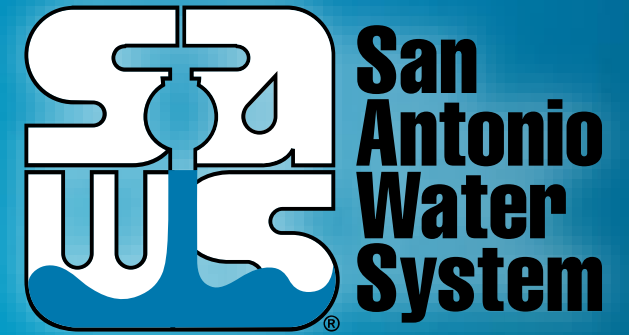


SAWS SSO Program Achievements

Jeff Haby, P.E.

Vice President – Production & Treatment

September 21, 2018



MAKING SAN ANTONIO
WATERFUL



Path Forward

Overview

- SAWS by the Numbers
- Consent Decree
- Key Elements
- Innovation
- Program Effectiveness
- Path Forward





SAWS Overview

One of the nation's largest municipally owned utilities

- Created in 1992
 - Merger of three city departments
 - Separate Board of Trustees
- Serve 1.8 million people
- 12,000+ miles of pipe
- \$2 billion 5-year capital program
- 1,700 employees

Consent Decree Overview:

- Timeline
 - 2007-2013 Negotiations
 - July 23, 2013 Lodged
 - October 15, 2013 Entered
 - Term: 10-12 years

- Compliance Requirements

- Reporting



**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION**

UNITED STATES OF AMERICA,	§	
	§	
and	§	Civil Action No.
	§	
STATE OF TEXAS,	§	
	§	
Plaintiffs,	§	
	§	
v.	§	
	§	
SAN ANTONIO WATER SYSTEM,	§	
	§	
Defendant.	§	

CONSENT DECREE

SSORP and the Consent Decree

- Reduce SSOs and comply with the CD
- Implement sustainable business practices
- Enforce standards and ordinances
- Continue to manage capacity constraints and condition issues

Capacity & condition assessment

Alternatives analysis and planning

CIP implementation, design and construction



CD Major Components



UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION

UNITED STATES OF AMERICA, §
and §
STATE OF TEXAS, §
Plaintiffs, §
v. §
SAN ANTONIO WATER SYSTEM, §
Defendant. §

Civil Action No.

CONSENT DECREE



1. ASSESS



2. PLAN



3. REPORT

Assessments Complete
Remedial Measures -Jan



4. Ongoing REHAB

SSO: Achievements



Condition Assessment

CCTV, Sonar or Pole Cam



Asset Description To be Assessed by July 2017	Miles of Inspections Required Under CD	Miles of Inspections Completed	% Complete
Small Diameter Gravity Sewer - EARZ, Concrete Pipe and Clay Pipe Installed Prior to 1973	1,869	1,909	102%
Small Diameter Gravity Sewer - Clay Pipe Installed from 1973 through 1982	410	411	100%
Large Diameter Gravity Sewer	364	378	104%

