

Request for Proposals

Executing a roadmap from existing GIS datasets to TDEC's Asset Management Plan.

Issued by: City of Crossville, TN

1. Introduction:

The City of Crossville is seeking proposals from qualified firms/vendors to provide professional services for the migration of the City's existing Geographic Information System (GIS) to a comprehensive Asset Management System that meets current requirements of the Tennessee Department of Environment and Conservation's (TDEC) Asset Management Plan (AMP) guidelines for their water and sewer system assets.

The selected firm/vendor shall enact Phase I of the attached Draft GIS Roadmap document.

2. Background and Existing System:

The city of Crossville has an existing GIS dataset that includes survey grade spatial data, including northing, easting, and elevation in the Tennessee State Plan Coordinate system. This dataset does include the size of the line, but not materials, date of install, or digital spatial information regarding number of repairs/leaks, maintenance, or general condition.

A sample of the existing dataset will be provided.

Sample GIS Data can be downloaded here:



or [Click Here for Download](#)

3. Project Objectives:

- A. Meet the requirements for TDEC's AMP (Tennessee Department of Environment and Conservation Asset Management Plan).
- B. Migrate and modify the City's existing GIS datasets into ESRI's standardized templates that include the required information stated in TDEC's AMP.

- C. Develop Standard Operating Procedures (SOPs) for future data collection, records keeping, updating and maintaining the newly structured dataset.
- D. Develop and make use of online or cloud based mapping and mobile applications.
- E. Develop training for existing and future city employees on the use and capabilities of the new SOPs and desktop/mobile applications.

4. SCOPE OF SERVICES:

- A. Task 1 – Project Initiation
 - a. Conduct Kickoff Meeting.
 - b. Review existing systems and dataset.
 - c. Develop detailed implantation plan.
 - d. Establish project schedule and milestones.
- B. Task 2 – Existing Conditions Assessment
 - a. Evaluate current GIS datasets and identify gaps and shortfalls from the requirements of the AMP.
 - b. Develop a detailed plan to fill the gaps with city staff.
 - c. Evaluate current GIS and CAD licenses for compatibility with new online cloud-based datasets.
- C. Task 3 – Asset Inventory Development
 - a. Review ESRI Water and Sewer Data Solutions with the City, make schema modifications, and deploy the new schemas into ArcGIS Online
- D. Task 4 – Data Migration
 - a. Migrate City’s existing infrastructure datasets into new schema designs
 - b. Will perform data checks and make upgrades
- E. Task 5 – Asset Management System Implementation
 - a. Configure web maps / applications for office and field users (viewers, editors, and field workers)
 - b. Confirm Spectra GPS units integrate with iOS devices using ESRI Field Maps
 - c. Develop SOPs for data collection, maintenance, error correction, leak repair and current condition information
 - d. Create training guides and workshops for office and field users
 - e. Teach office / mobile data collection, editing, analysis, and reporting
 - f. Work with the City to assess ArcGIS Online Backup solutions, schedule demos, and request cost estimates.
- F. Task 6 – TDEC AMP Compliance Report
 - a. Provide documentation that states in detail the compliance with the requirements of TDEC’s AMP.

5. DELIVERABLES

- A. All final products will belong to the City of Crossville, with the possible exception of software and “cloud services”.
- B. Provide in writing a detailed implantation plan, project schedules, and goals which will include the analysis of missing or gap data from the existing data of the city and the plan to fill those gaps.
- C. A data set with the migrated city data with missing or gap data filled to align with the requirements of the AMP and make use of the ArcGIS Online schemas.
- D. A deliverable Web Map / Applications for office and iOS mobile users in ESRI Field Maps.
- E. Digital SOPs for data collection, maintenance, error correction, leak repair notification and current condition reporting.
- F. Training Guides for office and field users.
- G. Provide written documentation in detail stating the compliance of the final product with TDEC’s AMP.

