Webb County Utilities (WCU)
07/16/18

Project

WCU Operational & Asset Management Data Platform

Implementation and Professional Support

I.   Summary

Webb County Utilities (WC) operates the Rio Bravo Water Treatment Plant and Rio Bravo Wastewater Treatment plant in Rio Bravo, TX. WCU serves the water and sewer requirements of 6000 customers. WCU is seeking an enterprise platform to manage all of its operational data, and migrate away from paper and spreadsheet based practices. In response to RFP 2018-004, FLOWatch is pleased to offer its Operational Data Management System (ODMS) 3.0 unified web platform to manage operational, asset management, workflow and maintenance activities, and produce compliance and management reports for all WCU facilities.

FLOWatch 3.0 is used to manage data such as flows, energy, water quality, maintenance, asset tracking, financials, compliance information, score card metrics and other business analytics for the utility plant manager managing one or more plant systems for both drinking water and wastewater treatment. FLOWatch 3.0 is a cloud-based service that is licensed on a Software-as-a-Service (SaaS) model where WCU would pay a recurring fee to store and manage information, produce reports and access critical analytics to insure plant systems are operated in an optimal manner.

The benefits of adopting the FLOWatch data management strategy include:

1) Eliminating the high initiation and operational costs associated with managing a stand-alone data management infrastructure and technology in-house,

2) Ability to access utility information from any location via multiple device technologies, and

3) Increased efficiencies in utility oversight tasks related to

> *a) Operational performance,*
>
> *b) Regulatory reporting,*
>
> *c) Management criteria,*
>
> *d) Asset management, and*
>
> *e) Audit tracking*.

This document provides a brief outline of the following:

- Introduction to FLOWatch 3.0 platform

- Benefits and Case Studies

- Proposed Cost of Initial Setup, Subscription and Customization.

II. Introduction

FLOWatch 3.0 was created to address several gaps that currently exist in water utility industry related to the collection and management of voluminous operational information. This includes fragmentation of data and operational practices, dependence on paper-based and spread sheet-based data storage, limited data communication capability, and lack of timely availability of information, all of which prevent an effective decision desk for utility operators and managers. The FLOWatch software platform uses a build-as-you-go "Lego" approach for setup, configuration and use. Designed with input from water plant operators to address usability challenges that exist in the field, it has been adopted in a wide range of water utilities because of its simplicity and ease of use. The software licensing model, which is based on a recurring license fee to host and manage the operational information, reduces or eliminates the need for expensive setup and the high infrastructure cost to maintain computer hardware, systems and software.

The platform contains the following modules, all of which are available to the plant manager and operator as part of a continuous offering:

A) Plant Configuration and Operation Module

B) Comment Log Workbook

C) Asset Management Module

D) Notifications and Workflow Module

E) Configurable Dashboard Module

F) Documents and Links Module

G) Formula and Calculation Engine

H) Preventive Maintenance Module

I) Budget and Financial Management Module

J) Customized Compliance Reports

K) Customized PDF Forms Module

L) Administration Module

These modules allow the platform to operate as a single system of record for the utility's functions. The platform is compatible on all commercially available browsers, and is form-factor friendly on all computing devices (Desktop, Laptop, Tablet and Mobile). This provides an additional financial benefit for the plant manager interested in utilizing inexpensive tablet computing devices for data capture in the field.

At WCU, treatment plant operational data has been historically stored on paper or Excel. This data is compiled manually and reviewed by the plant manager before submission to regulatory oversight. The manual data is not available for detailed analysis, trending and optimization. For WCU, transitioning to a digital system of record will overcome time and effort in procuring operational and maintenance information. Pre-compiled compliance and production report templates with built-in calculations will greatly reduce the risk associated of human error plus add exceptional speed and efficiency that frees staff time for other needed functions. FLOWatch 3.0 offers user based data collection monitoring that informs the plant manager, if erroneous data is entered by the operator. The data can be corrected before compliance reports are submitted. Audit tracking is available so that plant manager can request audit reports to track user information, when necessary.

Note:

1) Implementation of the FLOWatch platform allows WCU to capture and preserve the institutional knowledge and procedures of its management's and staff's best practices and

2) Increasing regulatory and operational complexities will undoubtedly force most water utilities to obtain and utilize a full-spectrum data management system in the near future. WCU proactivity allows it to begin harvesting the efficiencies now rather than later.

