

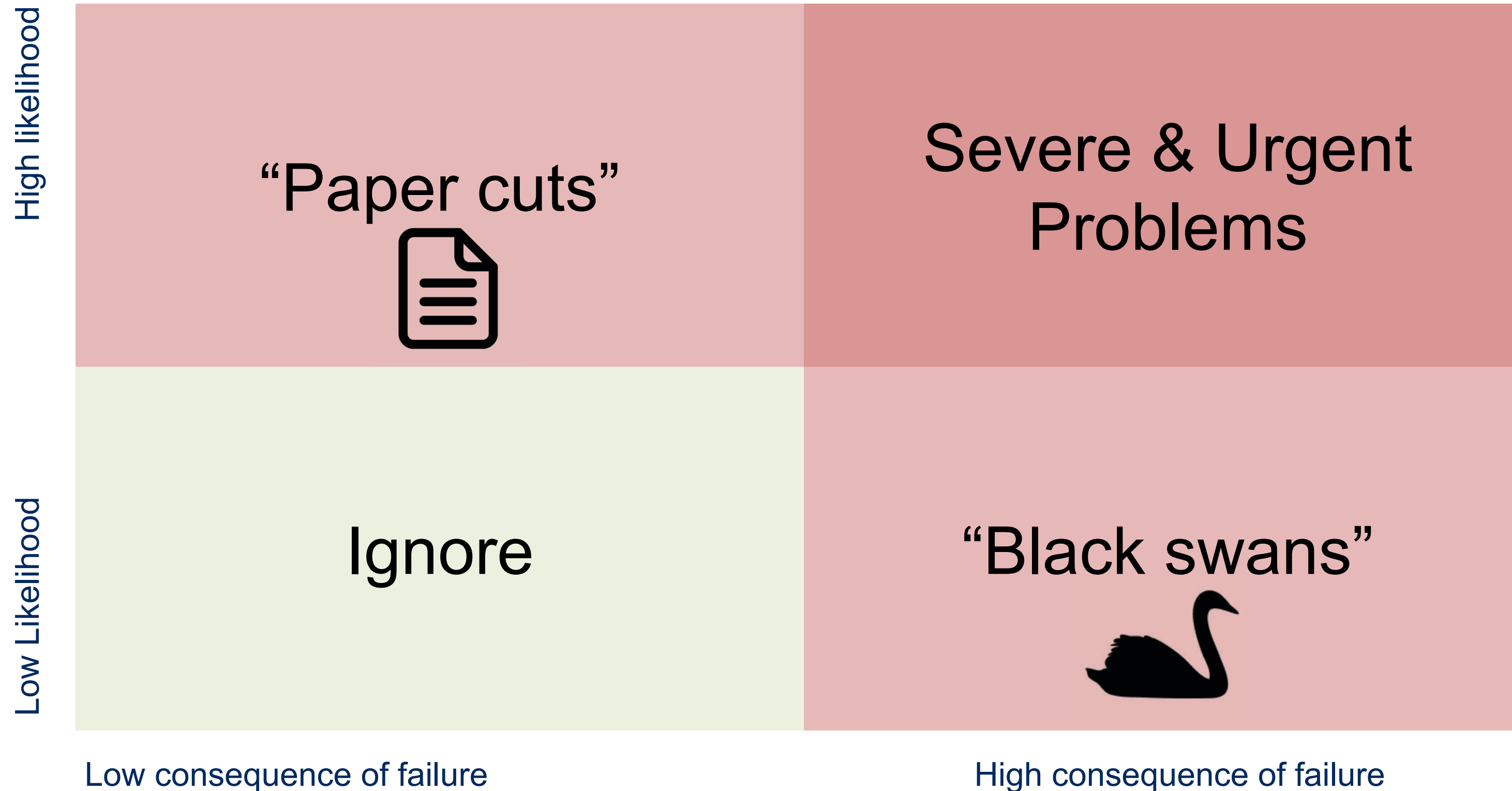
NEWEA / NEWWA Joint Information Technology & Asset Management Fair
November 2, 2021

Utility operations are complex...

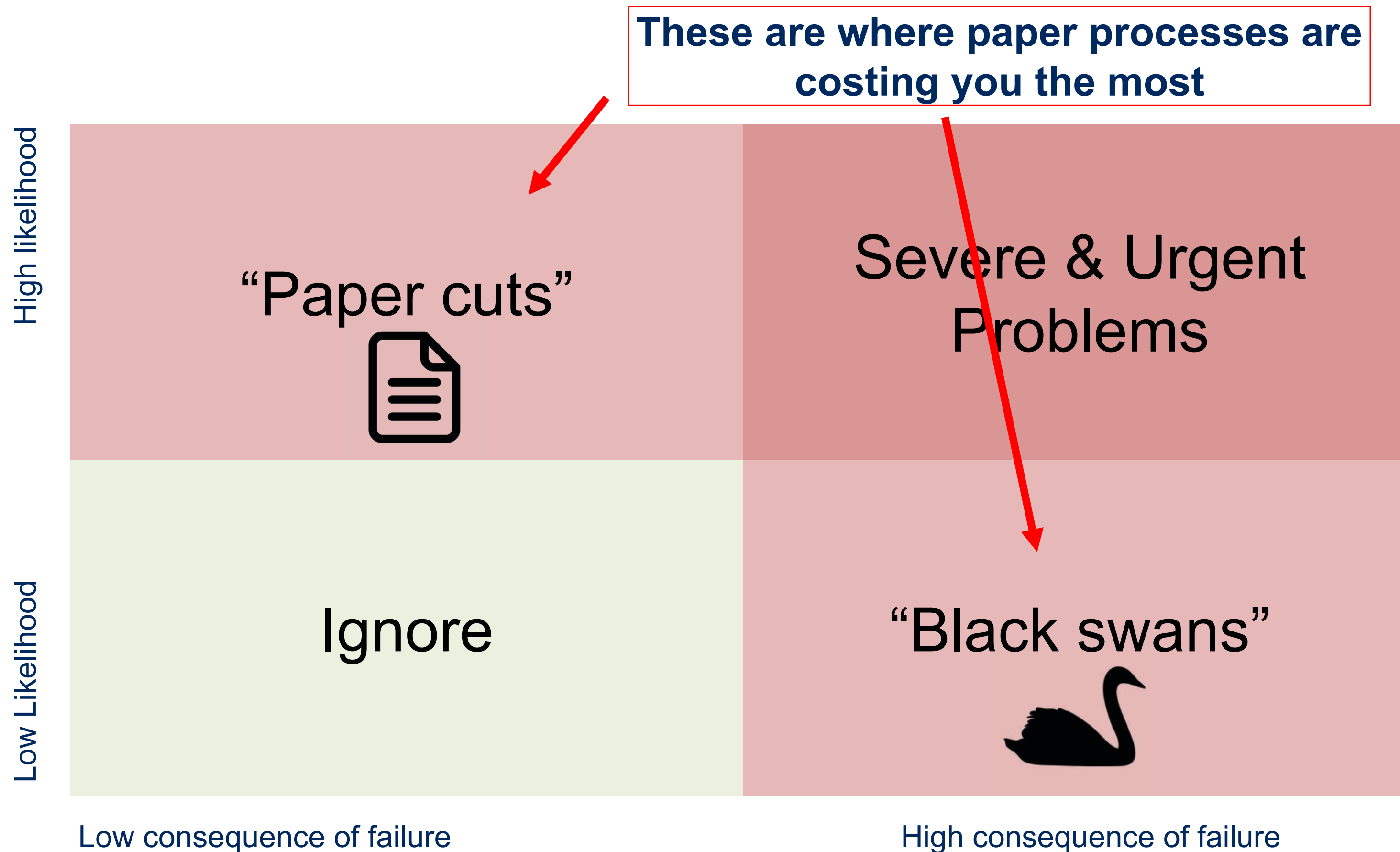


1. Regulatory driven
2. Indoor and outdoor, plant and field infrastructure
3. Multi-party – utilizing contractors, multiple teams
4. Generational
5. Sequential
6. Public-facing
7. Aging

You have top right / bottom left covered...

