

WORK ORDER

PURSUANT TO A MASTER AGREEMENT BETWEEN
THE CITY OF FORT COLLINS
AND
EXCERGY CORPORATION

WORK ORDER NUMBER: GIS 06.2018
PROJECT TITLE: Water GIS Roadmap
ORIGINAL BID/RFP NUMBER & NAME: 8500 GIS PLANNING & SYSTEM CONSULTANT
MASTER AGREEMENT EFFECTIVE DATE: July 26, 2017
ARCHITECT/ENGINEER: NA
OWNER'S REPRESENTATIVE: Sandra Bratlie
WORK ORDER COMMENCEMENT DATE: June 26, 2018
WORK ORDER COMPLETION DATE: January 31, 2019
MAXIMUM FEE: (time and reimbursable direct costs): \$59,331.00

PROJECT DESCRIPTION/SCOPE OF SERVICES: Develop the Water GIS roadmap to include Task 1 and 2. Please see the attached supporting documentation.

Service Provider agrees to perform the services identified above and on the attached forms in accordance with the terms and conditions contained herein and in the Master Agreement between the parties. In the event of a conflict between or ambiguity in the terms of the Master Agreement and this Work Order (including the attached forms) the Master Agreement shall control.

The attached forms consisting of Twelve (12) pages are hereby accepted and incorporated herein, by this reference, and Notice to Proceed is hereby given after all parties have signed this document.

SERVICE PROVIDER: Excergy Corporation

By: DocuSigned by: James A. Ketchledge Date: June 21, 2018
Name: James A. Ketchledge Title: CEO & President



OWNER'S ACCEPTANCE & EXECUTION:

This Work Order and the attached Contract Documents are hereby accepted and incorporated herein by this reference.

ACCEPTANCE: DocuSigned by:
Sandra Bratlie
Sandra Bratlie, Civil Engineer II Date: June 22, 2018

REVIEWED: DocuSigned by:
Pat Johnson
Pat Johnson, Senior Buyer Date: June 21, 2018

APPROVED AS TO FORM: _____ Date: _____
Name, City Attorney's Title
(if greater than \$1,000,000)

ACCEPTANCE: DocuSigned by:
Andrew S. Gingerich
Andrew Gingerich, Civil Engineer III Date: June 25, 2018

ACCEPTANCE: DocuSigned by:
Theresa Connor
Theresa Connor, Utilities Deputy Director Date: June 26, 2018

ACCEPTANCE: _____ Date: _____
Kevin Gertig, Utilities Executive Director
(if greater than \$1,000,000)

ACCEPTANCE: DocuSigned by:
Gerry S. Paul
Gerry Paul, Purchasing Director Date: June 26, 2018
(if greater than \$60,000)

ACCEPTANCE: _____ Date: _____
Darin Atteberry, City Manager
(if greater than \$1,000,000)

ATTEST: _____ Date: _____
City Clerk
(if greater than \$1,000,000)

**ATTACHMENT A
WORK ORDER SCOPE OF SERVICES, COST DETAIL, AND SCHEDULE**



Proposal to



for



Wet Utilities GIS Gap Analysis

June 14, 2018



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Scope of Work

Introduction

Fort Collins Utilities has requested Excergy to respond to a request for qualifications (RFQ) to gather GIS requirements to support wet utilities and field operations. FCU Water Engineering & Field Services (WEFS) Operations initiated a GIS project in 2017 to support operations for its water, wastewater, and storm water utilities. GIS related tasks have been identified to support Maximo/DataSplice implementation (Appendix C of the Excergy provided RFQ from FCU). Excergy is well positioned to assist Fort Collins Utilities (FCU) given our current engagements implementing a mobile GIS solution for asset creation and maintenance on the Utilities Maximo Enterprise Asset Management (EAM) project and from helping Fort Collins Utilities LPO to develop a Strategic and Technology Roadmap for a Geographic Information System (GIS) integrated with an Advanced Distribution Management System (ADMS) based on Esri technology.