III. FLOWatch 3.0 Benefits for WCU

The main benefits associated with adopting the platform are listed below, and are mainly classified under: operational efficiency savings, recurring labor/overhead savings, regulatory and compliance reporting and pro-active remediation in case of significant incidents, executive dashboard visibility, and adopting a platform that is sustainable, low cost and does not require major capital expenditure on technology infrastructure.

1. **Operational Efficiency of Processes and Assets:** FLOWatch 3.0 will serve as the single system of record for all operational data collection for WCU. WCU users will be able to generate ad-hoc trending, calculate efficiencies, track operational changes, and undertake steps to improve each process, pump station, chemical station, energy devices and all other assets. Maintenance tasks to maintain peak asset performance and preserve warranties can be easily configured into schedules, notifications and work orders. Additionally, the platform with its configurable workflow capability will become the central knowledge repository and will allow new operators gain competence quickly toward performance of daily and intermittent tasks. The platform will replace all O&M manuals stored in paper form or scattered electronic repositories.

2. **Recurring Labor/Overhead Savings.** WCU users will significantly reduce labor for collecting data, compiling results, performing quality control work, and reporting the information to management and regulatory oversight. The platform will be setup with validation rules, which will minimize or eliminate human error during data collection. Supervisors will also be able to perform oversight work without requiring an on-site physical presence, and pull data independently for 3rd party analysis. Because of the platform's form-factor compatibility, the data can be pulled on a variety of devices including mobile phones, hand-held devices, tablets, all-in-ones, mini-laptops, tough books and desktop workstations. For the plant manager and operators, data management will not be dependent on procuring expensive workstations, and will become a seamless part of their daily activity.

3. **Regulatory and Compliance Reporting.** FLOWatch Technical team has already developed several TCEQ mandated reports, and will make them immediately available to WCU when the project is initiated. These include the monthly operating reports (MORs) for its plants. The operators will not be required to spend any significant additional time compiling, tabulating and cross-checking the operational data and will be able to submit the reports for supervisory approval and submission in a matter of minutes. State regulatory agencies are evolving to e-Reporting and it will inevitably become a mandate in the State of Texas. When that occurs, WCU will already be prepared to provide the same reports in electronic format. WCU can become a leader and "path finder" for utilities in Texas by providing the roadmap process as it relates to efficient compliance reporting and could publish the information in journals and present at conferences.

4. **Executive Dashboard Visibility.** As the implementation and usage matures, FLOWatch technical team will work with the managerial staff to develop customized dashboards and score cards that reveal key performance indicators and provide benchmarking capability. Performance metrics are a useful method to evaluate and improve plant performance and allows the plant manager to be pro-active rather than reactive. These business analytics will allow cumulative and cross-functional metrics.

5. **Software-as-a-Service.** FLOWatch 3.0 will be licensed in a service model, where FLOWatch Helpdesk and Technical teams will be providing technical assistance, advisory and guidelines to WCU. The platform will not require any deployments on end user machines, and only requires a freely available commercial browser (Internet Explorer, Google Chrome, Firefox or Safari) on the end-user device. Additionally, the platform does not require expensive hardware (servers, routers, switches and other network devices to be procured and maintained by WCU Information and Technology (IT) staff. It does not require WCU to hire technology staff such as data and system administrators, web masters and software coders on a full-time or on call basis.

6. **Speed to Go-Live.** FLOWatch 3.0 SaaS approach will allow WCU to commence onboarding plant configuration data without any on-site deployment typical to purchased software solutions. WCU will have options to either implement all-at-once or a staged implementation that evaluates, improves and deploys expanded implementation activities.

7. **Ease of Customization.** FLOWatch 3.0 has constantly evolved and improved its functionality based on active feedback from our community of users. WCU will have an opportunity to add any customized items for a one-time customization cost. Some examples of customization from past customers include Dashboards, Asset Maintenance tools, Vendor and Client Management, and Budget Management. Any future enhancement requests from other customers will be seamlessly deployed to all customers as part of the periodic software upgrades. WCU will benefit from these enhancements that are provided out-of-the-box.