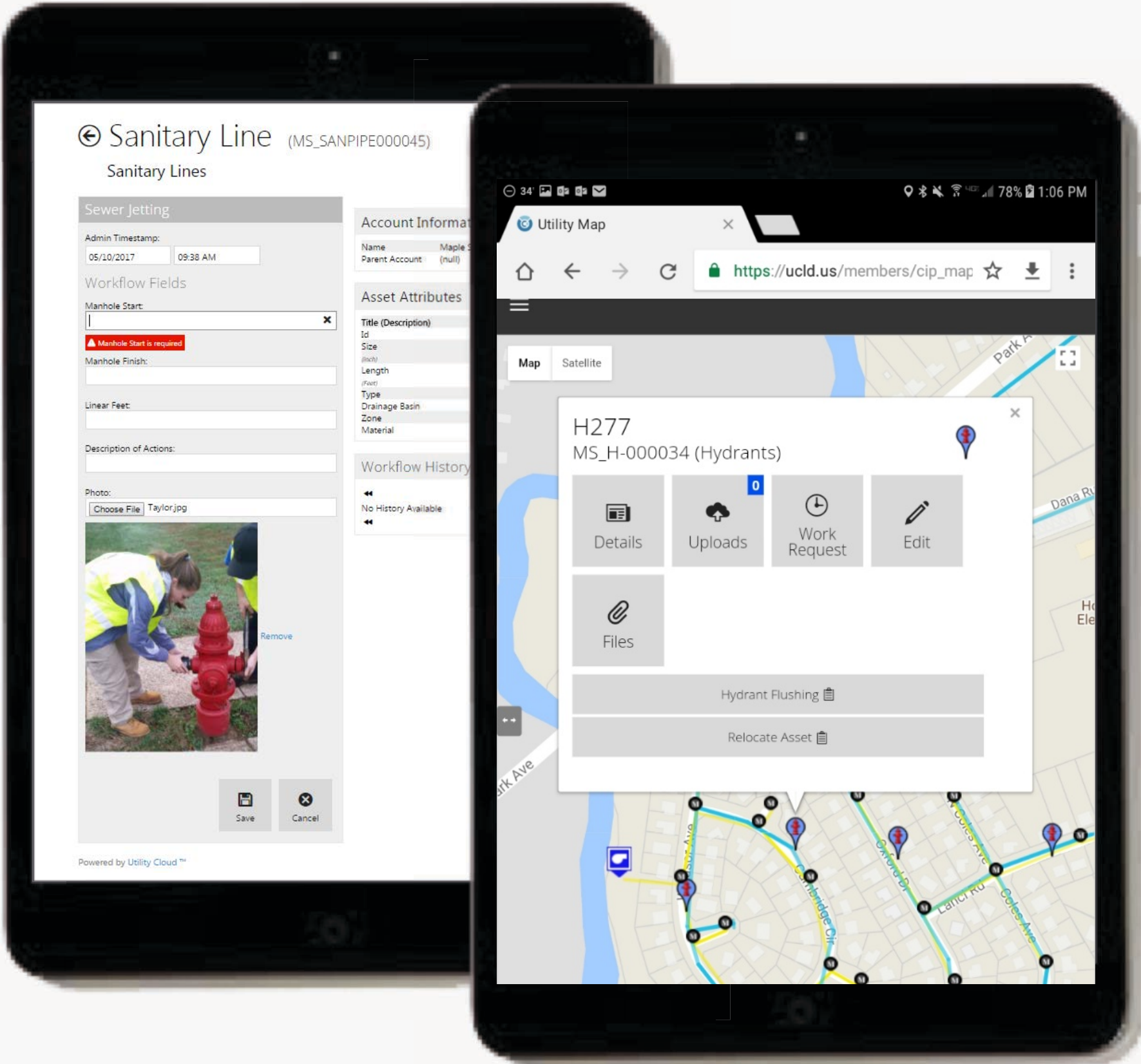


Two types of paper costs we see:



In one picture:

DATA TABLE			
TEMPERATURE	42°F	RAIN	0.32 INCHES
TOTALIZER X 1000	TIME: 08:12	1355632	GALLONS
FLOW RATE		837	GPM
DAILY VOLUME:			GALLONS
ELECTRIC METER X 640	7400	7397.6	KWH
EFFLUENT pH/TEMP:	TEMPERATURE 13.5 °C	7.33	S.U.
OPERATING TIME (LEAD PUMP)		49618.87	HR
OPERATING TIME (LAG PUMP)		4453.1	HR
OPERATING WELL (CIRCLE ONE)	PW-2	(PW-3)	
TOTALIZER X 1000	TIME: 08:03	446472	GALLONS
DAILY VOLUME:			GALLONS
FLOW RATE		460	GPM
ELECTRIC METER X 120		2149.68	KWH
PUBLIC WATER METER	TIME: 09:24	312430770	FT
WATER PRESSURE	INF 87	78	EFF
WATER ELEVATION		106	FEET 1/2 IN
pH/TEMP	TEMP: °C	52.00	S.U.
LEFT ELECTRIC METER X 1200		2579	KWH
RIGHT ELECTRIC METER X 1200		5220	KWH
PRIMARY PUMP TOTALIZER (X1000)	235288.7	FLOW RATE (gpm)	548 (A)
PRIMARY PUMP HOUR METER RUNTIME		24311.9	HR (B)
TOTE#1			GALLONS



How to look at this presentation:



1. Putting a true financial cost on paper vs. software in utility operations is nearly impossible.
2. But we **DON'T NEED** to quantify the exact expense – we simply need to prove that this is at least a combined ~\$50K problem for the software decision to be a no-brainer.
3. And for most, we argue, this is at least a \$1M per year problem.

Missing work

Example:

- Billy performs an inspection that should trigger a repair.
- Cindy misunderstands Billy's handwriting and doesn't issue a follow-on work order.

Impact:

- Missed customer complaints.
- Missed PMs / repairs = higher likelihood of replacement.

What if:

- All work was tracked in a queue against relative to priority and tracked against compliance goals?