6. PROPOSAL REQUIREMENTS

Firm Qualifications

Include:

- Company history
- Tennessee municipal experience
- Utility asset management experience
- Relevant certifications
- References from relevant sources or previous clients

Project Team

Provide:

- Project Manager
- GIS Specialist
- Asset Management Specialist
- Utility Engineering Support
- Training Staff

Technical Approach

Describe:

- Proposed software platform

- Migration methodology
- Data validation procedures
- Asset management methodology
- Compliance strategy

Project Schedule

Provide a detailed implementation schedule including milestones and completion dates.

Cost Proposal

Provide:

- Software licensing costs (estimated or general costs are acceptable, due to the unknown number of licenses needed or required)
- Implementation costs
- Migration costs
- Training costs
- Annual maintenance costs

Proposal Document

Maximum of 25 pages. Document to be submitted on a “jump drive / thumb drive” in PDF and a single printed hard copy, bound in a 3-ring binder.

7. EVALUATION CRITERIA

Criteria	Weight
<u>Experience in Direct AMP Compliance:</u> Please provide a list of current or completed AMP compliance projects the firm is/has been involved.	40%
<u>Experience in GIS Data Migration from Shapefiles to ESRI Schema</u>	
<u>Water & Sewer and Online Mapping/App capabilities:</u> Please list experience and/or examples.	30%
<u>Qualifications and Competence of the Firm:</u> Provide firm biography and history of technical services, especially work provided for a utility district and/or municipality.	20%
<u>Cost:</u>	10%

8. PROCUREMENT SCHEDULE

RFP Issued: **July 24, 2026**

Proposals Due: **10:00 a.m. CST, Aug 18, 2026**

Notice of Award: **Sept 8, 2026**

Project Start: **Sept 9, 2026**

9. RESERVATION OF RIGHTS

The City reserves the right to reject any or all proposals, waive informalities, negotiate with respondents, and award the contract deemed to be in the best interest of the City.

10. CONTACT INFORMATION

All inquiries regarding this RFP shall be directed to:

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GIS ROADMAP



CREATED BY:
KCI TECHNOLOGIES, INC.



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DOCUMENT CONTROL

Date	Version	Description	Author
9/23/2025	1.0	Initial Draft	KCI Technologies, Inc.
11/18/2025	1.1	Revisions based on COC feedback	KCI Technologies, Inc.
12/1/2025	1.2	Revisions based on COC feedback – Fire Flow Data	KCI Technologies, Inc.

DRAFT

INTRODUCTION

KCI Technologies has been tasked with assisting the City of Crossville in evaluating its current CAD and GIS workflow processes, developing a GIS roadmap, and documenting the steps necessary to align with the Tennessee Department of Environment and Conservation's (TDEC) Asset Management Plan (AMP) guidelines. This effort is designed to support the City's long-term goals of improving data management, integrating 3rd party software solutions, enhancing operational efficiency, and strengthening asset management practices across the City's water and sewer systems.

The purpose of the City of Crossville's GIS Roadmap is to establish a framework for the City's Engineering Department, Planning Department, and the Catoosa Utility Department to work collaboratively toward more efficient and effective use of GIS. The GIS Roadmap builds upon the City's existing data collection, data management, and work order management processes to support asset management, capital improvement planning (CIP), and regulatory compliance. By integrating these systems within a modern GIS environment, the City will be positioned to meet TDEC AMP requirements while ensuring that accurate geospatial data helps in decision-making processes into the future.

BUSINESS CASES

Business drivers for this plan include the cases below:

1. **TDEC AMP Requirements:** Without a compliant Asset Management Plan (AMP), the City risks being ineligible for state grants or low-interest loans for water and sewer projects.
 - a. **Standardized Data Inventory & Condition Assessments:** TDEC requires key asset details such as installation date, size, material, condition ratings, and replacement cost estimates. The GIS roadmap ensures these required fields are incorporated into a standardized geodatabase design. If the City does not currently have this information, they must establish a plan to collect it through field inventory, condition assessments, reviewing as-built drawings, or analyzing work orders and maintenance records associated with each asset.
 - b. **Support for Capital Improvement Planning (CIP):** By linking asset condition data and historical maintenance events to GIS, the City can prioritize replacement projects based on risk and performance rather than age alone. This approach supports capital improvement plans and long-term budgeting.
2. **Operational Workflow Efficiency & Modernization:**
 - a. **Replace Paper-Based Workflows:** Current workflows rely on a mix of handwritten paper forms, which must later be manually entered into other City software solutions like iWorQ. Because any future integration with iWorQ would fall under a Phase 2 effort or later, the primary focus for transitioning from paper to a digital GIS-enabled workflow would be the Fire Hydrant Flow data. Digitizing this process

will reduce redundancy, eliminate errors from manual entry, and provide real-time visibility into field activities.

