

Reporting Effectively through Self-Made Mobile Applications

Casey Claborn, P.E.; Env. Engineer

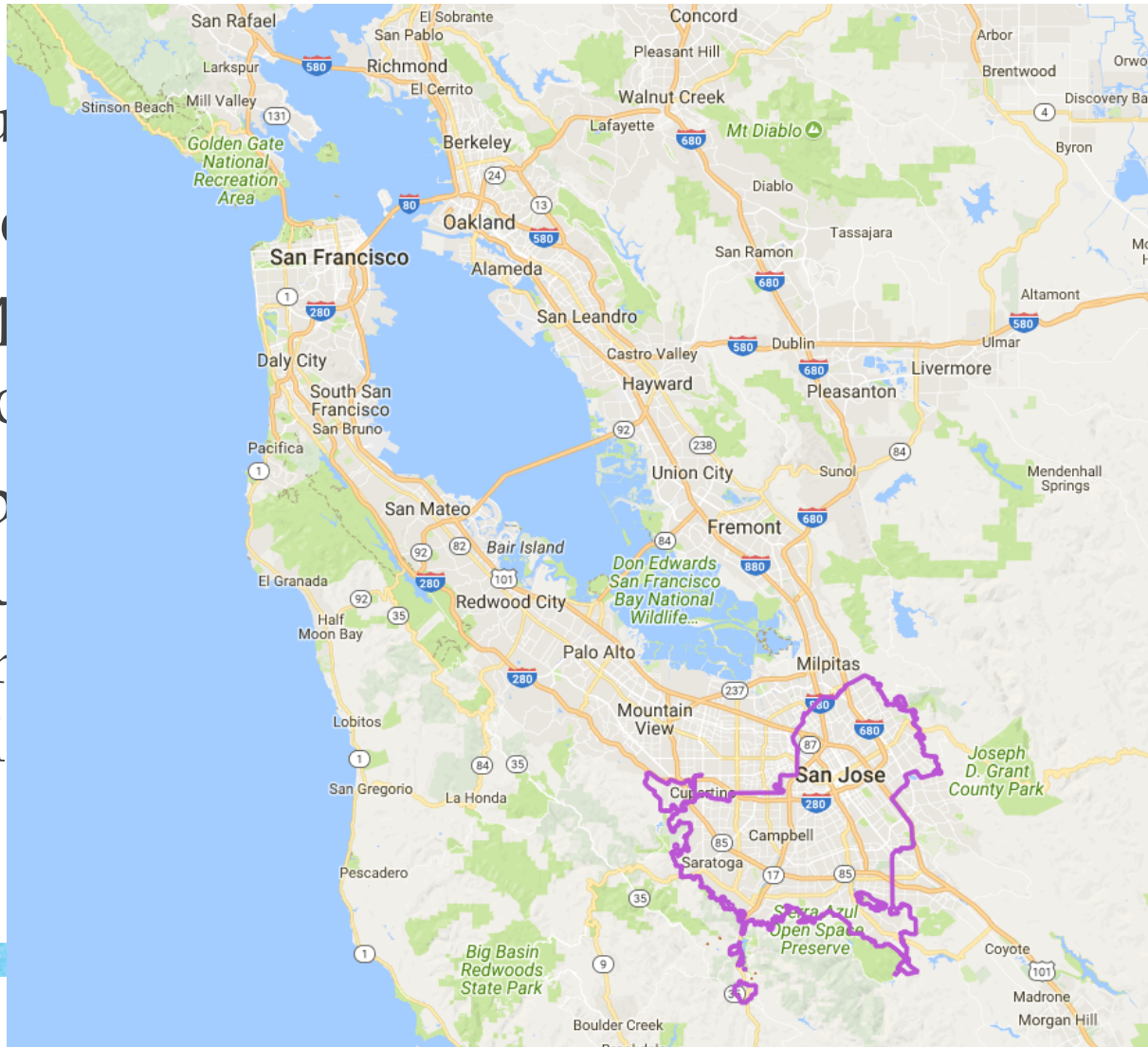
San Jose Water Company

March 7, 2018



San Jose Water Company

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San Jose Water Company

- A “tech-forward” company – aims to be ahead of the curve (among water agencies)
- IT staff currently manage dozens of internal and third party applications, from legacy to brand-new.