Routes Dashboard

Routes Dashboard

Search Route Name

My Routes

☒ Active Only

	Route	Open Work Orders	Status	Current Compliance	Total Compliance	Total Compliance Rate
	My Work	3086	N/A	-	-	
	All Work	8353	N/A	-	-	
	Odorization Inspection	1 of 1		-	-	
	Plaque stencil Check up	7 of 8		13%	-	
	PFOA Pre Construction	0 of 0	N/A	-	-	
	Lead and Copper Sampling	31 of 33		6%	-	
	Catch Basin Condition Label	1981 of 1984		0%	-	
	Cathodic Protection Survey	0 of 1		-	-	

Showing 1 to 9 of 15 entries (filtered from 24 total entries)

My Events

Filter by Assignee

Month

SEPTEMBER 2021

Sun

Mon

Tue

Wed

Thu

Fri

Sat

29

30

31

1

2

3

4

Work Orders

70558

Showing 25/2536 results

977856564 - Rectifier

#272782179 - Annual Cathodic Protection Survey (ACPS)

Natural Gas - Rectifier

Cathodic Protection Survey - Cathodic Protection Survey

Demo User

CB-2 - Catchbasin

#246223007 - Catch Basin Stormwater Plaque Label

StormWater - Catch Basins

Catch Basin Condition Label - Adding plaques or stencils to catch basins

Demo User

CB-2 - Catchbasin

#246225124 - Catch Basin Stormwater Plaque Label

StormWater - Catch Basins

Plaque stencil Check up

Demo User

CB-5 - Catchbasin

#246225125 - Catch Basin Stormwater Plaque Label

StormWater - Catch Basins

Plaque stencil Check up

Demo User

CB-6 - Catchbasin

#246223009 - Catch Basin Stormwater Plaque Label

StormWater - Catch Basins

Catch Basin Condition Label - Adding plaques or stencils to catch basins

Demo User

CB-7 - Catchbasin

#246223010 - Catch Basin Stormwater Plaque Label

StormWater - Catch Basins

Catch Basin Condition Label - Adding plaques or stencils to catch basins

Demo User

CB-8 - Catchbasin

#246223011 - Catch Basin Stormwater Plaque Label

StormWater - Catch Basins

Catch Basin Condition Label - Adding plaques or stencils to catch basins

Demo User

Double work

Example:

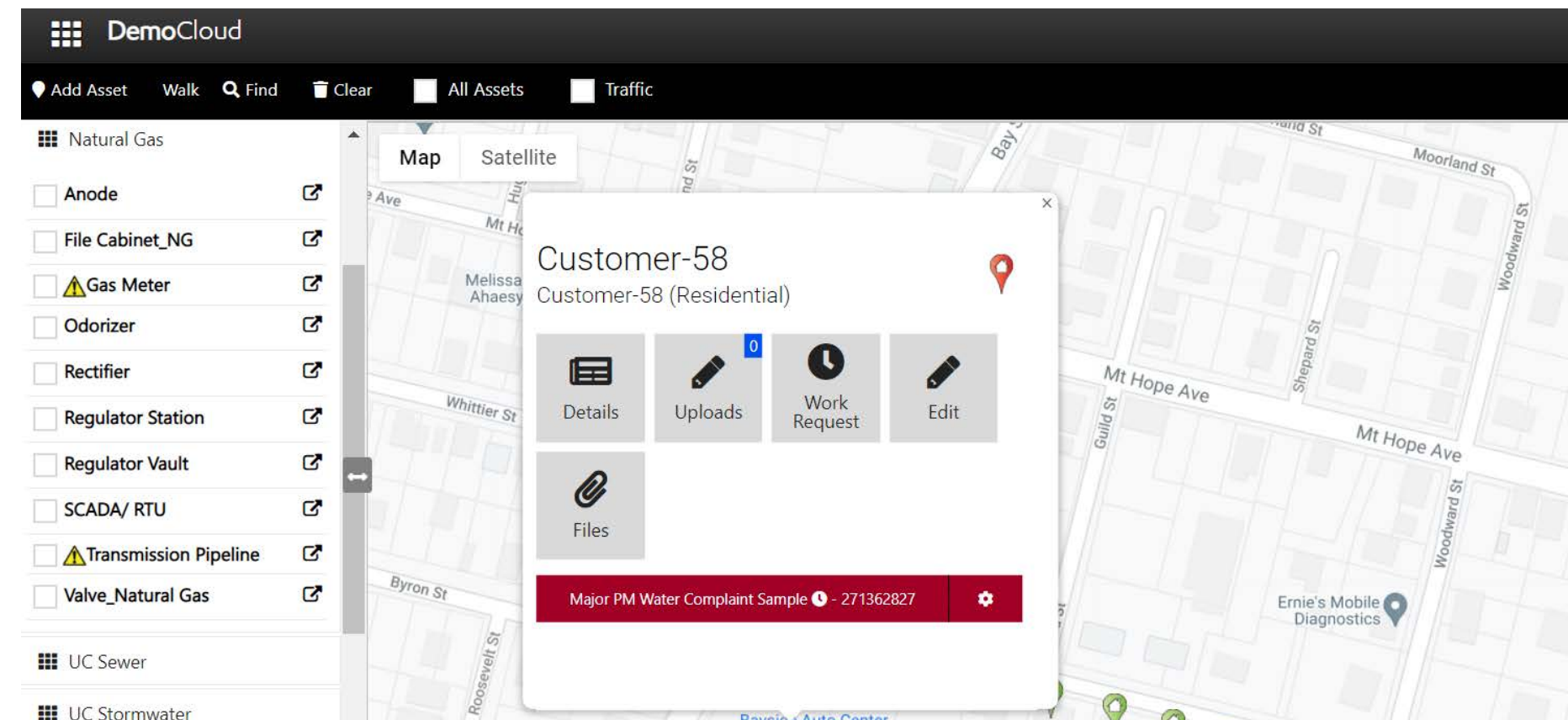
- Billy performs a PM task.
- Without knowing it Johnny performs that same PM a day later.

Impact:

- Unnecessary and duplicate work

What if:

- Work were scheduled against the asset, could be assigned to individuals, showed complete work history on the asset, and prevented Johnny from performing the duplicate task in the first place?



Where's my work?

Example:

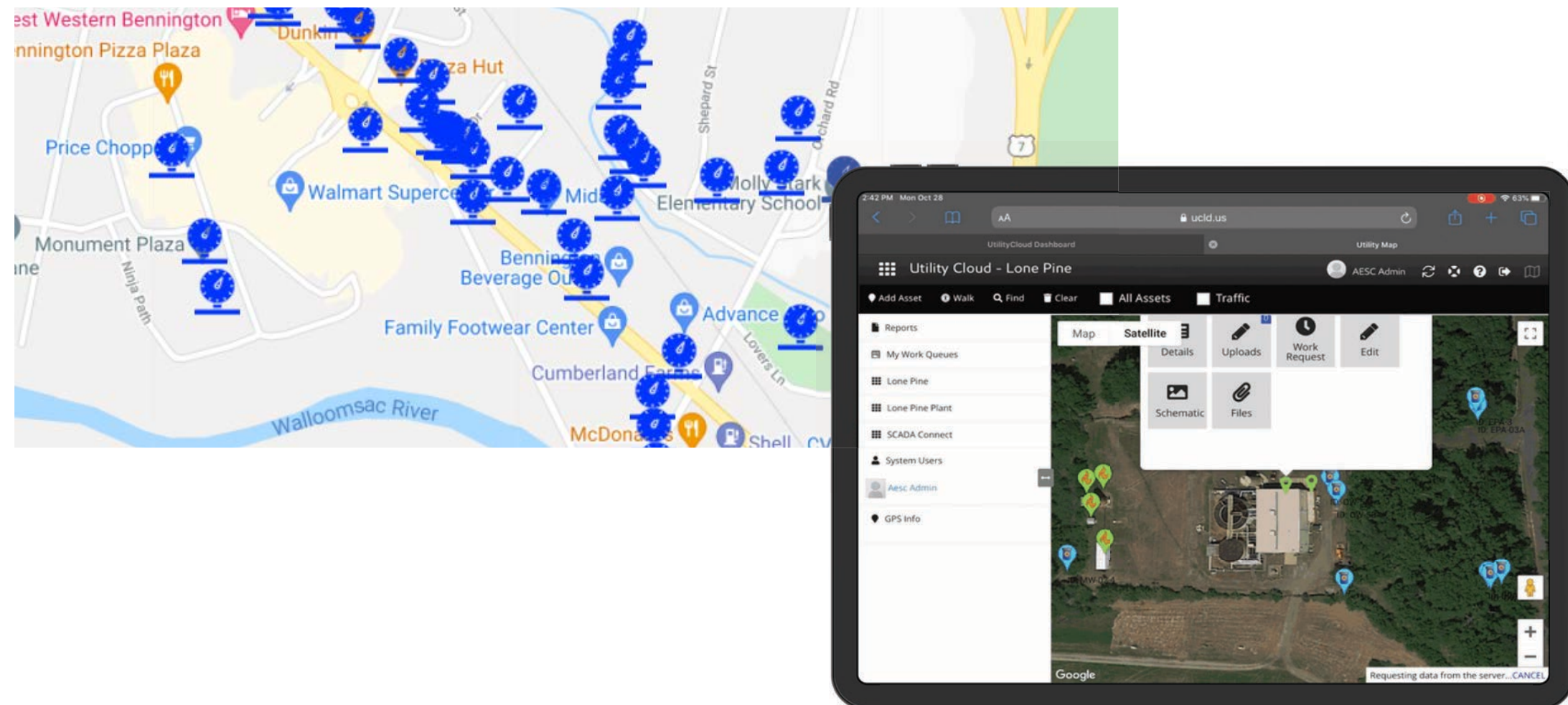
- Billy goes to hydrant only to find that it's not where he thought it would be – he cannot tell where he needs to perform work.