Excergy proposes services separated into two sections; one—focused on wet utilities GIS gap analysis, and two – optional services for development of a solutions roadmap for realizing the wet utilities GIS requirements as part of an FCU Enterprise GIS. Excergy proposes to implement an approach utilizing its Integrated Development Methodology™ (IDM) being utilized to develop the LPO GIS/ADMS Strategic and Technology Roadmap. This will provide FCU with some economies of scale in methodology but more importantly position for synergies and possible integration with LPO towards realization of an overall enterprise GIS for all FCU utilities.

The proposal has been organized based on inputs originally shared by FCU on February 14, 2018, and updated based on feedback received during the time period since up to present. Sections of services proposed parallel the project structure for the LPO STR project with focus on project definition, business transformation, solution architecture, and project management. Excergy is confident that its depth of understanding of FCU combined with our consultants' industry background and expertise will meet and exceed expectations for the requested deliverables.

Analysis

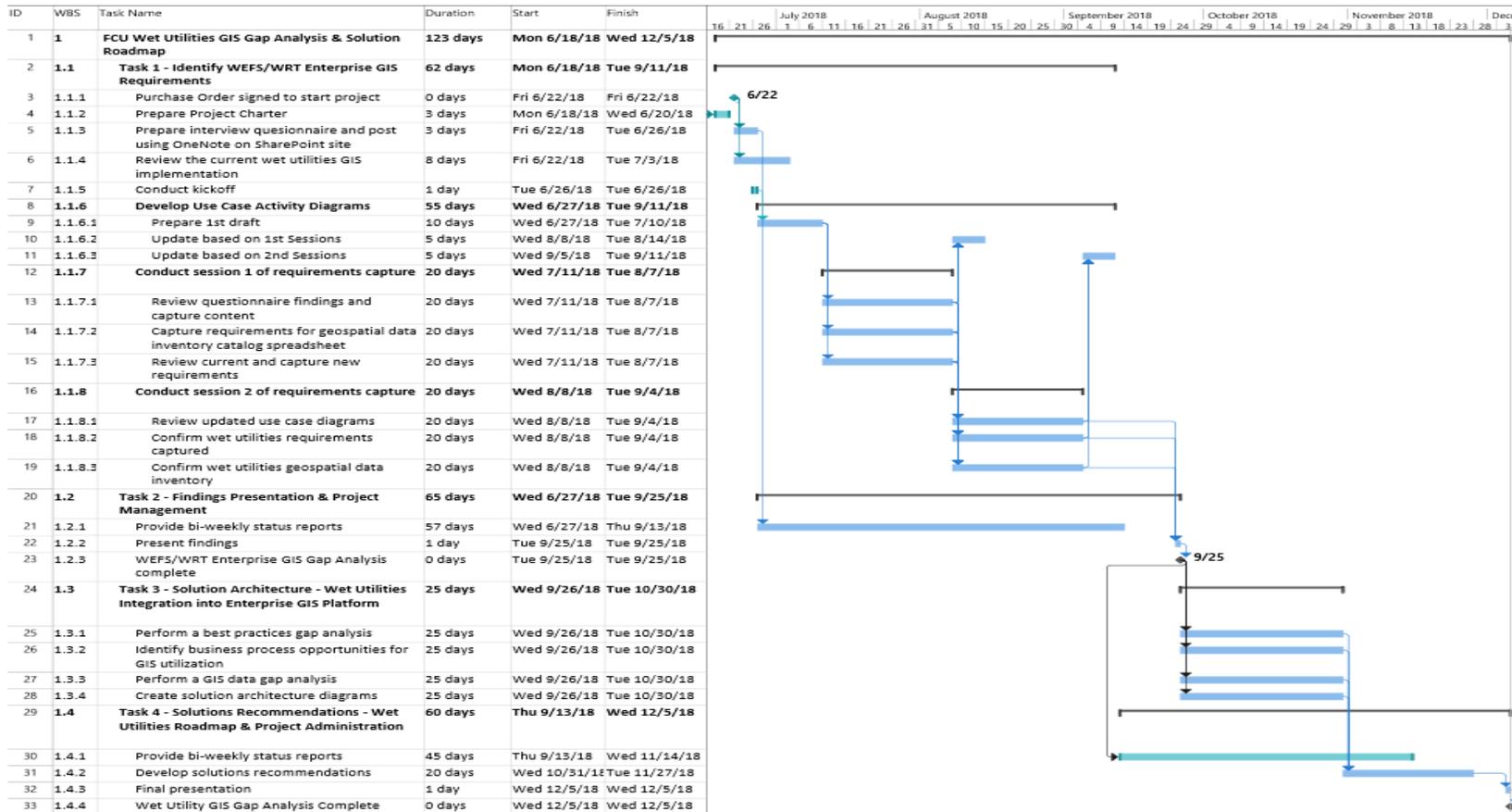
The requested SOW for gathering GIS requirements for wet utilities can be accomplished with the scope assumptions/constraints identified. To minimize getting up to speed, the principal resources identified to deliver the proposed services are currently involved in either of Excergy's two ongoing projects and are confirmed to have additional capacity for adding this work during the timeframe requested. The Excergy team resources and roles identified include:

- ▶ Patrick Noonan, Project Manager and GIS SME
- ▶ Mark Hatfield, Water Utilities SME

Schedule

The schedule highlights the approach and task organization Excergy would use to complete the requested services in an approximately five-month timeframe for all proposed services.

Figure 1. FCU Wet Utilities GIS Gap Analysis & Solutions Roadmap Schedule



Requested Services – FCU Wet Utilities Gap Analysis

Task 1: Project Definition – Identify WEFS/WRT Enterprise GIS Requirements

Excergy will start the project by defining a project charter and developing an interview questionnaire for use in helping to collect the required information. These materials will be shared with FCU SME's and confirmed as part of a project kickoff meeting with project sponsors. Excergy will also engage with FCU GIS SMEs to review, confirm, and possibly expand upon the previously captured FCU requirements task list in Appendix C. The analysis will allow Excergy to confirm existing and/or further define new requirements that may be missing as potentially suggested by the FCU provided preliminary GIS requirements. Excergy will then arrange a series of sessions over two cycles based on previously identified business processes and participants confirmed by FCU GIS SME's, project sponsors, and the FCU internal contacts identified in Appendix B of the Excergy provided RFQ.

Excergy will leverage the methodology used for the LPO Strategic Technology Roadmap to capture requirements and build use case activity diagrams for WEFS and WRT. As requirements are understood, Excergy will also capture details for the geospatial data sources. The deliverables will support an FCU wet utilities transformation towards an enterprise GIS serving all its utilities and operations.

The business processes for creating, maintaining, and managing edit changes as part of work orders have been captured for wet side utilities as part of the Maximo project. LPO has captured current business processes and identified impacted areas for its future GIS/ADMS as part of its STR. The gap is in capturing other wet utilities business processes where spatial data is or could be utilized to improve FCU business operations and services.

- ▶ **Prepare a project charter** to define the project description, objectives, key people, deliverables and schedule. The project charter will be the first deliverable developed to ensure alignment between Excergy and FCU GIS SME staff and other key project participants. The charter will be reviewed and confirmed as part of the project kickoff session in a later task.
- ▶ **Prepare interview questionnaire** using MS OneNote and posting to the FCU project SharePoint site. The questionnaire will be developed prior to interviews and shared to attendees in advance to help them prepare for the sessions. The use of OneNote and placement on SharePoint will encourage collaboration during the content development between Excergy, project SME's, and FCU interview participants.
- ▶ **Review current wet utilities GIS requirements** to confirm and supplement the FCU Identified GIS Task list for Maximo Project. Any "gaps" in requirements that are captured will result in actionable task items being defined with dependencies and schedule constraints identified where applicable to allow for subsequent management as part of the ongoing Maximo project implementation. Otherwise, the requirements shall be carried forward and supplemented with additional findings per the task activities that follow.