- b. GIS & CAD Integration:** Asset updates currently move manually from GPS devices to CAD and are only synced to GIS every few months. Establishing an integration or data migration workflow process between CAD and GIS will streamline data updates, reduce delays, and allow both engineering and field teams to access the same current, authoritative asset datasets.
- c. Work Order & Asset Tracking:** Linking iWorQ with GIS would allow work orders to be tied directly to assets, improving cost visibility and supporting the development of CIP projects. Another alternative workflow process the City should explore, is having field crews enter maintenance activities and GIS data corrections directly into the GIS, supported by an internal review and approval workflow to ensure data accuracy and consistency.
- d. Proactive vs. Reactive Maintenance:** The City operates primarily in a reactive mode, addressing issues only when they occur. GIS-enabled maintenance history and condition data will support preventative maintenance planning, reduce emergency repairs, and extend asset lifecycles.

3. Data Accuracy & Accessibility:

- a. Field Collection:** Field crews currently rely on outdated collection processes and quarterly or biannual mobile map updates, leading to incomplete or inaccurate asset data. Implementing Esri Field Maps with real-time syncing will ensure that updates are captured immediately, improve location accuracy using City owned Spectra GPS units, and reduce errors through field forms with standardized dropdown menus and required fields.
- b. Condition Assessments:** Currently, valve conditions, hydrant inspections, and leak histories are not systematically tracked in a single system. Integrating related tables within GIS will enable the City to capture inspection results over time, supporting condition scoring, replacement prioritization, and support requirements in TDEC asset management plan requirements.

4. Long-Term Sustainability & Workforce Transition:

- a. Knowledge Retention:** Much of the City's asset knowledge resides with a few experienced employees nearing retirement. Without capturing this information in GIS, institutional knowledge will be lost. Centralizing data preserves this knowledge for future staff and supports future operations.
- b. Dedicated Asset Management Role:** A full-time GIS / asset management specialist is needed to manage GIS datasets, support field crews, oversee system integrations, and ensure compliance with TDEC requirements. This role will help drive long-term success of the City's AMP and GIS efforts.

- c. **Phased GIS Deployments:** The City can adopt GIS and integrations in phases to spread costs, provide training, and reduce operation disruptions.

KEY RECOMMENDATIONS

The City of Crossville should move from CAD-heavy and paper-driven workflows toward a GIS-centric asset management program. This requires a phased adoption for deploying software solutions, developing standard operating procedures for data management, and redefining field data collection workflow processes. The GIS Roadmap items below show how these recommendations are tied into TDEC compliance, operational efficiency, and long-term sustainability.

Phase 1 – Recommendations

ESTABLISH A CENTRALIZED GIS PLATFORM

A key GIS Roadmap recommendation is to establish a centralized GIS platform that serves as the foundation for all water and sewer inventory and condition assessments. This includes adopting Esri Data Solutions for water¹ and sewer² and customizing the solutions to capture TDEC Asset Management Plan³ (AMP) requirements. Incorporating related tables for inspections, condition assessments, and integrating work order maintenance activities will create a structured system for tracking asset performance over time, supporting proactive, data-driven decision-making and long-term infrastructure planning.

ESRI ARCGIS ONLINE

The City of Crossville currently has an ArcGIS Online subscription, but it is not yet being fully utilized to manage water and sewer infrastructure datasets. The next step should be to expand its use by deploying Esri's Water Distribution and Sewer Data Management Solutions (referenced above), which will create a centralized, cloud-based platform for managing the City's utility assets. This phase will transition the City away from paper records and manual CAD-based processes by establishing a centralized repository for all water and sewer asset information. Using Esri templates and tools, the City can implement standardized data models, interactive maps, and field collection applications that allow staff to capture, update, and view data in real time. ArcGIS Online will enhance collaboration between City departments, improve efficiency in the field, and provide access to utility information for both office and field staff.