Impact:

- Wasted time and effort finding the work
- Potential to do the wrong work on the wrong asset, thinking that the correct work was done.

What if:

- You took the question of “where” completely out of the equation, even inside a plant?



Example:

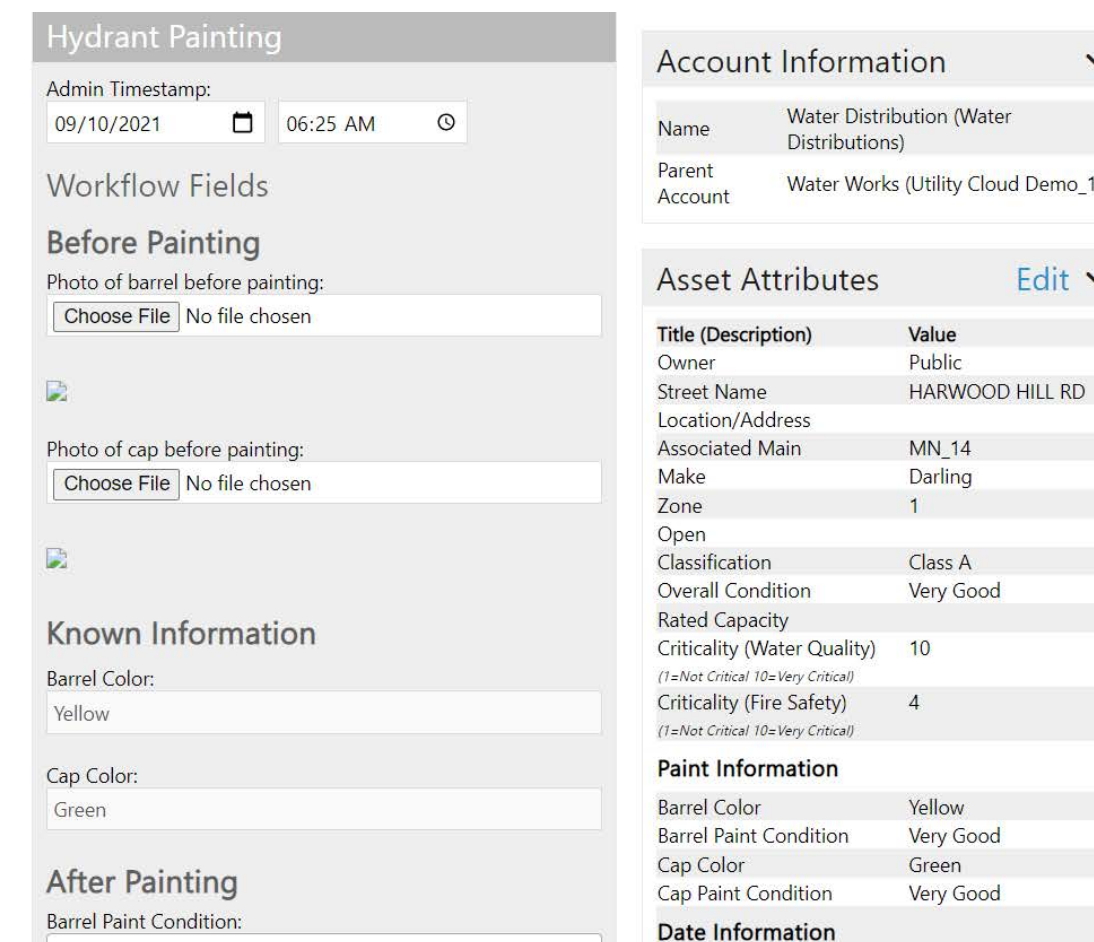
- Billy takes a sample, scribbles down chain of custody data.
- Billy is forced to re-sample when paperwork is lost, not legible or incomplete.

Impact:

- Unnecessary duplicate efforts
- Urgent re-work that takes priority over operationally critical items

What if:

- Data from the field were quality controlled: dropdowns, pictures, calculated fields (eliminated subjectivity), etc.?



Hydrant Painting

Admin Timestamp: 09/10/2021 06:25 AM

Workflow Fields

Before Painting

Photo of barrel before painting:
Choose File No file chosen

Photo of cap before painting:
Choose File No file chosen

Known Information

Barrel Color: Yellow

Cap Color: Green

After Painting

Barrel Paint Condition:

Account Information

Name: Water Distribution (Water Distributions)
Parent Account: Water Works (Utility Cloud Demo_1)

Asset Attributes

Title (Description)	Value
Owner	Public
Street Name	HARWOOD HILL RD
Location/Address	
Associated Main	MN_14
Make	Darling
Zone	1
Open	
Classification	Class A
Overall Condition	Very Good
Rated Capacity	
Criticality (Water Quality)	10 <small>(1=Not Critical 10=Very Critical)</small>
Criticality (Fire Safety)	4 <small>(1=Not Critical 10=Very Critical)</small>

Paint Information

Barrel Color	Yellow
Barrel Paint Condition	Very Good
Cap Color	Green
Cap Paint Condition	Very Good

Date Information

Example:

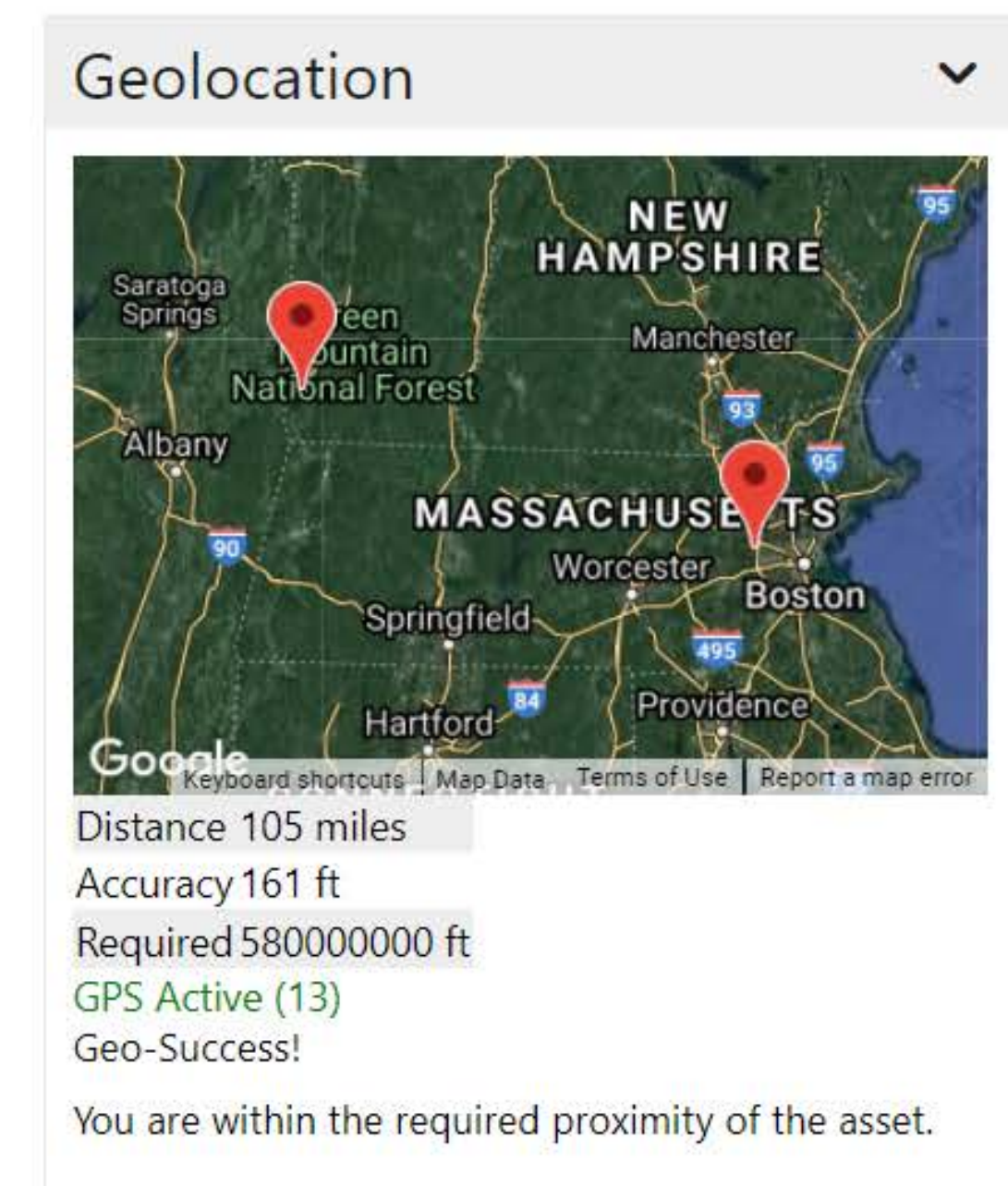
- Contractor Sally performs a catch basin cleaning, but other than looking at the catch basin, how can the utility verify the work was completed on the correct asset?

Impact:

- Contractor overspend
- Paying for the wrong work or no-work

What if:

- Proximity verification on work tasks required for operations to be within 10 ft. of the asset to complete the task?



Multiple work on the same asset

Example:

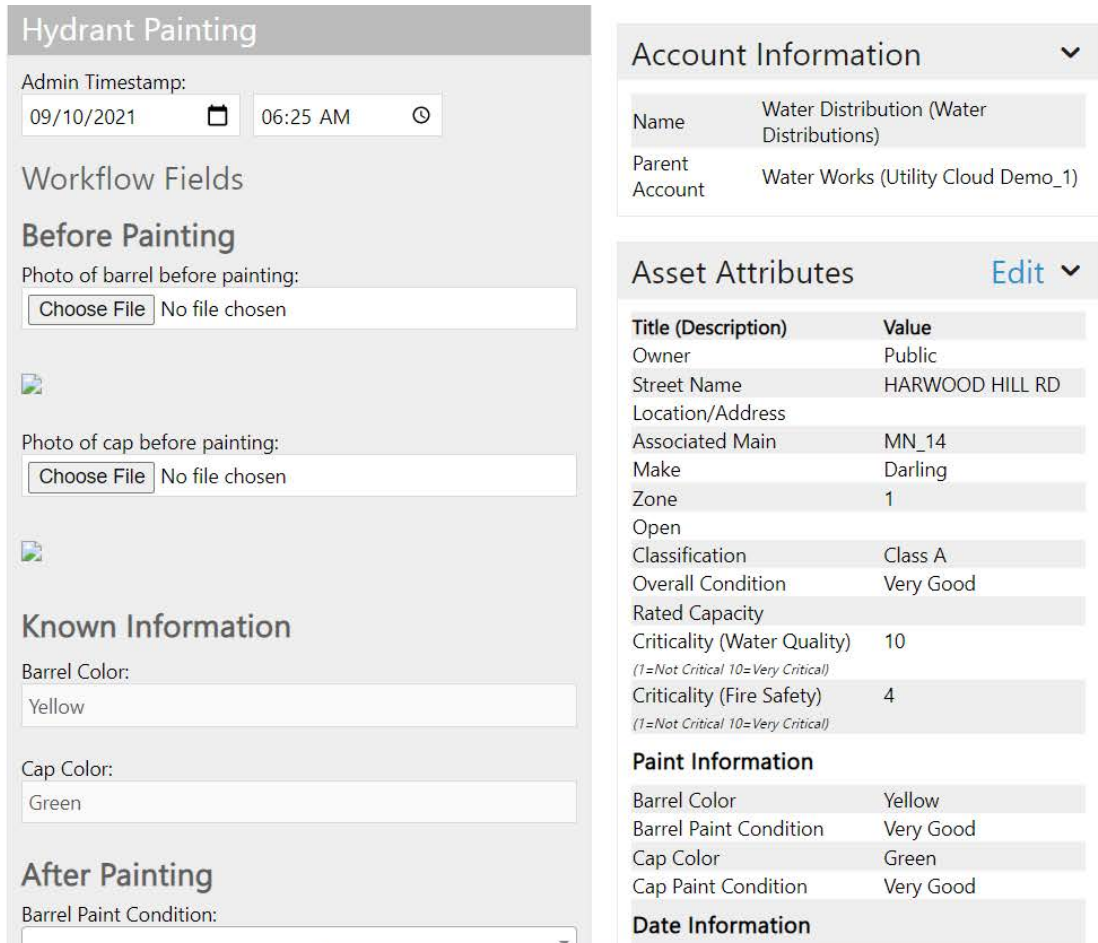
- Billy's crew exercises all valves over the course of a year – but now pays Expensive Engineering Firm to do a condition assessment on all its hydrants.

Impact:

- Missed opportunity to collect asset management data at the time of work

What if:

- Configurable digital forms collect additional condition data at the time of work, delivering a continuous refreshed view of infrastructure health?



Hydrant Painting

Admin Timestamp: 09/10/2021 06:25 AM

Workflow Fields

Before Painting

Photo of barrel before painting: No file chosen

Photo of cap before painting: No file chosen

Known Information

Barrel Color: Yellow

Cap Color: Green

After Painting

Barrel Paint Condition:

Account Information

Name: Water Distribution (Water Distributions)

Parent Account: Water Works (Utility Cloud Demo_1)

Asset Attributes [Edit](#)

Title (Description)	Value
Owner	Public
Street Name	HARWOOD HILL RD
Location/Address	
Associated Main	MN_14
Make	Darling
Zone	1
Open	
Classification	Class A
Overall Condition	Very Good
Rated Capacity	
Criticality (Water Quality)	10
<small>(1=Not Critical 10=Very Critical)</small>	
Criticality (Fire Safety)	4
<small>(1=Not Critical 10=Very Critical)</small>	

Paint Information

Barrel Color	Yellow
Barrel Paint Condition	Very Good
Cap Color	Green
Cap Paint Condition	Very Good

Date Information

Schedule-based vs. Condition-based



Example:

- Billy performs his PMs based on a fixed schedule.
- But Billy’s schedule has him working on assets with low likelihood and consequence of failure.