Condition Assessment: Rate A-E

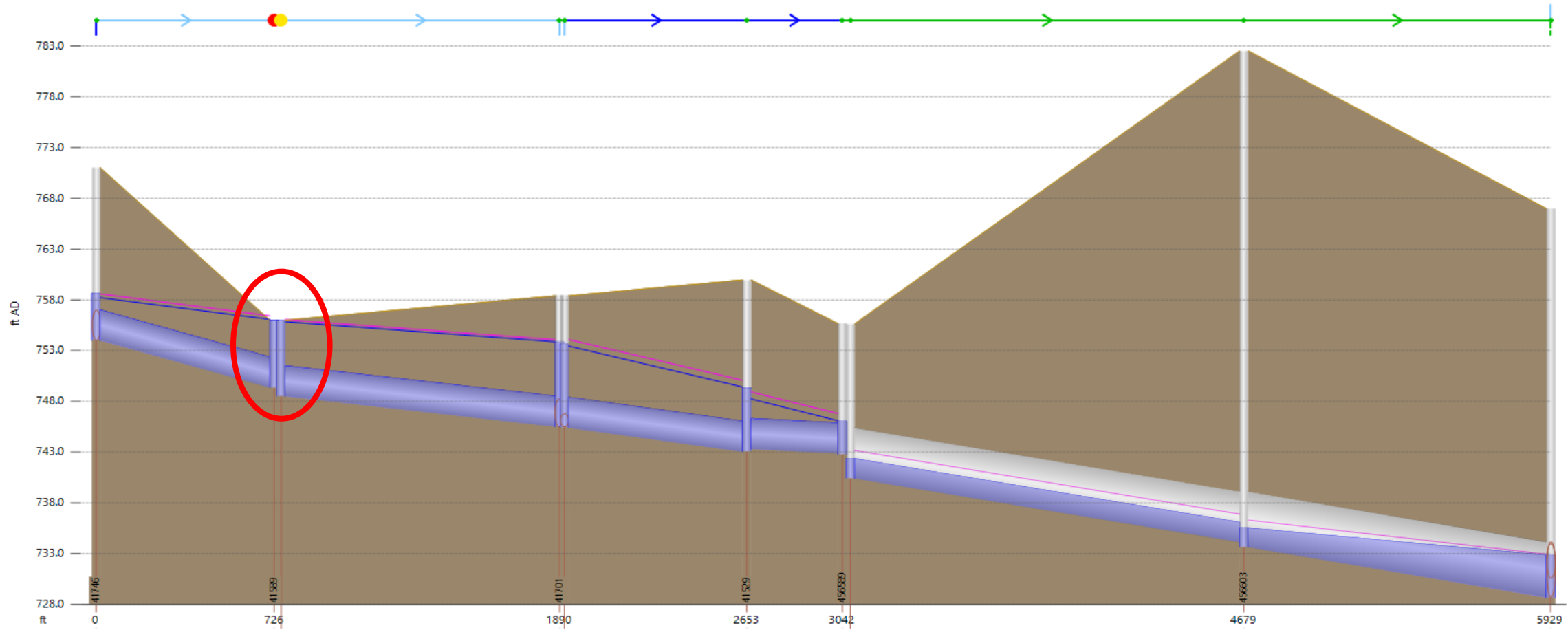


Table VII-I:
Condition Categorization Summary

Condition Category	Miles of Small Diameter Sewer Mains ^{1,2}	Miles of Large Diameter Sewer Mains ^{1,3}	Number of Manholes
Category A – Very Good	1,019.32	79.22	21,611
Category B – Good	415.67	52.72	32,406
Category C – Fair Condition	1,156.74	114.29	270
Category D – Poor	332.26	83.18	1,171
Category E – Very Poor	178.93	32.27	262
TOTAL	3,102.92	361.68	55,720

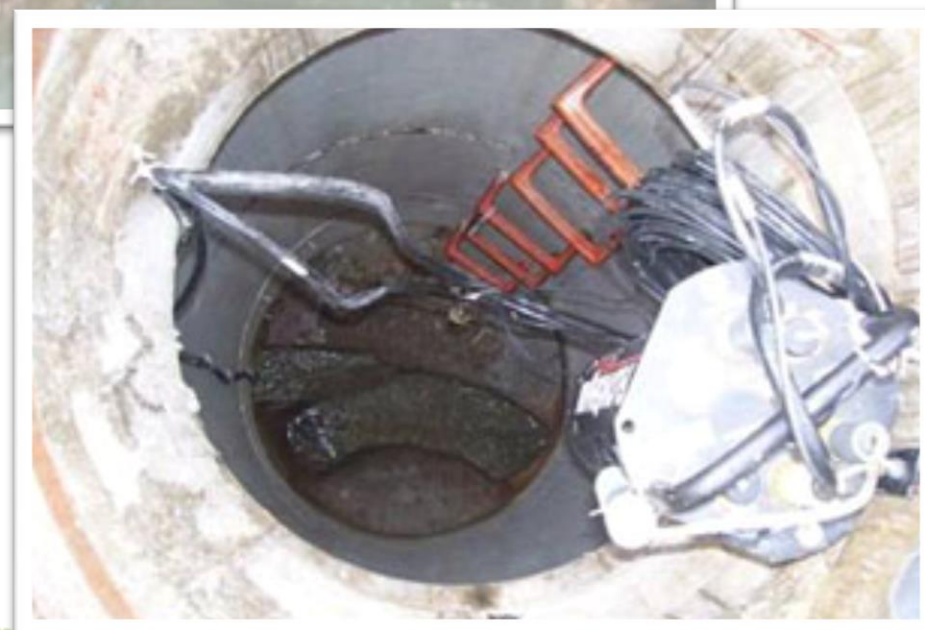
Capacity

What is a Capacity Constraint?

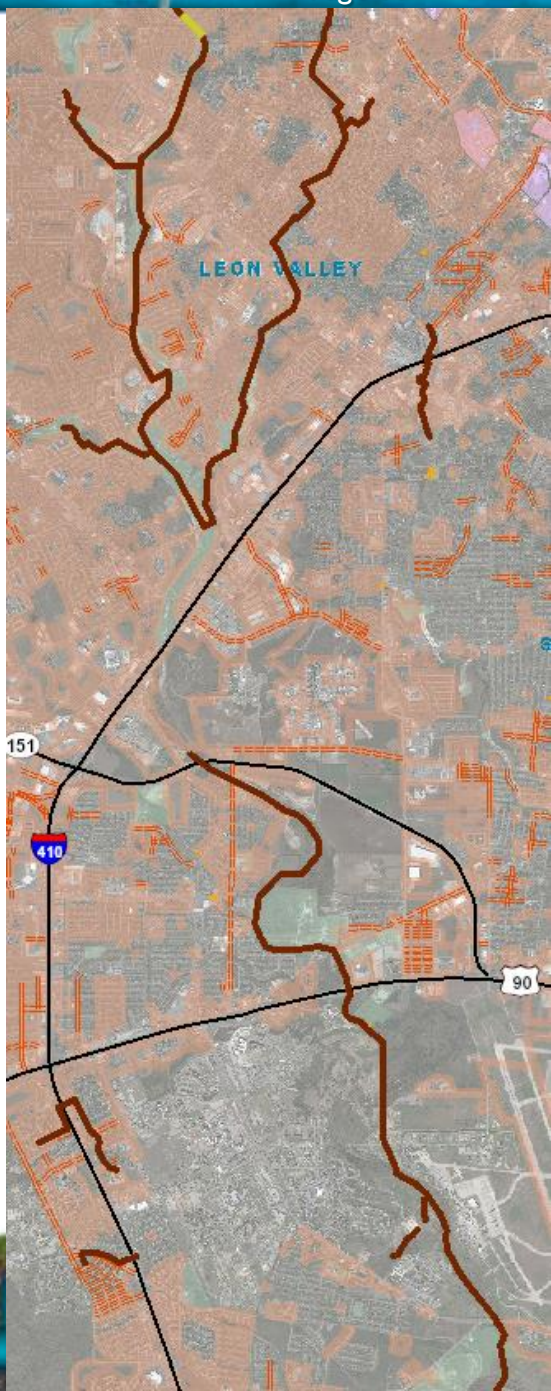
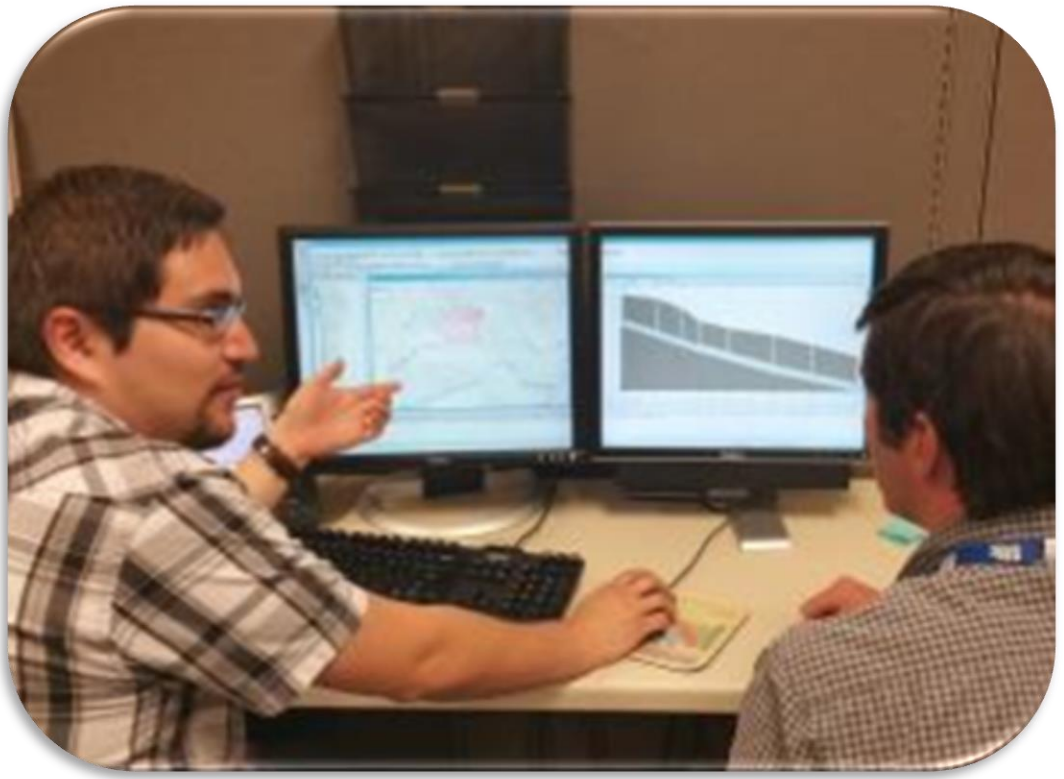