8. **Operator First Approach.** Unlike many commercial software vendors that have modified their offerings from other vertical markets to the utility sector, the FLOWatch platform and our technical team is grounded in water and wastewater treatment plant operations. The team's core competence is in sustained Water Quality Control with a deep interest in driving technology to our sector. The platform has been designed by and for the operator community. Our belief is that an operator focused approach lends itself to quick and widespread acceptance and ultimately produces efficiency gains across the enterprise.

IV. Case-Study (Bistone Municipal Water Supply District)

Bistone Municipal Water Supply District (MWSD) is a Texas wholesale and retail water supplier for the City of Mexia, Mexia State Supported Living Center, City of Tehuacana, White Rock S.U.D. and the City of Coolidge (for emergency supply only). Bistone operators were logging their well and ground water plant data and documenting operational tasks using paper based logbooks and checklists. Managers spent a significant amount of time manually gathering and organizing this information to prepare regulatory compliance reports or addressing plant issues. This created a big challenge especially when a plant or pump station issue needed to be addressed immediately. This manual data collection process also resulted in unintentional human errors creating more work for managers and staff to resolve and making corrections. FLOWatch 3.0 Platform was initiated as a pilot level for Bistone MWSD in Jan 2015. The project activities have now evolved to-date included the following:

A) Setup and Configuration of Bistone Corporate Account with FLOWatch 3.0 online platform at http(s)://omni.flowatch.com.

B) Setup and Configuration of Bistone Ground Water Plant, Surface Water Plant and Distribution System

C) Workflow and Notifications per Operator request. Setup and Configuration of the daily operator log worksheet including automated calculations

D) Development of Operator Site Visit dashboard

E) Development of Monthly Operating Report (MOR) on Water Quality. Development of Production MOR Report. Development of Disinfectant Level Quarterly Operating Report (DLQOR)

F) Development of Management Dashboards for performance visualization

G) Commencement of Asset Maintenance and Work Ordering Process

Each of the above features were developed by the FLOWatch technical team with active feedback and validation, and end-user approval provided by Bistone MWSD operational staff. <u>Bistone MWSD also contracted with FLOWatch to develop a modern public facing web site that will display critical information (reports, events, activities, staff, water quality, weather and other relevant links) to increase and improve its public outreach.</u>

V. Case-Study (Middlesex Water Company)

Middlesex Water Company is a publicly traded water provider in New Jersey with annual revenues exceeding $100M. Middlesex owns and operates approximately 110 water and wastewater plants. The firm purchased and implemented Oracle Work and Asset Management (WAM) software at a substantial cost, and thereafter issued a general competitive RFP for operational data management as WAM was clearly not geared for day-to-day utility operations. The executive team at the utility adopted FLOWatch 3.0 after comparing it with several other ODMS software including HACH WIMS. The company has a mix of large and small treatment plants and required a platform that was suitable across the enterprise. Previously, the company was dependent on paper and spreadsheet driven practices and did not possess the level of visibility to drive efficiency uniformly. Conversion from paper to a cloud based platform has resulted in significant tangible and intangible savings. In spite of having WAM (a decision undertook prior to establishing a vendor relationship with FLOWatch), Middlesex initiated several maintenance related wellness checks within FLOWatch using native PDF digital entry functionality.

FLOWatch is also currently in talks to explore having FLOWatch system as a single system of record that can aggregate and collate various streams of data (Assets, Production, Financial, Consumables) so that composite KPI metrics can be presented to senior leadership as native dashboards. The company has rewarded FLOWatch with additional lines of work since the commencement of implementation so that new functions are added to our core feature set. FLOWatch is also currently implementing the platform at their 70 distributions systems in New Jersey and Delaware. The next action items for this project include training the distribution systems user community, and explore expanding the implementation to all of their distribution systems.   The transition will allow legacy systems MS Excel and MS Access to be retired in favor of FLOWatch 3.0.