Impact:

- Over-maintaining certain assets while avoiding those that need the greatest attention.

What if:

- Work schedules were prioritized based on condition and consequence of failure?

Select Asset Class:		CC DCVA					
LOF			COF				
			Very Low	Low	Moderate	High	Very High
			1	2	3	4	5
	Very High	5	1	2	1	0	2
	High	4	0	0	0	1	1
	Moderate	3	4	2	4	1	2
	Low	2	7	4	4	6	1
Very Low	1	4	0	1	0	0	

Example:

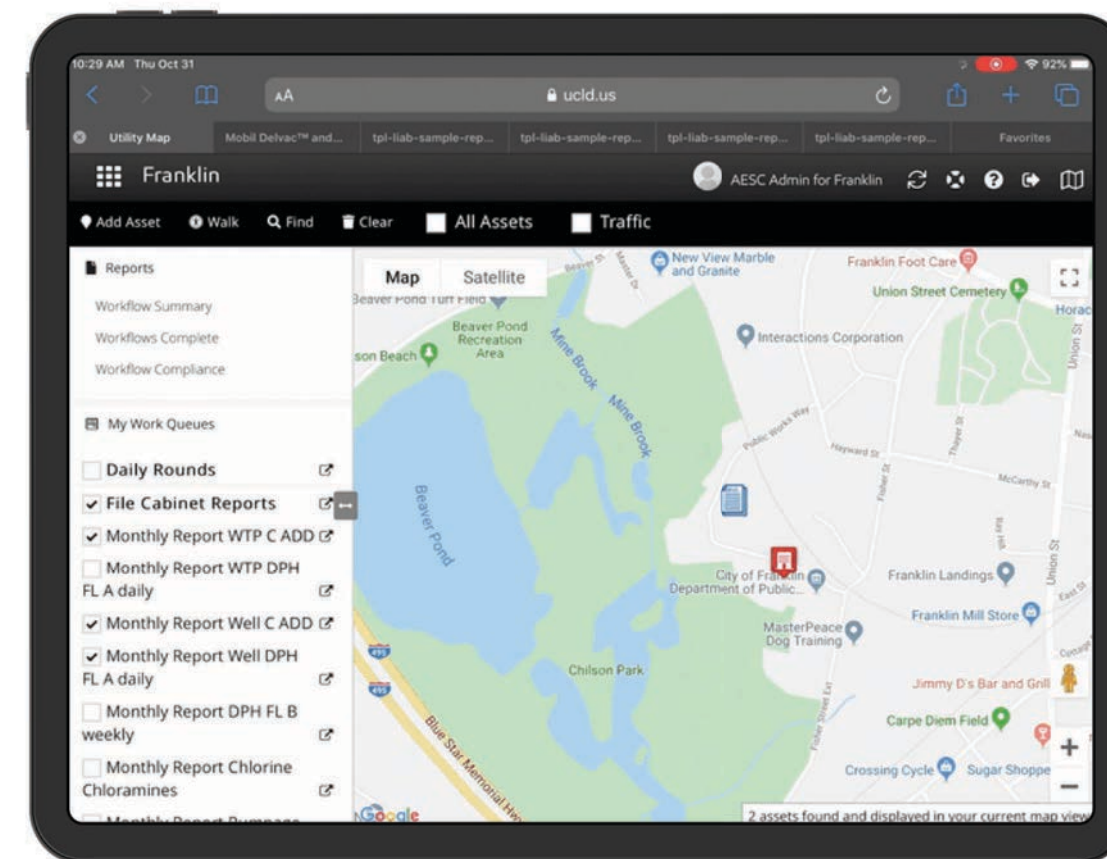
- Every month Cindy works on the MOR report – with data not in one place, this takes lots of copy/pastes, quality review, re-work and clarification, etc.

Impact:

- Probability of error on regulatory reports.
- Wasted time and effort compiling reports.

What if:

- All work automatically populated complex regulatory reports?



Missed Revenue

Example:

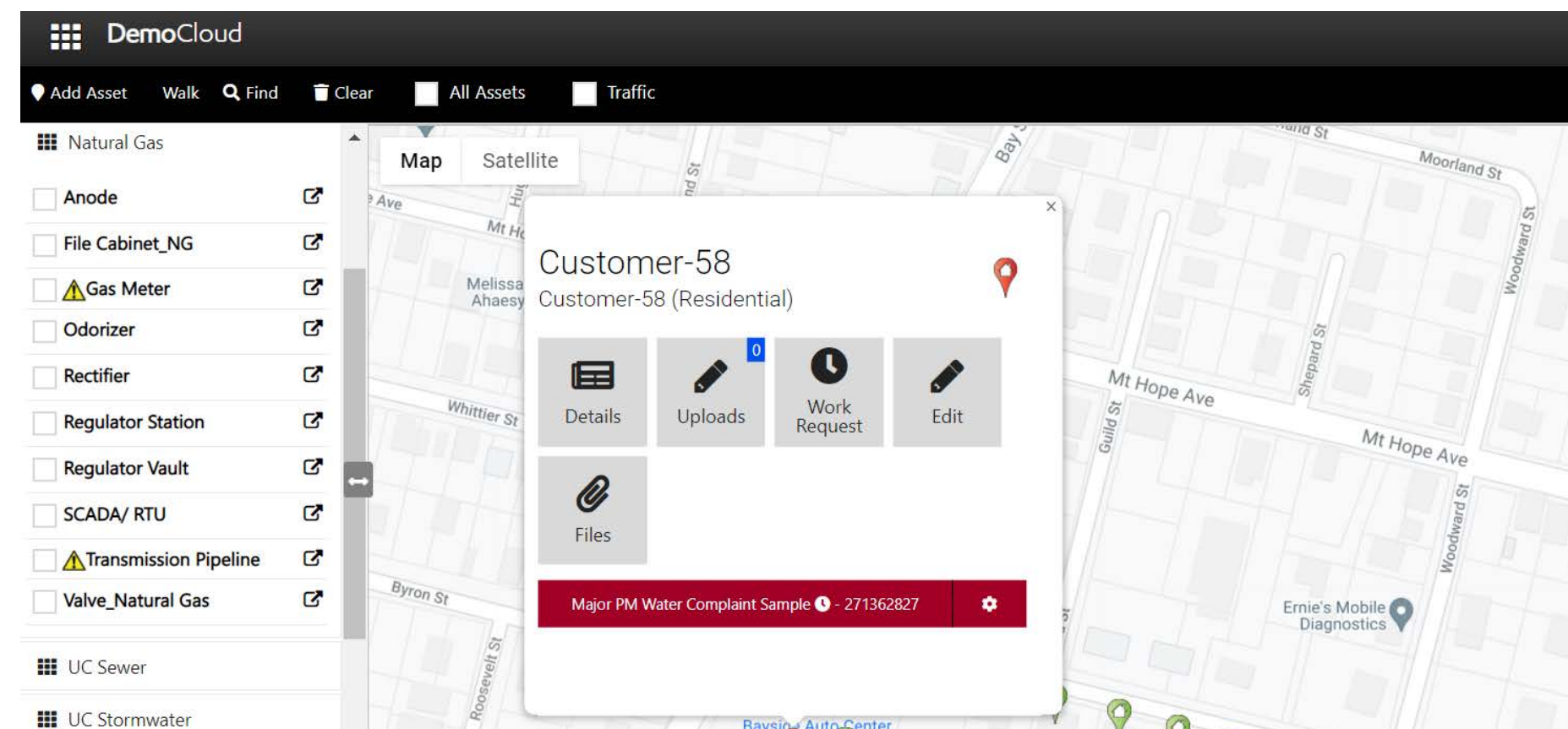
- Billy performs a billable service request for a business – the paperwork gets lost in the shuffle and no one is holding Billy accountable to deliver the billable information back to Billing.