Flow Monitoring Program

- Flow Meters (>200 flow meters)
- Rain Gauges
- Flow Monitoring Contracts
 - Model calibration
 - Inflow & Infiltration studies
 - Capacity Validation



Capacity Assessment

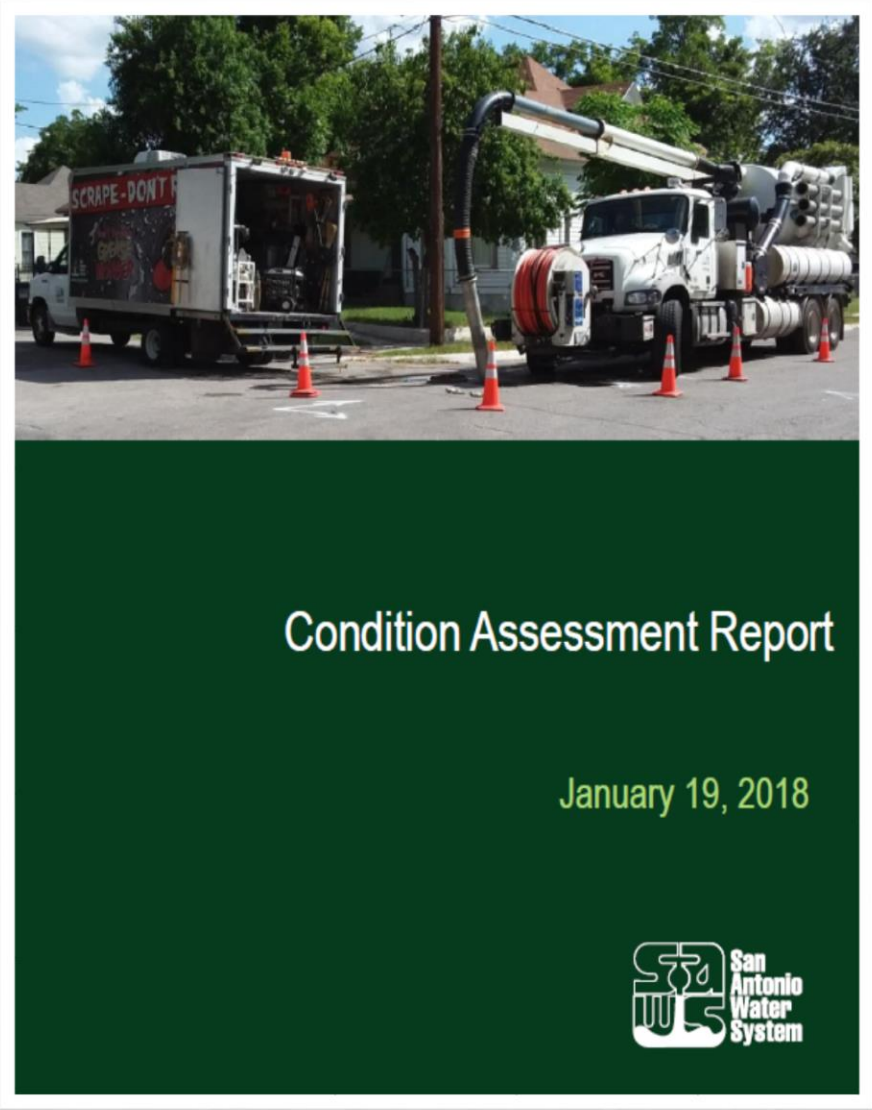


Capacity

Table VII-I: Potential Capacity Constraints Summary	
Category	Number of Potential Capacity Constraints
Priority 1 – Category A SSO per Wet-Weather SSO Categorization and where model also predicts an SSO	45
Priority 2 – Where model predicts SSO, but with no observed SSO, or a Category A SSO per Wet-Weather SSO Categorization, but model does not predict an SSO	130
Priority 3 – Where model predicts HGL near ground elevation	87
Priority 4 – Category B SSO per Wet-Weather SSO Categorization	137
Priority 5 – Where pipe design capacity is exceeded for sustained 60 minutes or more but the HGL is not near the ground elevation	139
Total	538