TideWater Utilities operates over 100 plants in Delaware for drinking water and wastewater treatment services. It is a wholly owned subsidiary of Middlesex Water Company. Prior to going-live on FLOWatch 3.0, operational data was stored on paper and Microsoft Excel. The quality control staff would spend considerable time tabulating and cross-verifying the information for Monthly Operational and Summary Reports. Since going-live with FLOWatch 3.0, the supervising staff can automatically create the reports on-demand before the second week of each month, verify the information, print out the reports and submit to the State regulators within a working day. The difference from manual to automated submission as decreased the turnaround time from up to 2 weeks to within one day.   Additionally, the FLOWatch Technical team setup a nightly distributed email report that shows a list of all plants with missing data to drive operator tasks. The system provides ad-hoc trending, analysis and visualization capability, features that were not available prior to adopting the FLOWatch platform. Tidewater Management reported tangible labor savings from FLOWatch driven efficiencies.

VI. Initial Implementation Scope of Work

Based on preliminary inputs received from WCU, FLOWatch 3.0 initial implementation will be undertaken to achieve the objectives of TCEQ compliance reporting. Beyond the initial phase, additional customization work will be undertaken to expand the functionality and bring additional streams of data into FLOWatch for asset management, maintenance scheduling and composite scorecard development. At the end of the initial implementation, WCU users will have full access to all FLOWatch 3.0 functionality, so that operational features can be utilized on a daily basis.

For this initial phase, FLOWatch will perform one-time activities that require setup and configuration of WCU system in FLOWatch 3.0. This work is priced at **$15,000**. The work activities under initial setup and configuration include:

FLOWatch Site and WCU Organization Setup

a) FLOWatch technical staff will setup WCU accounts on the FLOWatch platform at https://tracntrol.flowatch.com. Storage, compute and network bandwidth can be adjusted by FLOWatch Infrastructure staff based on end-user requirements.

b) FLOWatch shall make available its mobile apps for iOS and Android devices to WCU staff.

c) FLOWatch shall configure a dedicated SFTP location, where SCADA files can be optionally dropped.

Facility/Plant Setup and Configuration

FLOWatch 3.0 distinguishes between a facility that is used to organize assets and maintenance, and a plant that is used to setup operational information such as time series data, processes, sampling points and chemicals. For the initial implementation, both facility and plant setup will be undertaken for WCU with emphasis of detailed configuration on the latter.

d) FLOWatch technical staff will work with a designated WCU plant operator or manager to onboard facility and plant definitions, sampling points, parameters and characteristics, workflow, schedules, tasks and actions, and electronic documents for the designated site. This shall be validated by end-users so that daily and weekly log-sheets that are currently entered in paper-form are replaced with user friendly FLOWatch 3.0 data entry forms.

e) FLOWatch shall work with WCU to develop and automate its SWMOR and DLQOR reporting for the designated site.

f) FLOWatch shall work with WCU staff to automate SCADA data pull (hourly or daily averages), as is required to submit complete monthly compliance

reports. WCU may be required to engage its current SCADA vendor to extract appropriate datasets to FLOWatch.

g) FLOWatch will digitize relevant forms for capturing distribution, flush, calibration and water loss data.

h) FLOWatch technical staff will create logins and access privileges for all required operators and managers at WCU.

i) FLOWatch will work with the WCU field staff to validate the setup, and provide appropriate training to use both the mobile apps and the FLOWatch web platform.   FLOWatch shall setup bi-weekly technical sessions to hand-hold the usage, and provide clarifications and assistance as needed.

The tasks and anticipated timeline are shown in the table below.

Work Items	Weeks			
	1	2	3	4 and 5
Task a, b and c	■			
Task d		■		
Task e, f		■	■	
Task g, h		■	■	
Task i				■
Trial Go- Live				■

Table 2: Initial Implementation Rollout Plan (Recommended Timeline of August - October, 2018 based on delivery of project artifacts)

VII. Budget

The enterprise-wide Admin License of FLOWatch 3.0 is priced at $600/month per operator. FLOWatch Limited License is priced at $150/mo. For WCU that has up to 14 operators and 1 admin license, the normal recurring subscription cost is $2,700 per month or $32,400 per year. FLOWatch shall provide all cloud subscription features at a discounted volume price of $ 20,000.00 per year, and shall fix this cost for a period of 5 years.   This license fee will cover software hosting, support and upgrades, and data storage up to 5 GB including its standard backups.

FLOWatch professional services charges are shown in the table below.