Compliance Programs at SJWC

- Drinking Water Compliance & Recordkeeping
 - Goal: drinking water without lead, bacteria, harmful organics, etc.
 - Each year, there are thousands of water quality samples to keep track of, and lab results to keep.
 - However, each of these thousands of samples follow similar rules. For example, sampling frequency is prescribed by regulation.
 - Entire program fits in one department, with 4 staff.
- Locus EIM performs well in this environment

Compliance Programs at SJWC

- Environmental Regulations in California
 - NPDES Discharges
 - Wastewater Discharges
 - Stormwater Programs
 - CEQA Compliance
 - Air Quality/Emissions Inventory
 - Hazardous Materials Storage
 - Hazardous Waste Management



Compliance Programs at SJWC

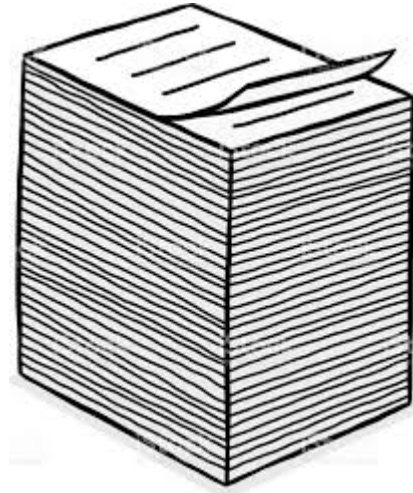
- Environmental Recordkeeping
 - Permits and their requirements
 - Employee training records
 - “Usage data” (hours run, gallons discharged)
 - Audits and inspections, including photos
 - Checklists
- Scrutiny on water industry is increasing as industrial “bad actors” become harder to find (and fine)

Environmental Recordkeeping

- Regulations focus on recording company activities: gallons discharged, hours run, waste generated
 - Not very predictable like drinking water sampling
 - More diverse records to maintain
 - Affects most of the company's employees (not just the WQ team)
- Needed a data management system that is more flexible than EIM

Environmental Recordkeeping

- Before this effort, records were all managed on paper and in Excel.
- No validation – had to rely on staff to fill everything out correctly.
- No backup – if someone's logs got lost under the seat of their truck, we didn't find out until next year...



Example:

NPDES Discharge Reporting

- Annual Report requires categorizing and aggregating a full year's records
- Before L.P., one had to hand-review a banker's box full of records per year.
 - Verify that data is accurate and complete
 - Enter it all into Excel
 - Run analysis as required by permit
 - Format data for submission to State

Locus Platform



Selecting a Data Mgt. System

- Looked at several products, but most had a limited set of features
- Needed to be able to generate alerts based on incoming data
- Needed something that was mobile-enabled
- IT strongly preferred cloud-hosted
- Also wanted the option to expand beyond environmental data management to capture other data that is currently on paper-excel only