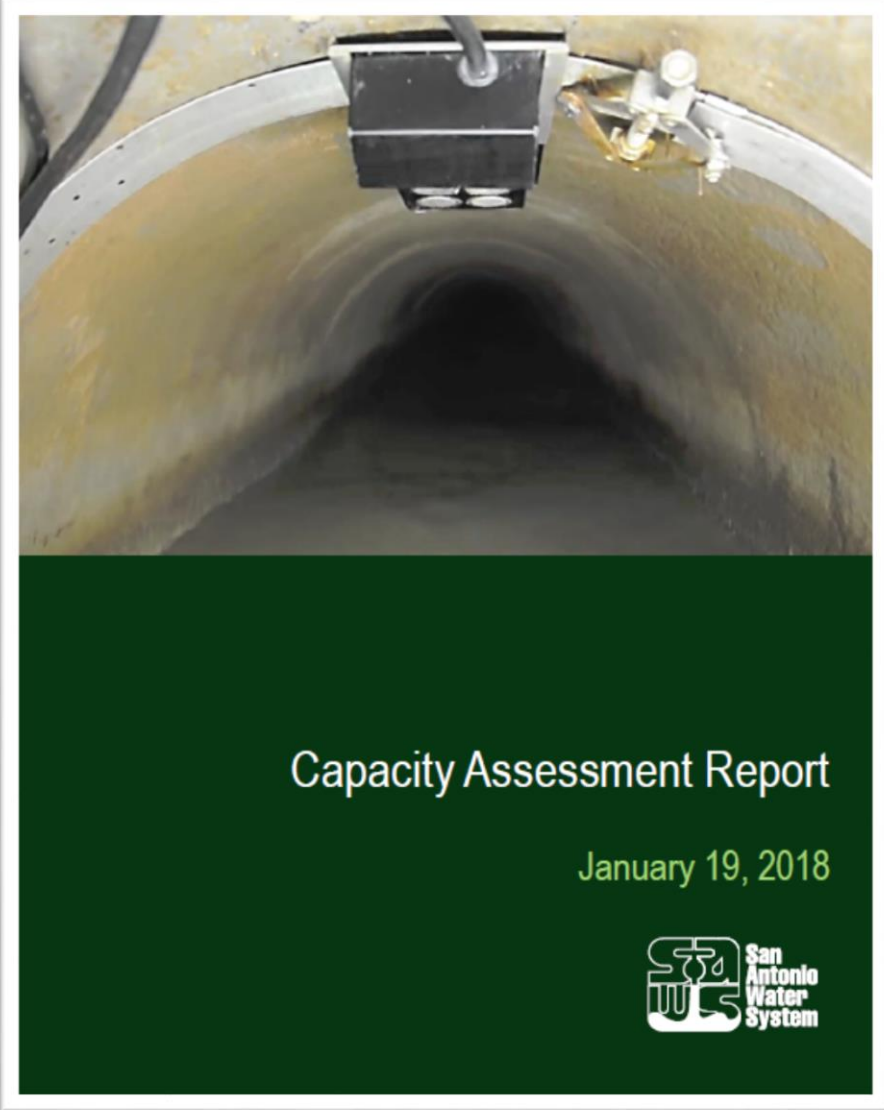
Table IX-I: Capacity Assessment Results	
Capacity Assessment Result	Number of Potential Capacity Constraints
Remedial Measures Alternatives Analysis	170
Monitor in the Future per Capacity Assessment and Remediation Process and Guidelines Appendix (CMOM)	273
Not a Capacity Constraint	95
Total	538



The cover features a photograph of a white utility truck with a long, articulated boom and a trailer labeled "SCRAPE-DONT". The truck is parked on a street with orange traffic cones around it. Below the photo is a dark green section with white text.

Condition Assessment Report


January 19, 2018

The cover features a photograph of a camera view looking down a large, circular pipe. A mechanical device is visible at the top of the pipe. Below the photo is a dark green section with white text.

Capacity Assessment Report

January 19, 2018



CD Compliance Requirements

Program Status

1. Complete Early Action Program Phase I & II
2. Condition and Capacity Remedial Measures Plan
 - Plan due to EPA in January 2019
 - Execute the Plan (Build Projects)
3. CMOM (Capacity, Management, Operation and Maintenance)

Early Action Program

- EAP Phase I
 - Small Dia 64.1 mi
 - Large Dia 22 mi
 - Manholes 1,275
- EAP Phase II
 - Small Dia 89 mi
 - Large Dia 2.9 mi
 - Manholes 355



Maintenance, Monitor or Alternative Analysis



Plan



Alternative Analysis Remedial Measure

- Best Option “Alternative” to Resolve “Remediate”
- Most Practical Solution & Timeframe
- Long-term Performance and Life-Cycle Cost

- Coordinate both Condition & Capacity Projects
- Prioritize & Develop Schedule
- Determine Budget Requirements

Plan: Basin Planning

Overview: 2 Phases (10% and 30% Phases)