Impact:

- Missed customer revenue opportunity.

What if:

- Work could be integrated with your billing system?



And we fear the black swans



Example:

- All work history lives in file cabinets
- For insurance or other reasons, the utility is asked to pull detailed work history.

Impact:

- Liability & significant financial exposure.

What if:

- The utility could pull detailed work history across asset class and monitor this regularly to proactively plan for audit situations?

The screenshot displays a software interface with two main sections. The top section, titled "Work History", contains a table with columns for Type, Date, Description, Work Order ID, and Status. The bottom section, titled "Timeline", shows a chronological list of events, each with a date, time, and a small image of a green fire hydrant.

Type	Date	Description	Work Order ID	Status
WDO	08/24/2021	Hydrant Painting	273054763	View
WDO	08/24/2021	General Hydrant Inspection	273054065	View
WDO	08/16/2021	Hydrant Painting	273027688	View
WDO	08/16/2021	General Hydrant Inspection	273027340	View
WDO	08/09/2021	General Hydrant Inspection	273022976	View
WF	07/22/2021	UDF Hydrant Flushing		View
WF	03/15/2020	UDF Hydrant Flushing		View
WF	02/15/2020	UDF Hydrant Flushing		View
WF	01/15/2020	UDF Hydrant Flushing		View
WF	01/10/2020	UDF Hydrant Flushing		View

The "Timeline" section shows two entries, each with a date and time, and a small image of a green fire hydrant. The first entry is dated 8/24/2021 11:48 AM and the second is dated 8/16/2021 10:50 AM. Both entries are titled "Hydrant Painting" and include sub-headers: "Photo of hydrant after painting", "Photo of cap after painting", and "Photo of cap before painting".

“But we struggle getting budget!”

Example:

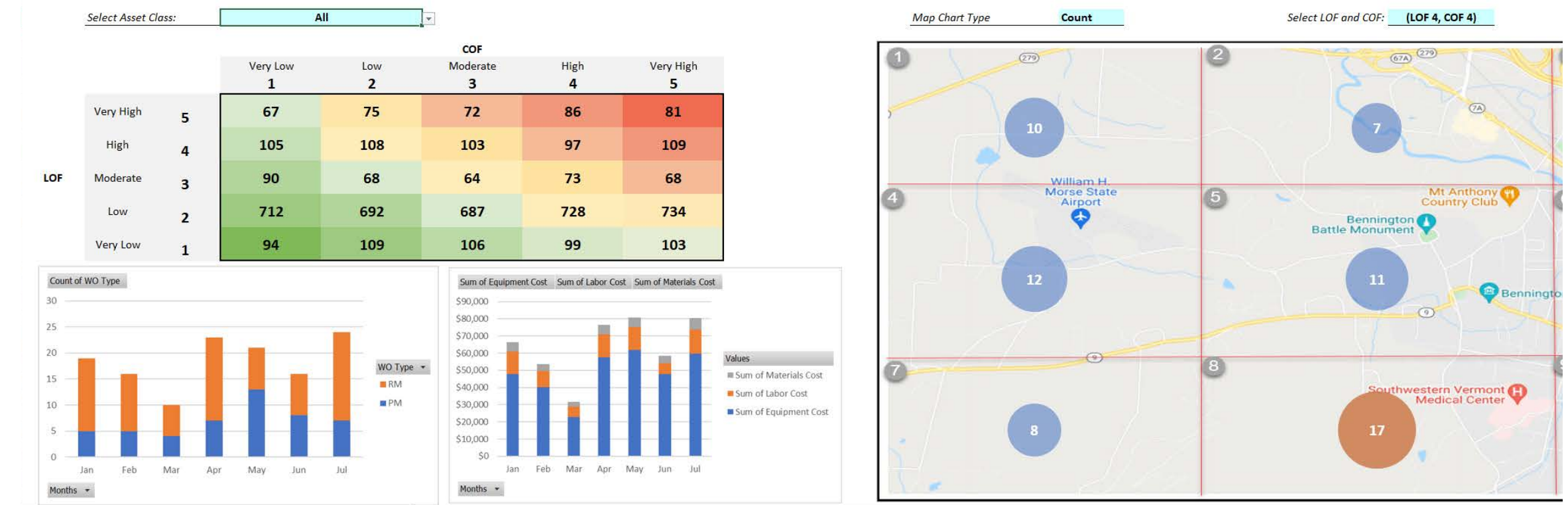
- Bobby puts forth his budget requests which lack quantifiable data on the risk of assets and the cost to maintain poor infrastructure.

Impact:

- Continued overspend on reactive maintenance.
- Lack of capital plan to replace aging infrastructure.
- Under-delivery: less manpower than required work, but no way to quantify!

What if:

- You could flip the script: “here are the assets and costs associated with our riskiest assets and here’s how much it costs us to manage this infrastructure. You tell me what we should or shouldn’t replace?”



- Prior to 2016, the Town of Southbridge, MA used a highly manual process to schedule work, collect data, and plan for its asset management activities.
- Across the utility, data and work activities consisted of a combination of MS Excel, paper, and legacy databases.
- Completion of field work required a printed work order, handoff to a field tech to do the work and fill out the order, return it to the office, and hand it off to a secretary to type into the computer.