A key driver of this phase is compliance with TDEC Asset Management Plan (AMP) requirements. The new water and sewer GIS databases will be customized to include the fields and schema needed for state reporting, ensuring that critical asset attributes such as install date, material, size, condition, and replacement cost are captured and maintained. This structured approach not only fulfills regulatory mandates but also enables more accurate capital improvement planning,

¹ [Esri Water Distribution Data Management Solution](#)

² [Esri Sewer Data Management Solution](#)

³ [Tennessee Asset Management Plan Guide](#)

better decision-making, and improved access to state grants and funding. By completing this phase, the City will lay the groundwork for long-term GIS growth and future integrations with their work order management and billing systems.

Once the GIS databases are built and populated with existing data, the next step is to configure ArcGIS Online web maps and applications to make this information easily accessible and usable. Web maps will display key infrastructure such as water and sewer lines, valves, hydrants, meters, and manholes, while web applications will allow end users to view and/or edit asset information directly through a web browser or Esri mobile solution. To support this, ArcGIS Online groups will be configured to organize users by role and responsibility, ensuring that each group has the appropriate permissions for viewing or editing data. These groups will also play a key role in maintaining security by controlling access to sensitive datasets and workflows, allowing the City to manage who can see or modify specific layers and tools. This approach provides a structured, secure environment that balances accessibility with data integrity, enabling staff to efficiently perform their duties while safeguarding the City's critical infrastructure information.

By utilizing the existing ArcGIS Online subscription, the City will move from static, disconnected systems to a modern, dynamic platform that improves communication, streamlines operations, and supports data-driven decision-making and long-term capital planning.

DATA MANAGEMENT

Establishing a strong foundation for data management is critical to the success of the City's asset management program. The first step is to implement standardized geodatabase designs that support water and sewer utility systems. This will be achieved by using Esri Data Management Solutions as starting points. These prebuilt schemas include essential fields such as asset IDs, material types, pipe sizes, install dates, and related maintenance tables. By adopting these schemas, the City will gain a standardized, scalable model for asset management. The schemas include separate databases for water and sewer systems, with each containing layers for pipes, valves, hydrants, manholes, meters, and other relevant infrastructure. All layers will share consistent attributes, such as asset IDs and install dates, which makes data integration and reporting seamless across different asset types.

The Data Management templates should also be customized to fit the City's specific operational needs. For example, if there are assets unique to your system such as grinder pumps or local hydrant manufacturers, these can be added to the schema. At the same time, fields and default drop-down values that are not relevant can be removed. This process ensures that field crews and office staff work with a clean, simplified data structure tailored to field workflows while still adhering to best practices.

A critical part of this project will be migrating existing water and sewer CAD data into the new geodatabase schemas. Currently, much of the data resides in CAD, including point and line features collected with GPS units and manually digitized from record drawings. The migration process will begin with exporting CAD data managed in Carlson and other existing file formats into formats that can be imported into geodatabases via ArcGIS Pro. Once in ArcGIS Pro, the data will be carefully reviewed, validated, and aligned with the new schemas. This process will include creating accurate pipe connections, assigning unique asset IDs, and populating key attributes

such as material, size, and installation dates. It will also involve handling legacy data challenges, such as duplicate points, missing attributes, and spatial inaccuracies, so that the new geodatabases become the authoritative source for water and sewer assets.

To maintain accuracy and consistency, a set of data quality rules will be established. By enforcing these standards, GIS will provide reliable, high-quality data that supports operational decision-making and regulatory compliance.