- ▶ **Conduct project kickoff** to ensure all parties and stakeholders are on the same page before initiating other activities. Excergy will present the plan for performing this section of services to an audience envisioned as FCU GIS SMEs, Maximo team members, and other internal contacts identified in Appendix B of the “Excergy RFQ for Wet Utilities GIS” shared by FCU.
- ▶ **Develop use case activity diagrams** to support the requirements gathering sessions. The use case diagrams will be developed as a 1st draft prior to the sessions and updated later as a result of the sessions. Similarly to those developed to support the LPO STR, the use case activities (bubbles) will represent requirements categories to assist in reviewing and organizing the RTM and providing users with a method to more easily visualize their GIS needs within the context of their “uses” of geospatial information. The use cases will target processes for development review, design, master planning/modeling, capital project management, permitting, annexation, landbase maintenance, water quality, utility locates, and simulation/predictive modeling..
- ▶ **Conduct first requirements gathering sessions** to populate interview questionnaire, capture new wet utilities requirements, review use case diagrams, and to support creation of a wet utilities geospatial data inventory. Requirements will be captured to support the identified business processes in a manner consistent with how Excergy implemented for LPO in a requirements traceability matrix (RTM) with supporting Visio UML Use Case Activity diagrams. Excergy will combine with previously captured Maximo project wet utilities GIS requirements to ensure consistency and to ensure all FCU GIS requirements are consolidated for enterprise management. The consistency in capture methodology will more easily support comparisons, identify common needs, and position FCU to address requirements with future technologies and business processes across its respective utility domains. Excergy will also create a catalog of wet utilities data to identify current and future geospatial data capabilities and needs and to serve as a baseline for further recommendations. The data inventory will also include reference to “system of record” or the system with primary create/edit responsibility to assist with future GIS integration planning and data management.
- ▶ **Conduct second requirements gathering sessions** to confirm interview questionnaire, present updated use case activity diagrams, and present new wet utilities requirements. Interview questionnaires will be reviewed and validated and the updated use case activity diagrams will be presented to support the organization of the captured requirements. . The requirements gathering sessions will target wet utilities participants organized in mutually agreed upon groupings to include Water Systems Engineering, Water Utilities Engineering, Stormwater Systems, Collection System, Distribution System, Meter and Customer Services, Environmental Regulatory Affairs, Water Resources, Water Quality Services, Water Reclamation & BioSolids, and Water Production Divisions.

TASK 1 DELIVERABLES

- Project charter to summarize the purpose and intent of the project.
- Interview questionnaire using Microsoft OneNote.
- Consolidation of Utilities Maximo project WEFS and WRT GIS requirements with schedule dependencies if deemed applicable into separate FCU wet utilities GIS RTM.

- Project kickoff meeting to review project charter, scope, schedule and to confirm current wet utilities GIS implementation task list.
- Two sets of seven (7) interview requirements gathering sessions (14 total) based on geospatial processes identified and mutually agreed to on or before project kickoff.
- New functional and integration requirements capture in the Excergy integrated development methodology (IDM) requirements traceability matrix (RTM) spreadsheet to support current and future WRT and WEFS uses of geospatial data and technology.
- Geospatial data inventory catalog spreadsheet for water, wastewater, and stormwater along with reference or supporting data.
- Visio UML Use case diagrams for up to twelve (12) separate business process domains.

Task 2: Findings Presentation & Project Management

Excergy will ensure active communications and provide project administration services during the duration of these services. Given the location proximity for key staff proposed and their current involvement in other FCU related projects, Excergy can provide active onsite and offsite support through the project duration. A final presentation of the WEFS/WRT Enterprise GIS requirements gap analysis will be provided to project participants.

- ▶ **Provide bi-weekly status reports** to provide two-week review for previous and future activities along with an assessment for overall project progress
- ▶ **Present findings** to parties and stakeholders to review the materials developed in Task 1 and support their transition to FCU for upkeep and any future development.

TASK 2 DELIVERABLES

- Bi-weekly status reports for email distribution and posting to project SharePoint
- Findings presentation to review materials developed and to transition to FCU GIS SMEs

Optional Services – Wet Utilities Solutions Roadmap

Task 3: Solution Architecture – Wet Utilities GIS Integration into Enterprise GIS Platform

If desired, Excergy will assist FCU in transitioning from requirements discovery towards development of a plan for implementation. Artifacts and deliverables from Task 1 and 2 will be utilized to form a cohesive plan towards the implementation of an Enterprise GIS for wet utilities that integrates with the other IT/OT projects underway within FCU and the City of Fort Collins. The following services are proposed:

- ▶ **Perform a best practices gap analysis** to identify other potential utilizations of GIS technology that may be realized by recognizing wet utilities needs within an overall enterprise GIS framework. Such “wish list” GIS requirement items identified in Task 1 may be used as a basis for further exploration. Excergy may also reference its experiences with other clients in topical areas such as Smart Cities strategic planning, cloud-based services, and electronic plan submittal standardization as examples for FCU consideration.
- ▶ **Identify business process opportunities for GIS utilization** based on Visio use cases developed in Task 1 supplemented with Excergy consultants’ subject matter expertise. Excergy will build out the process activity steps and highlight where efficiency improvements from geospatial utilization may be possible. The potential GIS impact opportunity edits will be applied to clearly delineate potential changes to the “as-is” business processes with explanations added to articulate the geospatial opportunities.
- ▶ **Perform a GIS data gap analysis** to identify potential fidelity, accuracy, completeness, geographic coverage, consistency and timeliness issues as part of a future migration from current sources to future target geospatial data schema. The source GIS data will be based on the data inventory findings developed in Task 1. The target geospatial data schema is envisioned as an Esri based industry standard or other selected staging data model representation as a pathway to the Esri utility network extension when it becomes available. The gap analysis will be useful in refining requirements, highlighting data deficiencies to be prioritized for mitigation, and in defining the scope of work needed for a future data migration/conversion.
- ▶ **Create solution architecture diagrams** to show wet side GIS evolution as part of a phased integration between City GIS, FCU AMI, LPO GIS, and Maximo/DataSplice architectures. The idealized future state of wet utilities GIS will be depicted as the target architecture and a series of phases or business releases will be identified leading from current to this future state.

TASK 3 DELIVERABLES

- Best practices offerings templates to organize additional future state GIS requirement opportunities
- Process diagrams for twelve (12) current “as-is” business processes that could be impacted by geospatial data and technology with activities highlighted to show GIS utilization opportunities

- GIS data gap analysis to expand upon the data inventory in Task 1 and bring greater attention to perceived data issues
- MS Visio solution architecture diagrams showing current and future geospatial technology and phasing of integrations to other current and future technologies

Task 4: Solutions Recommendations – Develop Wet Utilities GIS Roadmap and Provide Project Administration

Excergy will ensure active communications and provide project administration services during the duration of these services. Given the location proximity for key staff proposed and their current involvement in other FCU related projects, Excergy can provide active onsite and offsite support through the project duration.

As part of FCU wet utilities GIS solutions recommendations, Excergy proposes to develop a roadmap document to capture and organize all the previous task deliverables into a cohesive plan of action. The plan will leverage the LPO STR and other Maximo project deliverables to offer a more complete enterprise GIS roadmap for FCU. The plan is envisioned as a supplement to the existing LPO STR for WEFS and WRT GIS capabilities development.

- ▶ **Provide bi-weekly status reports** to provide two-week review for previous and future activities for the additional schedule period encompassing the Optional Services
- ▶ **Develop wet utilities GIS roadmap** based on the prior tasks deliverables for the optimal path forward for WEFS/WRT and its continued GIS implementation.
- ▶ **Present GIS roadmap solutions recommendations as part of a final presentation** at the conclusion of the project. The Excergy project team will provide a walk-through of its findings and recommendations and provide mutually agreed upon refinement updates based on FCU feedback.

TASK 4 DELIVERABLES

- Bi-weekly status reports for email distribution and posting to project SharePoint
- Wet Utilities GIS Roadmap
- Wet Utilities GIS Roadmap Solutions Recommendations final presentation

Cost Estimate

The principal elements for the cost estimate are the Excergy staff labor and travel expenses.

Excergy Consulting and Implementation Support

Table 1 lists the primary tasks and the associated hours for Tasks 1 and 2. Table 2 for Tasks 3 and 4.