TABLE: FLOWatch SaaS Price Sheet

Item	Description of Work	Anticipated Costs
FLOWatch Platform Hosting	Host WCU Account, Data, Reports and related support desk services (Ongoing)	$ 20,000/year[1] WCU Full Scale Subscription Monthly Cost Shown Above. **Normal Licensing Breakdown Table:** <table><tr><th>License</th><th>Monthly</th><th>Yearly</th></tr><tr><td>Admin</td><td>$ 600</td><td>$ 7200</td></tr><tr><td>Limited</td><td>$ 150</td><td>$ 1800</td></tr></table>
FLOWatch Setup & Support.	Initial Setup and Configuration for Compliance Reporting and Asset Management	$ 15,000 (one-time only)
FLOWatch Customization & Professional Services	Customizations Beyond Trial Period	T&M Cost: $150/hour
General Technology Services	Other enterprise software development needs as identified by WCU including but not limited to public facing websites, citizen outreach features and general technology/services work	T&M Cost: $150/hour
FLOWatch Standard CSV based SCADA/LIMS Integration	Per Integration	Included in the setup fee.
SCADA Vendor Onsite Configuration for data pickup	Per Integration	$1,800[1]
FLOWatch Training	2-4 Hours (Onsite or Webinar)	Included in the one-time fee

[1]Third-Party vendor costs are not included in the table above except standard CSV based SCADA pickup onsite.

NOTES:

A) Additional storage cost beyond 5 GB will be charged at $20/GB/Mo

FLOWatch cloud subscription discount table for WCU is shown below:

Description	Year 1	Year 2	Year 3	Year 4	Year 5
Normal Annual Cloud Subscription (1 Admin License and 14 operators)[1]	$ 32,400	$ 33,372	$ 34,373	$ 35, 404	$ 36,466
Applied Annual Discount	($12,400)	($13,372)	($14,373)	($15,404)	($16,466)
WCU Annual Cloud Subscription Cost	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000
5 YEAR SUBSCSRIPTION COST					$ 100,000
TOTAL DISCOUNT SAVINGS					**($ 72,015)**

[1] Annual subscription costs are fixed for 5 years.

VIII. Exclusions, Assumptions and Terms

a) Mobile devices and tablets are not included in the project delivery cost.

b) For trial implementations only, client will provide feedback and next steps guidance in a 30-90 day period after go-live.

c) Internet Connectivity is required for client staff, who will view dashboards on tablets.

d) Client staff shall provide all data for trial and full implementations.

e) Client staff can attend the project calls periodically, and be available to answer questions/clarifications.

f) Payment shall be made to TraCnTrol, authorized distributor for the FLOWatch platform in Texas. For trial and full implementations, payment schedule shall include: 50% at project approval, 25% mid-way on the project timeline, and 25% at conclusion of initial setup and configuration. Recurring subscription fees shall commence when initial setup and configuration is completed, as currently proposed.

IX. Economic Benefits Analysis

The cost of implementation and software subscription for a 3 year period is shown below:

Item Description	Year 1	Year 2	Year 3
Setup and Configuration	$ 15,000			
Year 1 Subscription License		$ 20,000		
Year 2 Subscription License (est. 3% increase for inflation)			$ 20,000	
Year 3 Subscription License (est. 3% increase for inflation)				$ 20,000

Assuming an average savings of 20 hours per user per month, WCU will save a total of 280 hours in compliance and data management time each month. If the cost to WCU to employ a user is averaged and estimated at $20.00 per hour, this results in savings of $ 5,600 per month or $ 67,200 annually, and $ 201,600 over a three year period. The capital and operating charges incurred from adopting FLOWatch 3.0 are $ 75,000 over a 3 year period.

Per this analysis, FLOWatch 3.0 pays for itself with its savings on compliance and data management time savings alone without including all the other benefits, and sets up WCU with a robust data management platform for years to come.

X. Project Resources

Kapal Madireddi, PhD – Platform Architect responsible for upgrades, support and maintenance

Arvind Pang, FLOWatch LLC – Project Implementation Lead

Christelle Bruneau – Helpdesk

Kirk Jones – Client Services

Larry Brown – FLOWatch Point of Contact for Billing Services