After the migration, the City's GIS will become the primary system for managing water and sewer infrastructure data. CAD users will continue to access up-to-date information by exporting data directly from ArcGIS Online into standard CAD formats like DWG. Whenever possible, this export process will be automated to reduce manual tasks and ensure that CAD drawings remain synchronized with the latest GIS data. In addition, updates made in CAD during engineering projects can be imported back into the GIS, creating a seamless, bidirectional exchange of information and maintaining a single authoritative source of asset data. Further evaluation should also be conducted to determine whether Carlson software can directly access ArcGIS Online hosted feature layers, which could eliminate the need for manual import and export processes altogether.

FIELD DATA COLLECTION

Establishing a field data collection workflow is a critical part of the GIS roadmap. ArcGIS Field Maps should be used by City field users to collect, update, and view data directly on tablets. This ensures that critical asset data, such as hydrants, valves, meters, and sewer structures, is captured accurately in the field. Field crews will use Esri compatible tablets, chosen for their compatibility with the City's current IT policies. Spectra SP80 and SP85 GPS units will provide survey-grade accuracy, connecting to the tablets via Bluetooth to capture precise location data. Compatibility between these GPS units and ArcGIS Field Maps will be tested and configured before deployment to ensure smooth integration.

ArcGIS Field Maps will be set up with simplified, user-friendly forms to make data entry fast and reliable. Forms will focus on key fields, supported by drop-down menus and predefined values to reduce errors and maintain consistency. For example, pipe material or hydrant type will be selected from a list rather than entered manually. Crews will also be able to attach photos to assets, creating a visual record of leaks, repairs, and inspections along with making data corrections.

With cellular-enabled devices, crews can sync updates to ArcGIS Online in real time, giving office staff instant visibility into field activities. In areas with limited connectivity, offline mode will allow maps and data to be downloaded in advance and synced later. This ensures uninterrupted data collection, even in remote locations.

Implementing a GIS-based field data collection process will improve the accuracy, timeliness, and reliability of asset data. It creates a direct link between field operations and office workflows, eliminating delays and laying the foundation for better analysis and capital planning.

GIS TO CAD WORKFLOWS

Integrating GIS with CAD is essential to keep both systems accurate and up to date. ArcGIS Online will serve as the central, authoritative databases for water and sewer assets, while CAD will continue to be used for design and construction projects. This approach ensures that field crews, engineers, and office staff are all working from the same information without duplicating efforts or relying on outdated files.

To achieve this, ArcGIS Pro will be used to automate exporting GIS data directly into CAD formats, such as DWG. City engineers will be able to open these exported files immediately without extra conversion or cleanup work. Regular exports, such as weekly or monthly updates, will provide CAD users with the most current utility data.

In addition to exporting, CAD files like as-built drawings from new projects will be imported back into GIS to keep the database current. This two-way workflow eliminates manual re-digitizing and reduces errors, creating a smooth exchange of information between systems. By streamlining these processes, the City can maintain accurate, synchronized data that supports both daily operations and long-term planning.

TRAINING

Training should be tailored to meet the needs of different City user groups to ensure everyone can effectively use ArcGIS Online by viewing and editing GIS assets based on their role. As part of the City's asset lifecycle process, as-built information will be field collected via GPS by City staff and directly entered in the GIS, ensuring that newly installed or modified assets are accurately captured at the time of construction.

The City's designated GIS / Asset Management Analyst will receive advanced training in ArcGIS Pro, geodatabase management, ArcGIS Online administration, and backup processes. This role will also focus on maintaining data quality, configuring mobile workflows, and supporting other users. Field crews will be trained to use ArcGIS Field Maps to collect GPS data, take photos, and sync updates in real time including the direct entry of as-built features from the field. Training will emphasize using drop-down menus and standardized forms to prevent errors and ensure reliable data collection.

City stakeholders will learn how to view and edit data through web maps and web applications. CAD staff will be shown how to access up-to-date GIS data and prepare as-built drawings for easy import into GIS, reinforcing a two-way data exchange between CAD and GIS.

STANDARD OPERATING PROCEDURES

The development of Standard Operating Procedures (SOPs) is essential to ensure consistent, repeatable, and high-quality GIS data management for the City of Crossville's utility workflows. SOPs will document how GIS data is collected, validated, updated, and shared between departments, supporting TDEC AMP requirements and long-term asset management goals.