Selecting a Data Mgt. System

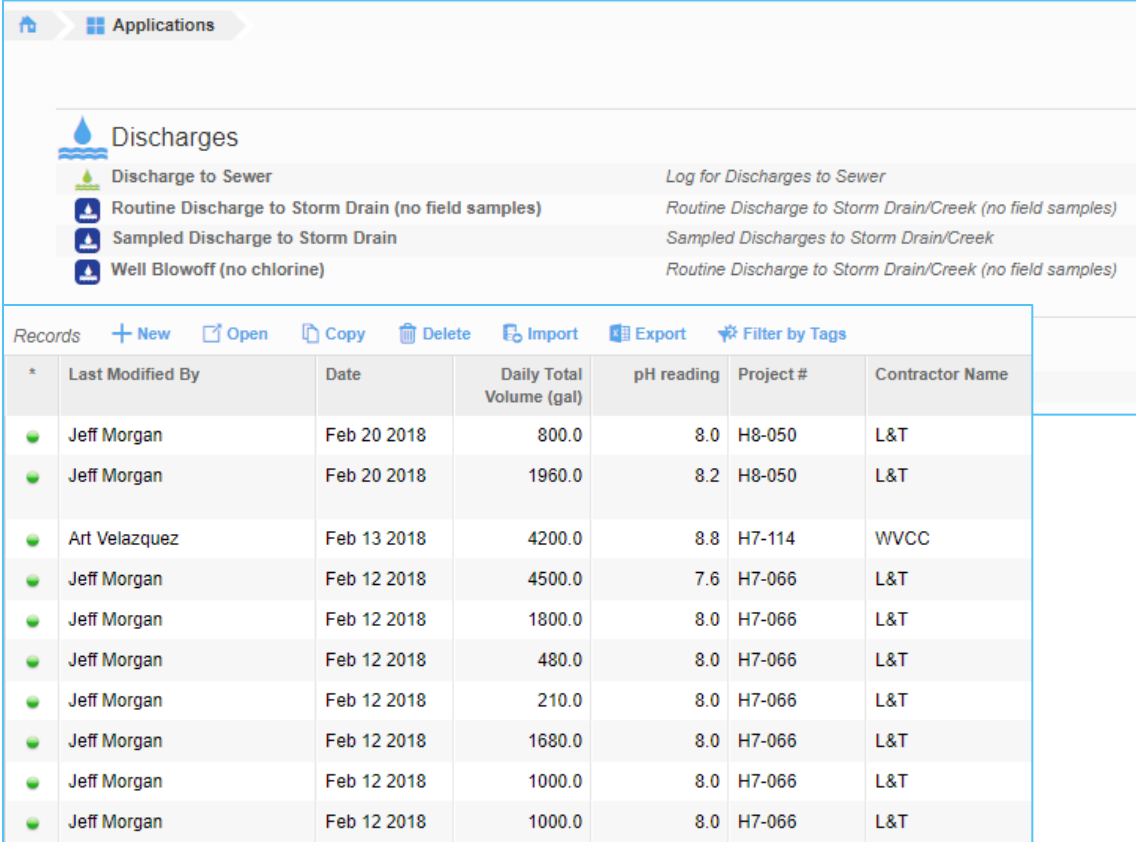
- Had a good experience with Locus EIM for drinking water data
- Locus staff recommended we look into their new Locus Platform product
- L.P. satisfied our requirements, and was budget-friendly
- SJWC selected Locus Platform to manage environmental data

Locus Platform: Getting Started





- Locus provided in-person training, and personalized live support.
- User and Admin interfaces are both intuitive and easy to navigate.
- As we developed and configured our first applications, Locus was there to advise us on how to implement more advanced features, some of which require writing scripts.
 - Java, HQL, or SQL are all options

Application Structure in L.P.

- Application
 - Entity
 - Record
 - Record
 - Entity
 - Record
 - Record
 - Record
 - Record



The screenshot displays the 'Applications' section of a software interface. It features a 'Discharges' header with a water drop icon. Below this, there are four categories of discharges, each with a corresponding icon and a description:

-  Discharge to Sewer *Log for Discharges to Sewer*
-  Routine Discharge to Storm Drain (no field samples) *Routine Discharge to Storm Drain/Creek (no field samples)*
-  Sampled Discharge to Storm Drain *Sampled Discharges to Storm Drain/Creek*
-  Well Blowoff (no chlorine) *Routine Discharge to Storm Drain/Creek (no field samples)*

Below the categories is a table with the following columns: * (checkbox), Last Modified By, Date, Daily Total Volume (gal), pH reading, Project #, and Contractor Name. The table contains 10 rows of data, all of which are 'Routine Discharge to Storm Drain (no field samples)'.