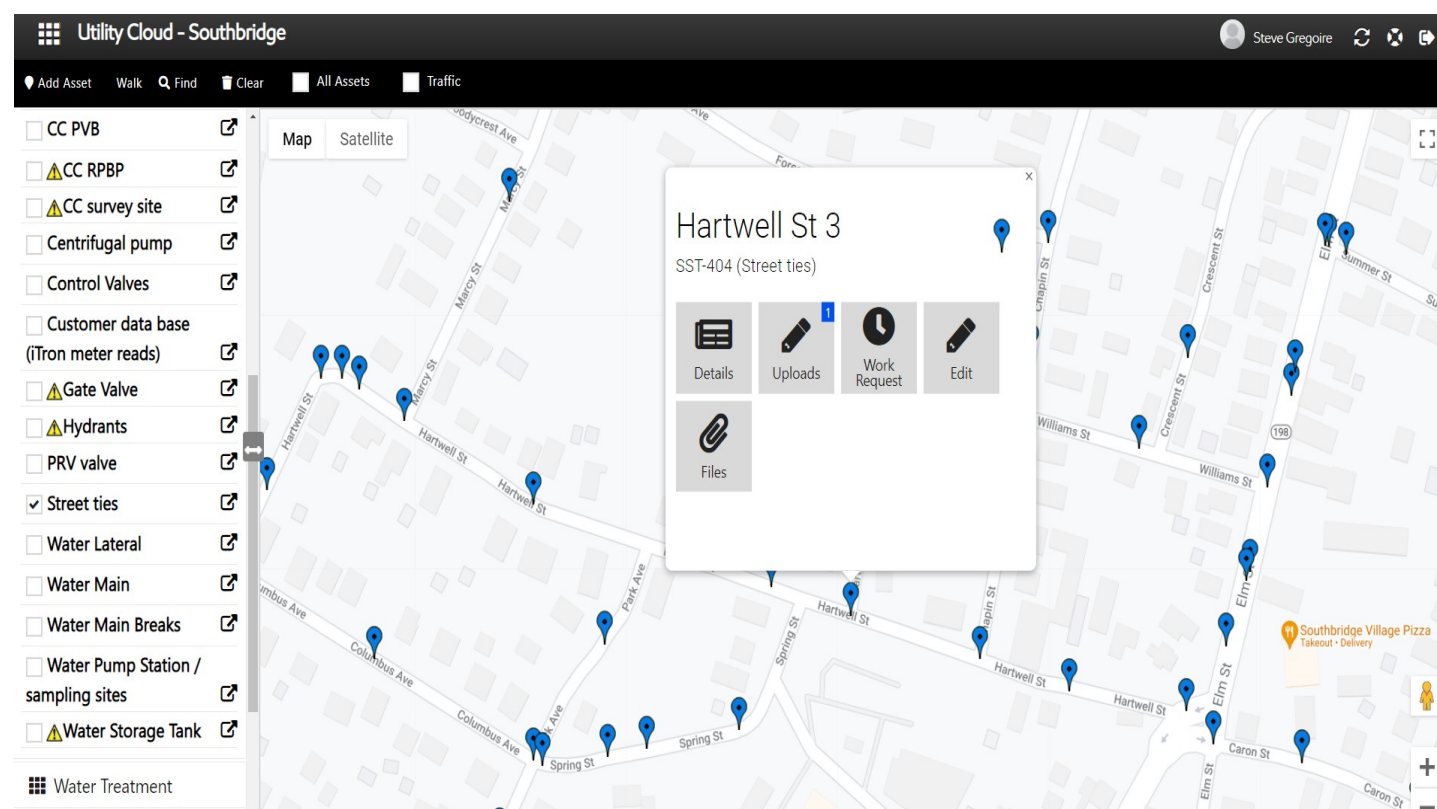




- Southbridge implemented Operations Management software (Utility Cloud) in 2016, expanding its use over time.
- Today, this technology is used to manage a wide range of assets, including 2,200 valves, 700 hydrants, 100 miles of water main, and a 6 MGD water treatment facility.

- OLD PROCESS

- Go onsite where the issue is at hand
- Return to office to search record drawings file cabinet(s) for either water main tie cards, or home service cards (or both)
- Make copies of card and return to site
- Hopefully have all the information needed on site to successfully locate the water main/service line in question
- Possibly make return trip to office for more info if needed.
- Return trips add to total response time (big issue in an emergency)



- ✓ NEW PROCESS

- ✓ All home service cards, and water main tie cards are located within the asset management system that all technicians can access onsite
- ✓ Locate yourself with GPS on tablet and choose the appropriate info.



Southbridge – Cross Connection Program

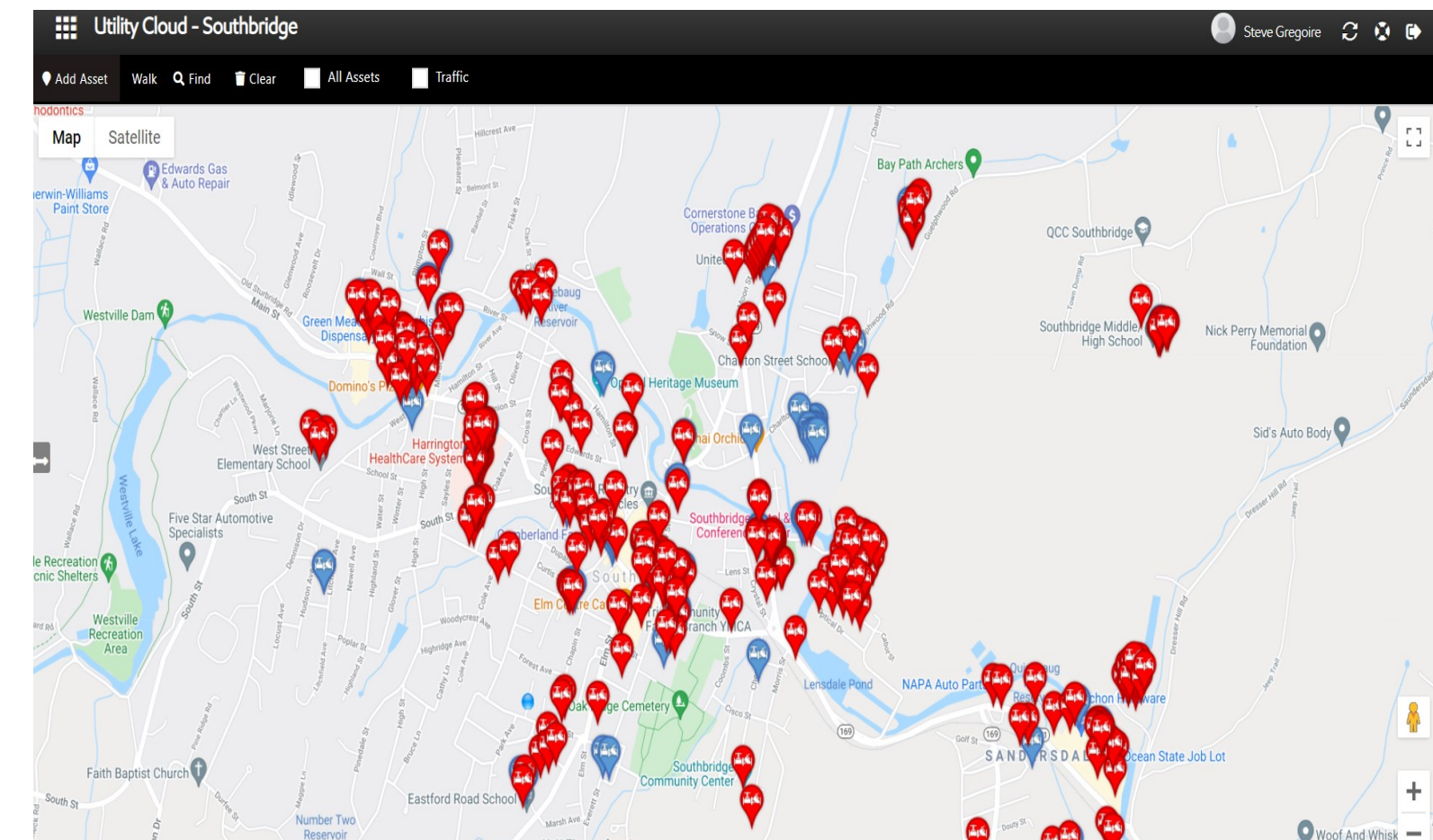


- OLD PROCESS (2 times per year)
 - Type out onto carbon paper all device test sheets for entire water system
 - Operators go into the field to conduct testing, fill out carbon sheets, leave copy for the customer, and return copy to the office.
 - Office reviews the test sheets, makes out violation list for failures, types & mails out failure notification
 - Test sheets filed for MassDEP compliance



✓ NEW PROCESS

- ✓ The system makes all backflow test due for completion on January 1st.
- ✓ Operators scan a bar code on each device, and the test form auto populates
- ✓ Test is completed, and results are emailed to the customer, emailed to the office, and saved as a PDF on the asset within the system
- ✓ Office admin mails out a violation notice for any failures



Southbridge – What's Next?

- Filter plant recurring maintenance / daily rounds
- Expansion to non-water assets:
 - Stormwater catch basin cleaning
 - Fleet maintenance
 - Cemetery plot administration



Thank You!



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