The following SOPs will be developed during Phase 1 in collaboration with the City's Engineering, Utility Maintenance, and Planning Departments:

SOP	Purpose
Field Data Collection	Defines how water and sewer assets are collected using ArcGIS Online Field Maps, including GPS accuracy requirements and required attributes.
As-Built / New Construction	Establishes how newly installed or repaired assets are entered in GIS during construction or replacement.
Asset Management	Documents how iWorQ maintenance activities are recorded for line breaks, hydrant flow tests, valve repairs, leak repairs / detection, etc.
GIS to CAD Workflows	Provides standardized workflow process for importing and exporting data between GIS and CAD.
QAQC	Defines rules for spatial and attribute validation.

BACKUPS

Protecting the City's GIS data is critical. Regular backups of ArcGIS Online will ensure that water and sewer data, along with maps and applications, can be restored if something goes wrong. Automated backups should be scheduled nightly or weekly and stored on a City server or in the cloud. This will safeguard against issues such as accidental deletions, data corruption, or system failures.

A Disaster Recovery Plan should be created to outline how the system can be quickly restored. By combining consistent backups with a solid recovery process, the City will minimize downtime, prevent data loss, and keep essential GIS services available for office and field users.

Phase 2 – Recommendations

ARCGIS ENTERPRISE

As the City of Crossville's GIS program grows, a future phase will involve moving from ArcGIS Online to a full ArcGIS Enterprise deployment. This transition will provide greater control, scalability, and flexibility for managing data, users, and integrations. The City will need to decide between on-premises hosting, where servers and infrastructure are maintained by the City's IT staff, or managed services, where a third-party provider hosts the environment in the cloud. On-premises hosting gives full control over hardware and security but requires ongoing maintenance, updates, and dedicated IT resources. The managed services option reduces the technical burden on City staff by outsourcing system management, backups, and upgrades.

Migrating to ArcGIS Enterprise will also impact integrations, data management, and field collection workflows. Enterprise offers more advanced tools and APIs, making it easier to integrate with other systems like iWorQ, SCADA, and the City's billing software.

When the City decides to migrate to an ArcGIS Enterprise deployment, they will need to discuss whether to migrate from the ArcGIS Online data solutions described above to Esri's Trace Network or Utility Network solutions. Esri's Utility Network solutions provide more robust data models that will help the City to model their water and sewer infrastructures. Utility networks allow the City to use more advanced network tracing, create network diagrams, and incorporate network and data validation rules. Implementing the Utility Network will require updated workflows, schema

changes, and potentially retraining for staff, but it will result in a modern, future-proof system for managing infrastructure assets.

The City should collaborate with its Esri customer representative to evaluate and compare the costs and benefits of an on-premises deployment versus a managed services deployment, ensuring they select the approach that best fits their budget, staffing resources, and long-term operational needs.

IWORQ INTEGRATION

iWorQ can connect directly to ArcGIS Online through its built-in GIS and REST services, allowing work orders to be linked to water and sewer assets. This connection makes it possible for City staff to view work orders on a map, create new ones from asset locations, and keep information consistent across both systems.

In Phase 2, the City should schedule a meeting with iWorQ to confirm their API and GIS service options, reviewing how the City's data is structured, and agreeing on a workflow for syncing work orders. The City should start with a small pilot project, such as tracking hydrant repairs or leak reports, to test the integration before rolling it out citywide. During testing, the City should verify that work orders created in iWorQ appear correctly in ArcGIS Online, and that updates from the field flow back without errors. Once testing is successful, the City should develop clear standard operating procedures and training materials so that staff know how to use the system consistently. This future phased approach will reduce risk, improve accuracy, and ensure a smooth transition to a fully integrated work order and GIS environment.