Table 1. Task Price for Tasks 1 and 2

	Project Manager	Executive Consultant	Total Hours	Labor Price
	Patrick Noonan	Mark Hatfield		
	\$ 199.00	\$ 219.00		
	70%	70%		
Task 1 - Identify WEFS/WRT Enterprise GIS Requirements				
1.1 Prepare Project Charter	6	2	8	\$ 1,632.00
1.2 Prepare Interview Questionnaire	4	2	6	\$ 1,234.00
1.3 Review current wet utilities GIS requirements	20	20	40	\$ 8,360.00
1.3 Conduct Project Kickoff	10	8	18	\$ 3,742.00
1.4 Develop Use Case Activity Diagrams	16	12	28	\$ 5,812.00
1.5 1st requirements gathering session	28	28	56	\$ 11,704.00
1.6 2nd requirements gathering session	28	28	56	\$ 11,704.00
Contingency	11	10	21	\$ 4,379.00
Subtotal	123	110	233	\$ 48,567.00
Trips	4	4	8	\$ 4,328.00
Task 2 - Findings Presentation & Project Management				
2.1 Bi-Weekly Status Reports	10	2	12	\$ 2,428.00
2.3 Present Findings	6	6	12	\$ 2,508.00
Contingency	1	1	2	\$ 418.00
Subtotal	17	9	26	\$ 5,354.00
Trips	1	1	2	\$ 1,082.00
Total Labor and Expenses Task 1 and 2				\$ 59,331.00

Table 2. Task Price for Tasks 3 and 4

	Project Manager	Executive Consultant	Total Hours	Labor Price	
	Patrick Noonan	Mark Hatfield			
	\$ 199.00	\$ 219.00			
Task 3 - Solution Architecture					
3.1	Perform Best Practices Gap Analysis	24	24	48	\$ 10,032.00
3.2	Identify Business Process GIS Opportunities	20	42	62	\$ 13,178.00
3.3	Perform GIS Data Gap Analysis	40	4	44	\$ 8,836.00
3.4	Create Solution Architecture Diagrams	32	24	56	\$ 11,624.00
	Contingency	12	9	21	\$ 4,359.00
	Subtotal	128	103	231	\$ 48,029.00
	Trips	3	2	5	\$ 2,705.00
Task 4 - Solutions Recommendations					
4.1	Bi-Weekly Status Reports (additpnal time period)	8	2	10	\$ 2,030.00
4.2	Develop Solutions Recommendations	36	32	68	\$ 14,172.00
4.3	Present Solutions Recommendations	10	8	18	\$ 3,742.00
	Contingency	5	4	9	\$ 1,871.00
	Subtotal	59	46	105	\$ 21,815.00
	Trips	2	2	4	\$ 2,164.00
Total Labor and Expenses Task 3 and 4					\$ 74,713.00

Summary

The combination of labor and travel expenses for the Task 1 and 2 Required Services herein results in a budgetary price of \$59,331. The labor and travel expenses for Task 3 and 4 Optional Services is \$74,713. The combination of labor and travel expenses gives a budgetary price of \$134,044, excluding internal Fort Collins' personnel costs.

Scope Assumptions/Constraints

- The work will occur in the 2018 calendar year.
- Wet utilities SMEs will be available to answer questions and perform research to support the creation of the application/system and data inventory spreadsheets.
- The following business processes have been identified for inclusion as part of the SOW:
 - Development review process; plan submittal, review
 - Design; as-builts
 - Engineering; master planning, modeling
 - Project Management; capital projects

- e. Permitting; MS4, Floodplain
 - f. Annexation; real estate easements, annexation data maintenance
 - g. Landbase; maintenance for parcels, curbs, streets, LiDAR, Survey, potholing (Xcel, Comcast, CenturyLink, Fiber, Private)
 - h. Water Quality; monitoring program, testing, physical features
 - i. Field Services; inspections/operations, use of GIS to map and plan, locate utilities
 - j. Work Management; confirm integration of processes with Utilities Maximo project
 - k. Modeling; simulation and predictive modeling
4. FCU will allow either of their FCU wet utilities co-project managers Sarah Rose and Sandra Bratlie, and/or FCU GIS SMEs Steve Denowski and Abiah Shaffer to attend all sessions with Excerpt team staff. The expectation for sharing work responsibilities on this project will require a close working relationship.
 5. FCU will appoint a single point of contact to serve as project manager to Excerpt and for communications to FCU staff.
 6. The project schedule assumes that the schedule as presented can be executed without FCU resource conflicts associated with other projects or initiatives underway for each of the business areas during the project activities.
 7. Excerpt assumes the statement of services and schedules for its other ongoing projects including LPO STR and Utilities Maximo will remain unimpacted by these services.
 8. The wet utilities GIS roadmap represents a compilation and strategic alignment of previously developed deliverables and does not include estimates for developing further content such as pricing details to implement or enterprise GIS governance recommendations to support. It is assumed FCU GIS SME's will pursue these refinements if deemed necessary.