*	Last Modified By	Date	Daily Total Volume (gal)	pH reading	Project #	Contractor Name
<input checked="" type="checkbox"/>	Jeff Morgan	Feb 20 2018	800.0	8.0	H8-050	L&T
<input checked="" type="checkbox"/>	Jeff Morgan	Feb 20 2018	1960.0	8.2	H8-050	L&T
<input checked="" type="checkbox"/>	Art Velazquez	Feb 13 2018	4200.0	8.8	H7-114	WVCC
<input checked="" type="checkbox"/>	Jeff Morgan	Feb 12 2018	4500.0	7.6	H7-066	L&T
<input checked="" type="checkbox"/>	Jeff Morgan	Feb 12 2018	1800.0	8.0	H7-066	L&T
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<input checked="" type="checkbox"/>	Jeff Morgan	Feb 12 2018	210.0	8.0	H7-066	L&T
<input checked="" type="checkbox"/>	Jeff Morgan	Feb 12 2018	1680.0	8.0	H7-066	L&T
<input checked="" type="checkbox"/>	Jeff Morgan	Feb 12 2018	1000.0	8.0	H7-066	L&T
<input checked="" type="checkbox"/>	Jeff Morgan	Feb 12 2018	1000.0	8.0	H7-066	L&T

Application Structure in L.P.

- “Entities” serve the same purpose as a traditional paper form, but with more features:
 - Validates data as it is entered (customizable)
 - “Rules” can make the form itself dynamic, by enabling or disabling fields, or pre-populating fields
 - Can execute a workflow, which can branch using data in the record or elsewhere in the database
 - Security controls on who may view, create, edit, or delete records.
 - Many of these functions also work in their mobile app (iOS only)

Application Structure in L.P.

- “Records” act like rows in a spreadsheet or a database, and are populated by staff.
- These can include compliance records as well as organizational data like lists of employees or facilities.
- Data can be referenced dynamically in any Entity or Application across the website (Tenant).

Application Development in Locus Platform

- “Configuration Workbench” makes app development easy and intuitive
- Entities (like paper forms) are developed by adding Fields
- Fields might include:
 - Basic info – name, date, location
 - Numerical data, field measurements
 - Descriptions of work performed, or issues observed
- Common “Field Groups” can be copied from one entity to another to save time

Application Development in Locus Platform

- Field Validations save staff time and improve data quality:
 - Checkboxes and pick-lists make things easier
 - Calibration checks – std. measurement must be in range before proceeding with a field test
 - Numerical vs. text (no “nine gallon” spills in your data that need to be cleaned up)
- Platform comes with almost 100 pre-made validations, and it's easy to create your own custom validations to suit your needs.

User Management

- Admin users can distribute licenses, edit user info, and reset passwords.
- Assigning users to Security Groups allows for quick configuration of global user permissions for new users.
- Security Groups also make it easy to line up security settings for each application with job functions within an organization

Data Security

- Security settings for each Entity control who may view, create, edit, or delete records.
- There are many ways to set this up depending on your business case.
- All changes to records in L.P. are documented in the Audit Log.



Referencing Your Data

- Records can be referenced manually or in an auto-generated Report.
- For an at-a-glance compliance status, Dashboards are another feature that Locus Platform offers.
- Multiple Import and Export tools afford flexibility for accessing the data in L.P.

Demonstration Time!

Locus Platform

Advantages of Locus Platform

- Staff (and outside contractors) can file field logs with their phone or laptop, offline or online.
- Highly customizable – can be designed to fit all our recordkeeping programs
- Coding skills not required, (but a plus)
- Cloud-based data storage and web app
- Updates and fixes are pushed in real time
- Cost-competitive

Caveats

- Requires you to invest time up front, relative to pre-built applications.
- Mobile App and Browser versions may differ – some extra testing and training required.
- To exercise the full potential of L.P., someone on your team needs to know how to code.
(HQL, SQL, Java)
- Data formatting isn't always standardized.

Other Applications at SJWC

- SJWC is starting to test out L.P. as a potential replacement for lots of business processes which traditionally relied on pencil-and-paper logs.
- This should open up new opportunities for data analysis, while saving valuable staff time.