10% Design

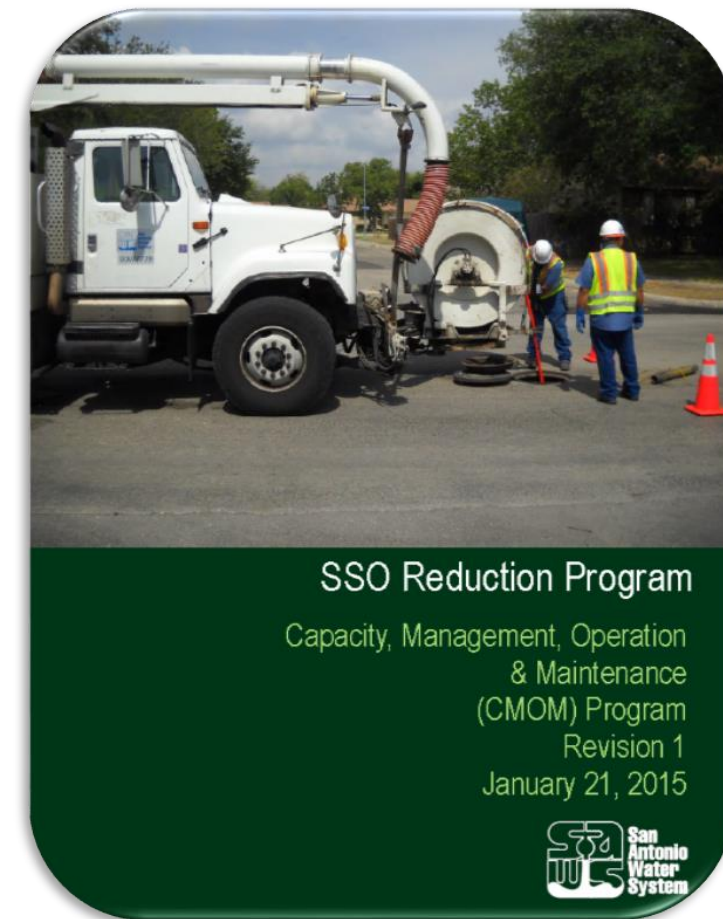
- Develop and finalize alternatives
- Assessment & design
- Recommendation to move forward to the 30%

30% Design

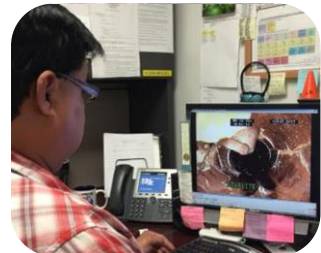
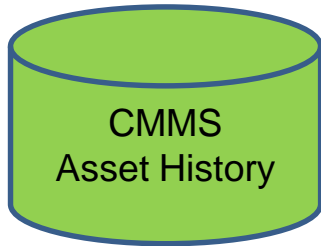
- Perform field verifications/evaluations
- Develop cost data
- Allows rapid progress in final Design & Construction

Capacity, Management, Operations & Maintenance

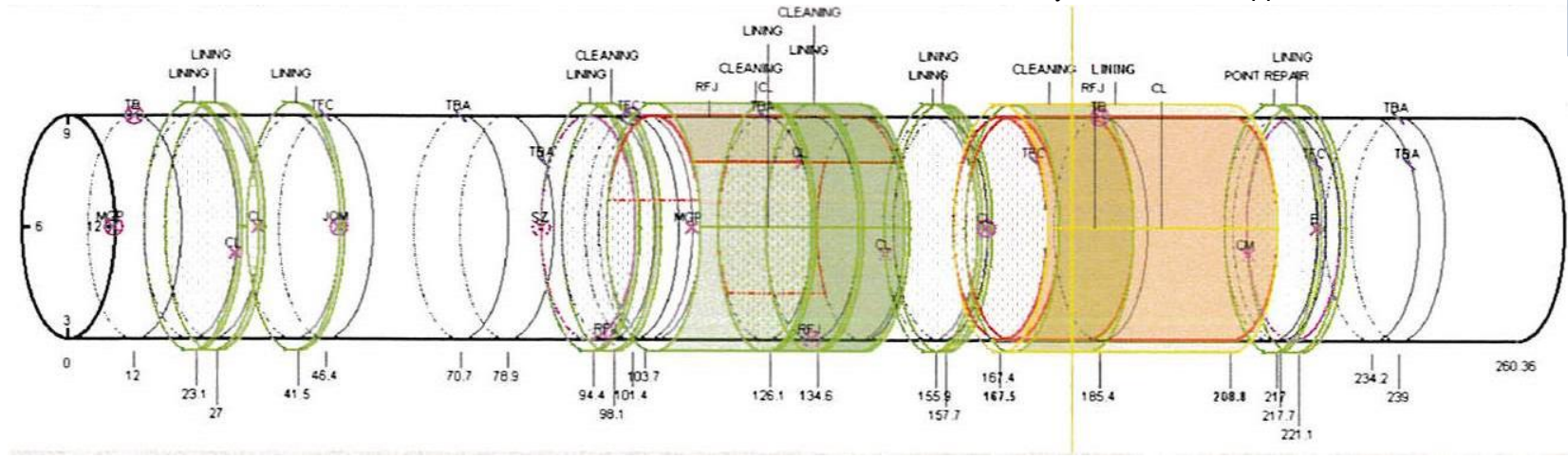
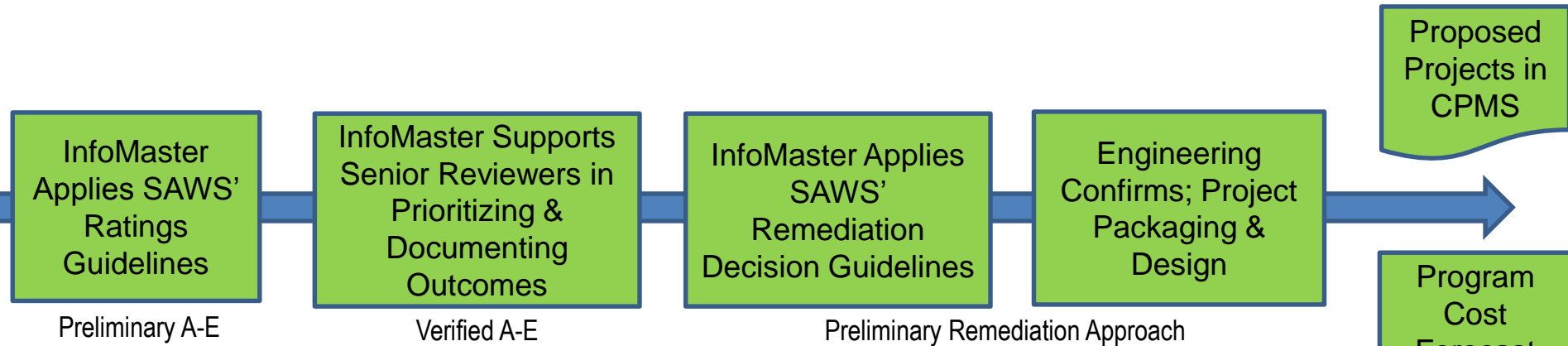
- Condition & Capacity Monitoring Program
- System Wide Cleaning
- Smart Clean Program
- Large Diameter Sonar/Cleaning
- Fats, Oils and Grease Management