SUMMARY

The City of Crossville GIS Roadmap provides a comprehensive plan to transition the City's current CAD-heavy and paper-driven workflows into a modern, GIS-centric asset management program. Developed to align with Tennessee Department of Environment and Conservation (TDEC) Asset Management Plan (AMP) requirements, the roadmap outlines strategies for improving data management, field data collection, and operational workflows. It emphasizes building a centralized GIS platform using Esri's ArcGIS Online and Data Solutions, which will support water and sewer infrastructure management, integrate with third-party systems such as iWorQ (Phase 2), and create a foundation for accurate, real-time asset tracking. By implementing this roadmap, the City will enhance efficiency, improve data accuracy, meet regulatory requirements, and position itself for long-term growth and capital planning.

Phase 1 – Recommendations / Requirements

Phase 1 of the roadmap focuses on establishing the essential foundation for the City's GIS program. This includes acquiring the necessary software licenses, hardware, and staffing to support the initial deployment. Specific requirements involve expanding ArcGIS Online user types to accommodate office staff, field crews, and supervisors, as well as purchasing an additional ArcGIS Pro license for the new GIS/Asset Management Analyst role. Hardware investments, such as

tablets compatible with the City's Spectra GPS units, are critical to enable accurate field data collection. In addition, an ArcGIS Online backup solution will be implemented to safeguard valuable data and maintain business continuity. Training for staff will also be prioritized, ensuring that both office and field users have the knowledge and skills to successfully adopt the new system. Together, these components form the operational backbone for Phase 1, ensuring that the City is prepared to migrate data, integrate systems, and launch mobile field workflows effectively.

Category	Phase 1 – Recommendations / Requirements
Licensing	• Purchase additional ArcGIS Online User Types and potentially credits for the City's subscription. ○ Estimated \$3,000 - \$5,000/year based on user types (Creator, Mobile Worker, Viewer). • Purchase an additional ArcGIS Pro license for new GIS / Asset Management hire.
Hardware	• Purchase additional tablets for mobile workers. ○ Confirm tablets are compatible with Spectra GPS units. ○ IT prefers Android tablets which are compatible with Spectra GPS units.⁴
Staffing	• Hire a GIS / Asset Management Analyst to maintain the system long-term.
Training	• Initial training for field crews and office users on ArcGIS Online including web applications and Field Maps.
Backups	• Purchase an ArcGIS Online Backup solution to run nightly or weekly backups. ○ The estimated backup solution is \$1,000 - \$1,500/year.

PHASE 1 – PROPOSAL RECOMMENDATIONS

To establish a strong foundation for GIS and asset management, the City should begin by expanding its ArcGIS Online subscription to include additional user types such as viewers, editors, and mobile workers. This will ensure that staff across departments—whether in the office or the field—have appropriate levels of access for viewing, editing, and managing utility asset data. Expanding licensing will enable more collaborative workflows, improve visibility into operations, and provide the City with a modern platform for real-time data management.

As part of this effort, the consultant will assist in evaluating the City's overall ArcGIS licensing needs, including ArcGIS Pro and ArcGIS Online. This evaluation will cover user type allocations, necessary credits for data storage and processing, and the selection of a reliable backup solution. The goal is to ensure the City invests in the right mix of licenses to support current operations while planning for future growth.

Next, the project will focus on updating and customizing Esri's Data Solutions schemas for water and sewer infrastructure to meet the City's operational requirements and TDEC Asset Management Plan (AMP) compliance. These standardized templates will be tailored to capture critical asset details such as installation dates, materials, condition ratings, and replacement costs. By aligning

⁴ [Esri Field Maps – GPS Compatible Units](#)

schemas with state requirements and the City's unique infrastructure, staff will have a clean, structured system for tracking asset performance and supporting long-term capital planning.

The City's existing CAD datasets will be migrated into the new Esri data schemas to create a centralized, authoritative GIS database. This process will involve cleaning and validating legacy CAD data, ensuring spatial accuracy, and populating key attributes to meet regulatory and operational needs. Once completed, GIS will become the City's single source of truth for water and sewer assets, with CAD workflows maintained through automated import and export processes.

To make this data usable for day-to-day operations, the consultant will configure web maps and mobile applications within ArcGIS Online along with developing a training plan to ensure City staff can use these tools to perform daily operations. These tools will provide field crews and office staff with real-time access to asset information, replacing outdated paper maps and static data. Dashboards and interactive maps will be developed to monitor field activities, track work orders, and support informed decision-making.

