



## **AGENDA MEMORANDUM**

### **CONTACT:**

CLIF CUSTER

### **SUBJECT:**

GEOGRAPHICAL INFORMATION SYSTEM (GIS) MAPPING

### **SUMMARY:**

Considering Richwood's water main emergency at the intersection of Moore and W. Mahan, it is the opinion of Public Works that an interactive mapping system such as an GIS is crucial for future operations, maintenance and informational purposes of Richwood's water, wastewater, streets, and drainage infrastructure.

The ability to track infrastructure conditions in real-time will allow Public Works to:

- Effectively note deficiencies with given infrastructure.
- Inform Council of repair or replacement needs.
- Inventory and note operational status on assets such as valves and fire hydrants.
- Effectively track replacement and repairs while making notes on materials used.
- Maintain an interactive mapping system for current and future staff and Council alike.

### **BACKGROUND INFORMATION:**

The topic of GIS mapping has been at the forefront for Richwood since 2018 when Freese and Nichols were brought on to conduct a Water/Wastewater Capital Improvement Plan. At that time, required shape files for map development were not in existence making the cost of GIS development for the City of Richwood expensive (50K-70K).

Since 2018 Richwood has put in place a Water/Wastewater Capital Improvements Plan, Stormwater Master Plan, and has participated in hydraulic modeling to determine the best size and location of future required elevated water storage capacity. This engineering work that has been performed over the years has generated many of the shape files necessary to develop a comprehensive GIS mapping system. With the necessary shape files in existence, the financial impact to Richwood for developing a GIS mapping system is significantly reduced.

## **ISSUE:**

Relying on paper maps, or maps in PDF format serves only for a water/wastewater system reference. A web-based interactive GIS mapping system will allow Public Works to make real-time updates to maps that will serve for better operational, maintenance, informational purposes now and into the future.

Arc Mapping which owns GIS software requires an entity developing a GIS mapping system to host their system with Arc Mapping. Reoccurring costs due to hosting fees is a requirement for Richwood to have a GIS mapping system implemented.

## **FISCAL IMPACT:**

Below is a recommended scope of work and cost from Ryan Tinsley with Strand.

Morgan and I worked with our GIS specialist to prepare the following list of potential scope items that could be included on a GIS mapping project.

1. *Gather available information from OWNER and Brazoria County, including parcels, aerial photography, topographical data, streets, and additional information, as available.*
2. *Configure ArcGIS Online account for web application development and design custom GIS home page.*
3. *Review the information and prepare alternatives for appropriate basemaps and corresponding layers, as follows.*
  - a. *Water System: Incorporate ENGINEER's existing ArcGIS Map of OWNER's water system into the GIS as a basemap. Discuss and develop additional layers for the mapping with the OWNER and load the layers into the web application.*
  - b. *Sanitary Sewer System: Incorporate ENGINEER's existing PDF map of OWNER's sanitary sewer system into the GIS as a basemap. Discuss and develop additional layers for the mapping with the OWNER and load the layers into the web application.*
  - c. *Storm Sewer System: Incorporate ENGINEER's existing ArcGIS Map of OWNER's storm sewer system into the GIS as a basemap. Discuss and develop additional layers for the mapping with the OWNER and load the layers into the web application.*
4. *Identify how OWNER intends to use GIS system. Provide OWNER a list of recommended data fields, custom forms, and tools that can be incorporated for each data layer available. For example, for a water distribution system, OWNER may wish to keep records of features, such as dimensions, number and size of pipes, material, condition, and more.*
5. *Prepare a Web application that will enable OWNER to access the database from multiple devices with access to the Internet. This includes access from mobile devices (both Android and iOS), tablets, laptops, and desktops.*
6. *Review Web application with OWNER. This will provide OWNER the opportunity to review the database and the Web application.*
7. *Finalize the database and Web application. Final modifications will be made based on the results of the Web application review.*
8. *Provide up to 4 hours for on-site training of OWNER's staff.*

The City will need to acquire an ArcGIS Online Organizational software license through ESRI. The City will need to purchase one **Creator (\$550 per year)** and one **Viewer (\$110 per year)** user account. Strand's proposed fee for this effort is estimated to be **\$17,000** invoiced on an hourly-rate basis. It is likely that the fee will end up being less, but that will be depend on the number of custom fields desired for each data layer.

Additional costs involve an iPad Pro and an additional cellular service line.

Engineering - \$17,000.00

iPad Pro - \$1,500.00

Hosting Fees (reoccurring) - \$660.00 annually

Cellular Service (reoccurring) - \$480.00 annually

***Council should anticipate a 3% annual increase on reoccurring costs***

**RECOMMENDATION:**

Approve the development of a GIS mapping system in an amount not to exceed \$20,000.00.