Assessment & Remediation Planning



PACP Coding



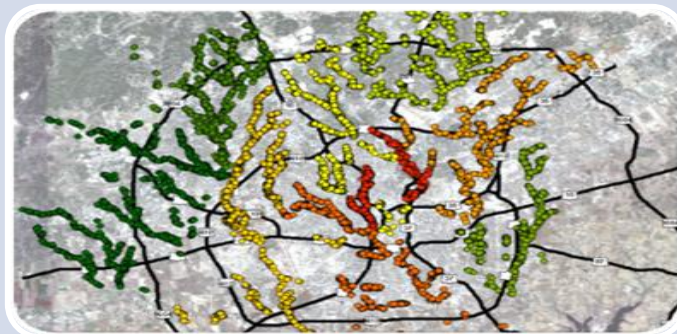
Smart Clean Program

In Progress

- Smart Clean Covers will be installed on 200 manholes
- Resource optimization through trend analysis and remote alarm system integration



Inflow Reduction Program

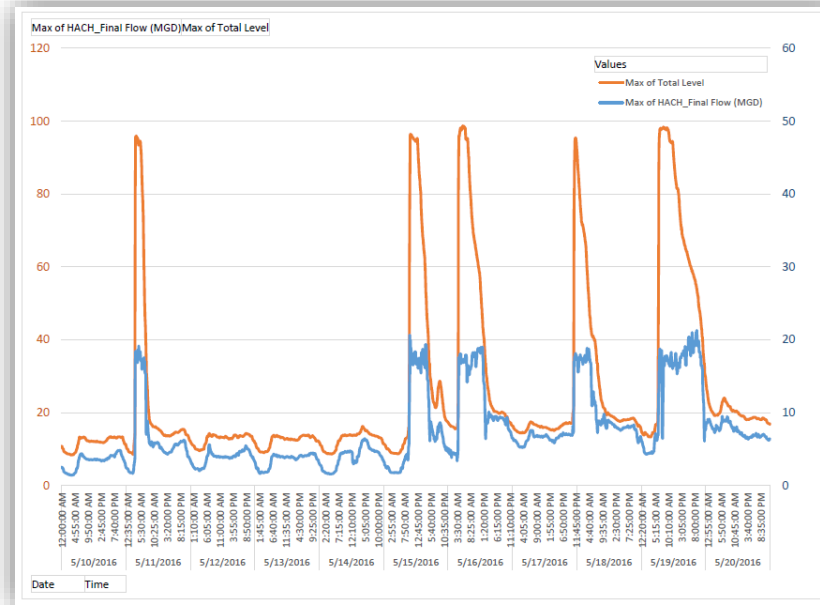
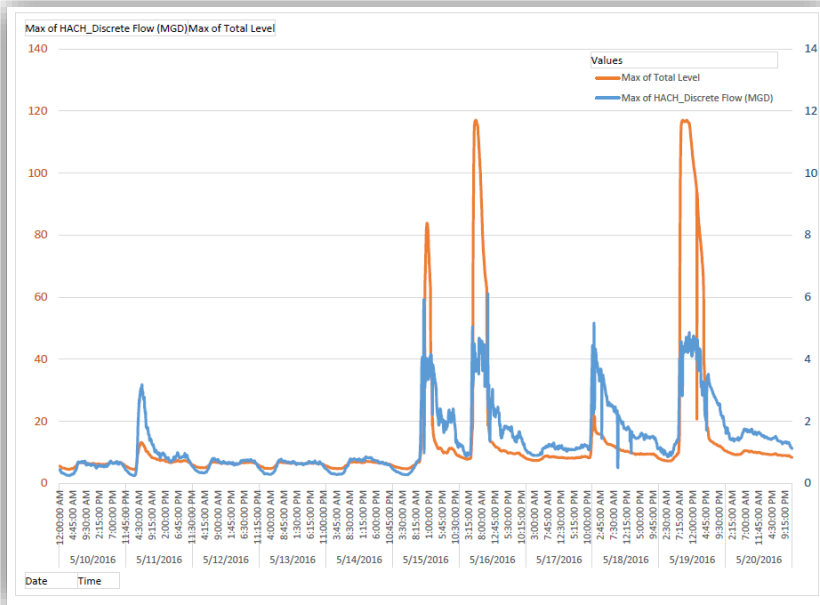


