2. SCOPE OF WORK:

This Work Authorization (WA) proposal includes a detailed description of the Scope of Work (SOW) to be performed by McKim & Creed, (M&C) as well as the proposed lump sum fee to be paid to M&C by Arcadis for the services described herein.

Task 1.0 – Project Coordination and Project Management

- A. Provide Project Management for the portion of the project pertaining to M&C’s role in developing the electrical portion of a Catastrophic Electrical Failure Response Plan (CEFRP) to be present by Arcadis to the City of Hollywood. This task will include coordination, one (1) site visit, a virtual kick-off meeting, progress meetings (total 2 virtual), one (1) virtual Draft Review, invoicing, and QA/QC of the M&C deliverables.

Task 2.0 - CATASTROPHIC ELECTRICAL FAILURE RESPONSE PLAN:

- A. Provide input in the form of a write up to Arcadis, to develop a Catastrophic Electrical Failure and Response Plan (CEFRP) that addresses operational impacts from an electrical failure or widespread power outage. This plan development will include in coordination with Arcadis, the following items:

- 1. Description of current electrical system at the WTP and in the distribution system.
- 2. Description of Florida’s electrical system and grids, as information is available.
- 3. Evaluation of single points of failure.
- 4. Summary of electrical system redundancy.
- 5. Review Generator backup power and fuel supply.
- 6. Review of threat scenarios to assets and facilities, including electrical fire.
- 7. Review Preparedness actions for catastrophic electrical power failure with response levels and corresponding actions.
- 8. Review Response actions during power outages.

9. Assist in the Recovery actions, restoration, and damage assessment for electrical outages.
10. Assist in a phased approach that provides for an initial response, sustained response, and procedures for recovery following a catastrophic electrical failure.
11. Assist Checklist/procedure for DPU to undertake in the event of a catastrophic electrical power outage.
12. Assist temporary power and restoration of power for essential services.
13. Assist in the General recommendations and contingencies for electrical resilience at the WTP and in the distribution system.

ASSUMPTIONS:

1. Arcadis will provide all documentation relevant to this response plan.
2. Arcadis will provide a written schedule with milestones, updated as needed.
3. Cyber Security of Electrical equipment is not included but can be added within the scope of this project.
4. All deliverables will be in a Word doc or Excel sheet format. Development of drawings is not included.
5. All project correspondence shall be directed to:
Joan Fernandez of Arcadis Joan.I.Fernandez@arcadis.com with copies to others as may be appropriate.

COMPENSATION:


6. The Work described herein will be performed Lump Sum Fee Amount of **\$39,486.00** If directed in writing by Arcadis, additional Work can be performed using an hourly rate fee of \$225.00 plus expenses. Thank you for considering McKim & Creed for this project.

3. INVOICING/FUNDING PROCEDURES:

For work performed, invoices shall be submitted monthly to Arcadis Inc. at accountspayable.administaration@arcadis-us.com attention Joan Fernandez and will be billed as incurred to proceed with those services.

Arcadis Work Authorization Number: _____

PREPARED BY:


Senior Electrical Manager
 McKim & Creed, Inc.

 Date

APPROVED BY:

Joan Fernandez, PE
Project Manager
 Arcadis-US Inc.

 Date