Other Applications at SJWC

- Maintenance Logs
 - Emergency Generators
 - Pump Testing
 - Watershed Maintenance
- Inspection Logs
 - Valve Inspections
 - Safety Inspections
 - Audits
- Process Logs (QA/QC)
 - Flushing Truck
 - Treatment Plant

Short on Time? Long on \$?

- Locus also offers lots of pre-built applications for EHS Compliance Data Management:
 - Waste Management
 - Audit Protocols
 - Toxic Release Inventory
 - Incident Management
 - Industrial Hygiene
 - Title V
 - Sustainability



EHS & SUSTAINABILITY SOFTWARE & DATA MANAGEMENT CONFERENCE

2018 | CONFERENCE
MARCH 5-7 | ST. PETERSBURG, FL

- Thanks to NAEM for organizing this conference
- Thanks to Locus Technologies staff for assistance in developing SJWC's Platform applications, and for connecting us with NAEM.



Questions?

Suggestions?

Casey Claborn, P.E.

Water Quality Engineer – Env. Compliance

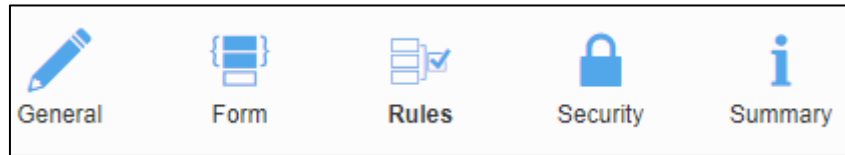
San Jose Water Company

casey.claborn@sjwater.com


(408) 819-1618

Alternate Demo starts here
(in case of bad connection)

Alt. Demo




Edit Entity Type


ID	Name	Application	Icon
 101616	Discharge to Sewer	Discharges	


Description
Log for Discharges to Sewer


Token
SEWER_DISCHARGE


Alt. Demo


General


Form





Rules














Security



Summary


* Section	
Details	


Section Fields


   Set business key


* Field	
 Comments	
 Contractor Name	
 Daily Total Volume (gal)	
 Date	
 Location	
 Max Flowrate Allowed for This Site (gpm)	
 pH reading	
 pH should be 6.5 to 12.0 - if not, call WQ	
 Project #	
 Sampled by	
 SJWC Needs 72 hrs Notice	
 Totalizing Flowmeter in Place?	


 pH should be 6.5 to 12.0 - if not, call WQ
(RECV.DTL.INSTRUCTIONS)
Section Heading - Html - White w/ Black Border


 SJWC Needs 72 hrs Notice
(RECV.DTL.INSTRUCTIONS2)
Section Heading - Html - White w/ Black Border


 Project #
(RECV.DTL.PROJECT)
Text - 10


 Sampled by
(RECV.DTL.SAMPLER)
Text - 100


 Contractor Name
(RECV.DTL.CONTRACTOR)
Text - 100


 Max Flowrate Allowed for This Site (gpm)
(RECV.DTL.MAX_FLOWRATE)
Integer


 Totalizing Flowmeter in Place?
(RECV.DTL.FLOWMETER)
Picklist - Yes/No

 Date
(RECV.DTL.DATE)
Date

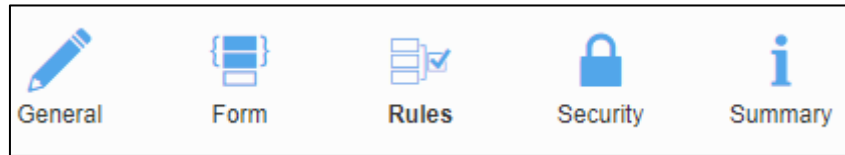
 Location
(RECV.DTL.LOCATION)
Text - 200