Flood Plain
Analysis



Manhole Lid
Testing

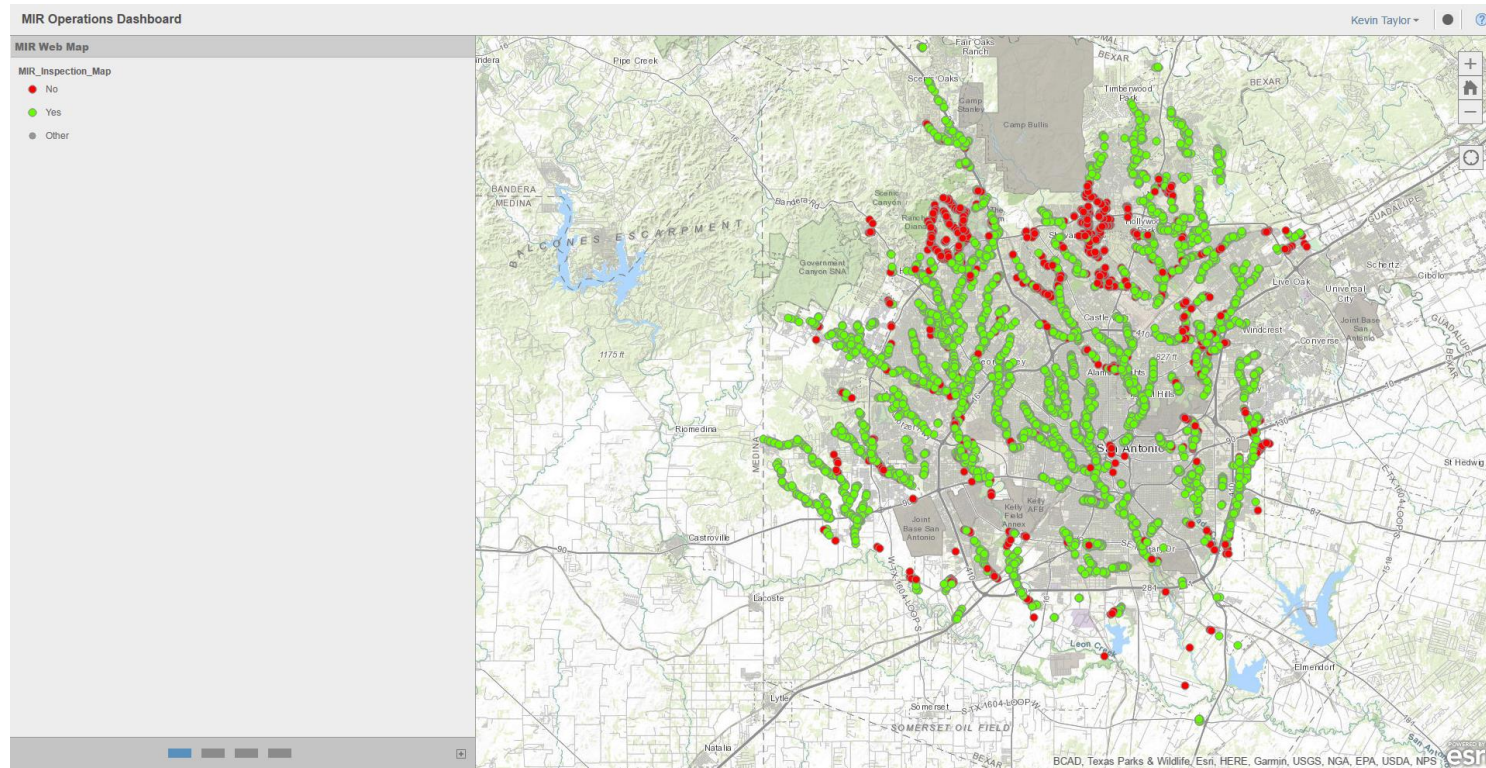
Manhole Defect



Manhole Testing: What is the MH Cover



Manhole Inflow Reduction (MIR) Program



- Deployed Mobile Application in July 2017
- Integrates with existing ArcGIS solutions at no additional cost to SAWS



- 100 Year Flood Plain & Low-Lying Creek Beds (Phase 1)
- Total of 8588 manholes

Asset Management

Sample Project: DR #970 - Concepcion Park

San Antonio Water System **Contract & Project Management System**

Workspace **Planning** Implementation Projects Resource Core Business/Category Financials Documents Assets Users

Project Management

Project: Pro-10319 - Phase VII Group III - IH 35 and Hwy 90, DR #970 - Concepcion Park

Planning Implementation Documents Schedule **Assets** Settings Closeout Resources Emails Locations

Comp Key: District: Urgent fix: Asset Remedial Measures:

Map NO.: Construction Methods: Asset Type:

Records per page 50 Current Page 1 / 1

Asset Type	Map NO.	From Asset ID	To Asset ID	Asset ID	COMPKey	Construction Methods	Asset Remedi...	Associated Project	Job No.	Associ...
<input type="checkbox"/> Sewer Main	160564	26934	26605	N/A	991196	Main/Lat - Open Cut		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Main	160566	1019358	26603	N/A	982692	Main/Lat - Open Cut		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Main	160566	1019376	1019358	N/A	3618008	Main/Lat - Open Cut		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Main	160564	1019348	1019376	N/A	3618071	Main/Lat - Open Cut		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Main	160564	1019372	1019348	N/A	3618007	Main/Lat - Open Cut		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Manh...	160566	N/A	N/A	1019358	3616564	MH/LS/PS/Pump - Replace		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Manh...	160566	N/A	N/A	1019376	3616568	MH/LS/PS/Pump - Replace		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Manh...	160564	N/A	N/A	1019348	3616561	MH/LS/PS/Pump - Replace		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Manh...	160564	N/A	N/A	1019372	3616566	MH/LS/PS/Pump - Replace		Pro-10319 - Phase VII Group III - I...	16-4524	
<input type="checkbox"/> Sewer Manh...	160566	N/A	N/A	26603	435154	MH/LS/PS/Pump - Replace		Pro-10319 - Phase VII Group III - I...	16-4524	