Prior to field deployment, the consultant will verify and test the compatibility of Spectra GPS units with mobile tablets using Esri Field Maps. This testing will confirm that existing GPS hardware integrates seamlessly with mobile devices, ensuring accurate data collection and smooth field workflows.

Training will play a key role in Phase 1. The consultant will develop comprehensive training guides and workshops for both office and mobile users. Field crews will learn how to collect and update data using mobile apps, while office staff and supervisors will be trained on data viewing, analysis, and reporting. These materials will provide step-by-step guidance to ensure consistent adoption of new processes.

During Phase 1, the consultant will guide the City through the development of Standard Operating Procedures (SOPs) by facilitating structured working sessions with Engineering, Utility Maintenance, and Planning staff to document current practices, identify gaps, and define future-state workflows aligned with TDEC AMP requirements. The consultant will draft SOPs based on industry best practices and Esri data collection workflows, then refine them through collaborative review and pilot testing with field crews and office users. This approach ensures that SOPs are not only technically accurate, but also practical, department-approved, and fully integrated into daily operations which will result in consistent data collection, reliable asset tracking, and repeatable processes that support long-term GIS sustainability.

The City's existing Carlson software licensing will also be reviewed to determine if it can directly access and utilize GIS data from ArcGIS Online. If this functionality requires additional Carlson modules, recommendations will be provided. Should direct integration not be feasible, an automated process will be developed to export data from ArcGIS Online to CAD using Esri's Data Interoperability tools, maintaining a synchronized flow of information between the two systems.

Category	Phase 1 – Proposal Recommendations
Licensing	Consultant will work with City to assess licensing needs and work with the City's Esri representative to develop estimate for purchasing additional user types and credits.

Schema Development	Consultant will review Esri Water and Sewer Data Solutions with the City, make schema modifications, and deploy the new schemas into ArcGIS Online.
Data Migration	- Consultant will migrate City's existing infrastructure datasets into new schema designs. - Consultant will perform data checks and make updates.
ArcGIS Online Configuration	- Consultant will configure web maps / applications for office and field users (viewers, editors, and field workers). - Consultant will confirm Spectra GPS units integrate with iOS devices using Esri Field Maps.
Training	- Consultant will create training guides and workshops for office and field users. - Consultant will teach office / mobile data collection, editing, analysis, and reporting.
Standard Operating Procedures (SOPs)	Consultant will meet with City stakeholders to develop Standard Operating Procedures (SOPs).
Backups	Consultant will work with City to assess ArcGIS Online Backup solutions, schedule demos, and request cost estimates.

Phase 2 – Recommendations / Requirements

In Phase 2, the consultant and City stakeholders will explore integrating iWorQ with ArcGIS Online using Esri's REST services to streamline daily operations. This integration would allow work orders to be directly linked to GIS assets, improving visibility and reducing manual data entry. As part of this evaluation, the City will determine the cost to upgrade iWorQ licensing to the premium level required for full integration.

Category	Phase 2 – Proposal Recommendations
Licensing	- Consultant will explore linking work orders to GIS assets via REST services. - Consultant will identify upgrade costs for premium iWorQ licensing if needed.

PHASE 2 – PROPOSAL RECOMMENDATIONS

Phase 2 will focus on evaluating and implementing key system integrations that enhance the City's asset management initiatives. The consultant will work with City staff to explore linking iWorQ work orders to GIS assets through Esri's REST services, including identifying any licensing upgrades required for full integration. In addition, the consultant will assess whether Carlson software can directly access ArcGIS Online feature layers and will recommend additional modules or develop automated export workflows if needed. These efforts will streamline operations, reduce manual data entry, and improve the accuracy and efficiency of the City's GIS-driven workflows.

Category	Phase 2 – Proposal Recommendations
Integrations	Consultant will determine if Carlson can directly access GIS data from ArcGIS Online.

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| | <ul style="list-style-type: none">○ Consultant will recommend additional modules if required or develop automated export workflows using Esri Data Interoperability tools. |
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