 Daily Total Volume (gal)
(RECV.DTL.VOLUME)
Decimal Number

 pH reading
(RECV.DTL.PH)
pH_decimal

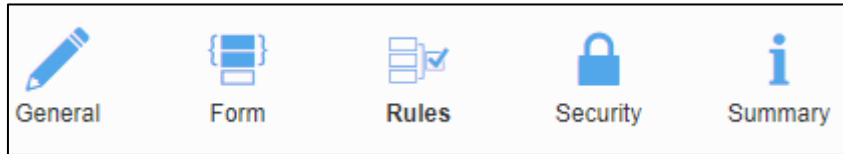
 Comments
(RECV.DTL.COMMENTS)
Text Area - 4000

Alt. Demo



Business Rules							
A set of business rules that are triggered based on user interaction with the form or fields in this entity type.							
+ Add Edit Copy Remove Up Down Enable Disable							
*	Name	On Save	On Load	On New	On Create	On Field Change	Post Save
	Record Name Set						
	pH_check_low						
	pH_check_high						

Alt. Demo



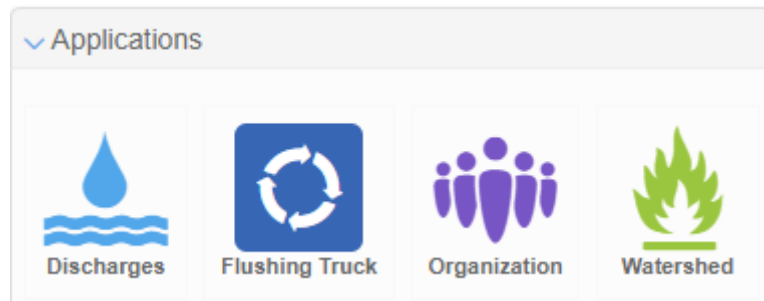
Security & Licenses

List of one or more security groups and/or license required by a user to interact with the fields


[+ Add](#) [Edit](#) [Remove](#)


*	Type	Security	Create	View	Update	Cancel	Delete
	User	* ALL USERS					
	Group	Dischargers					
	Group	_ALL_ACCESS_GRANTS_					
	Group	Minimum_grants					





Alt. Demo





Alt. Demo

 **Applications**











 **Discharges**

 Discharge to Sewer	<i>Log for Discharges to Sewer</i>
 Routine Discharge to Storm Drain (no field samples)	<i>Routine Discharge to Storm Drain/Creek (no field samples)</i>
 Sampled Discharge to Storm Drain	<i>Sampled Discharges to Storm Drain/Creek</i>
 Well Blowoff (no chlorine)	<i>Routine Discharge to Storm Drain/Creek (no field samples)</i>

 **Flushing Truck**

 Flushing Truck Daily Log	<i>Flushing Truck Daily Log</i>
--	---------------------------------

Alt. Demo

Records + New Open Copy Delete Import Export Filter by Tags						
*	Last Modified By	Date	Daily Total Volume (gal)	pH reading	Project #	Contractor Name
	Jeff Morgan	Feb 20 2018	800.0	8.0	H8-050	L&T
	Jeff Morgan	Feb 20 2018	1960.0	8.2	H8-050	L&T
	Art Velazquez	Feb 13 2018	4200.0	8.8	H7-114	WVCC
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	Jeff Morgan	Feb 12 2018	1000.0	8.0	H7-066	L&T
	Jeff Morgan	Feb 12 2018	1000.0	8.0	H7-066	L&T

Alt. Demo

Measure the pH of the discharge water. If the pH reading is less than 6.5 or greater than 12.0, stop the discharge and contact water quality staff. Meter and record the total volume discharged. Notify SJWC Water Quality On-Call of any surcharge event immediately: (657) 201-4170

Notify Water Quality staff (casey.claborn@sjwater.com) at least 72 hours prior to any planned discharge to the sanitary sewer. Send the notice with the proposed date & time of the discharge, location (cross roads), estimated volume and flow rate.

Project #

Sampled by

Contractor Name

Max Flowrate Allowed for This Site (gpm)

Totalizing Flowmeter in Place?

Date



Location

Daily Total Volume (gal)

pH reading

Comments