Select all found records

Records per page 50 Current Page 1 / 1



San Antonio Water System **Contract & Project Management System**

Workspace **Planning** Implementation Projects Resource Core Business/Category Financials Documents Assets Users

Asset Management

Asset: 982692

* Comp Key: 982692

Asset ID:

From Asset Type:

From Asset ID:

Installation Date:

Depth:

Length:

As Built:

Map NO.:

UPS Depth:

DWN Depth:

Cover Type:

Barrel Diameter:

Urgent fix:

Asset Remedial Measures:

Asset Type:

To Asset Type:

To Asset ID:

Location:

Service Status:

Diameter:

Pipe Type:

District:

UPS Invert Elev.:

DWN Invert Elev.:

Critical Rating:

Cover Diameter:

Construction Methods:

Status:

Other Details

Commented By:

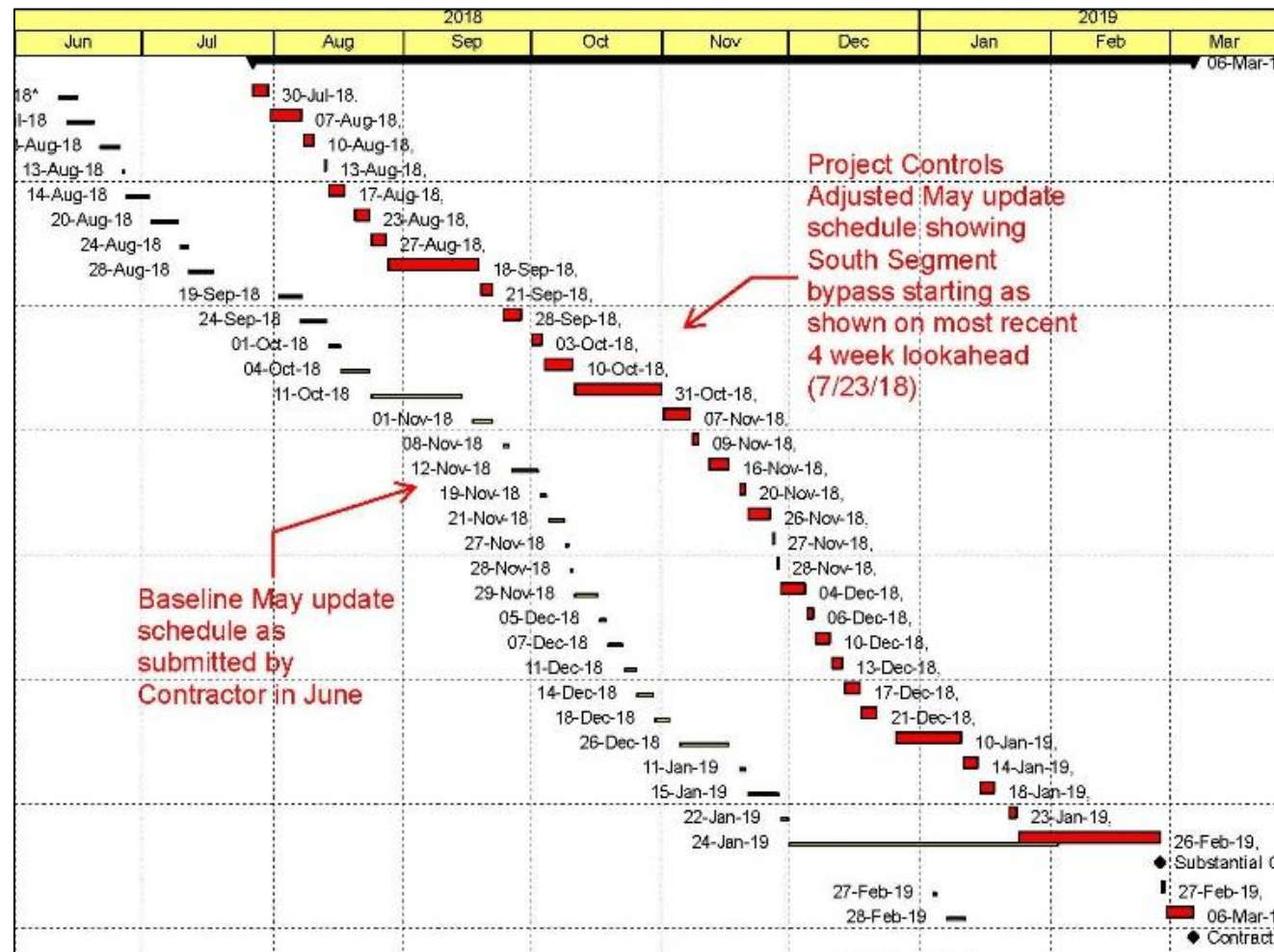
Records per page 50 Current Page 1 / 1 Record 1 - 1 of 1

ur 20180815] This asset was rehabbed on project 16-4524. Part of the asset is L...

Project Controls

Project Planning/Monitoring

- Engineering & Construction Master Schedule: plan and monitor project lifecycle for SAWS CIP and SSO Projects
- Monitor and report construction progress on critical SSO projects



Project Closeout (Engineering Portion)

Contract & Project Management System (CPMS)

- Key Documentation is required for Project Completion:
 - Final Design Plans
 - CPMS Asset Status and Construction Method updates for all Assets affected by Construction Project
 - Final Field Acceptance Checklist (FFAC)
 - Contractor Redlines
 - Final As-Builts
 - Post-Construction CCTV (Sewer)

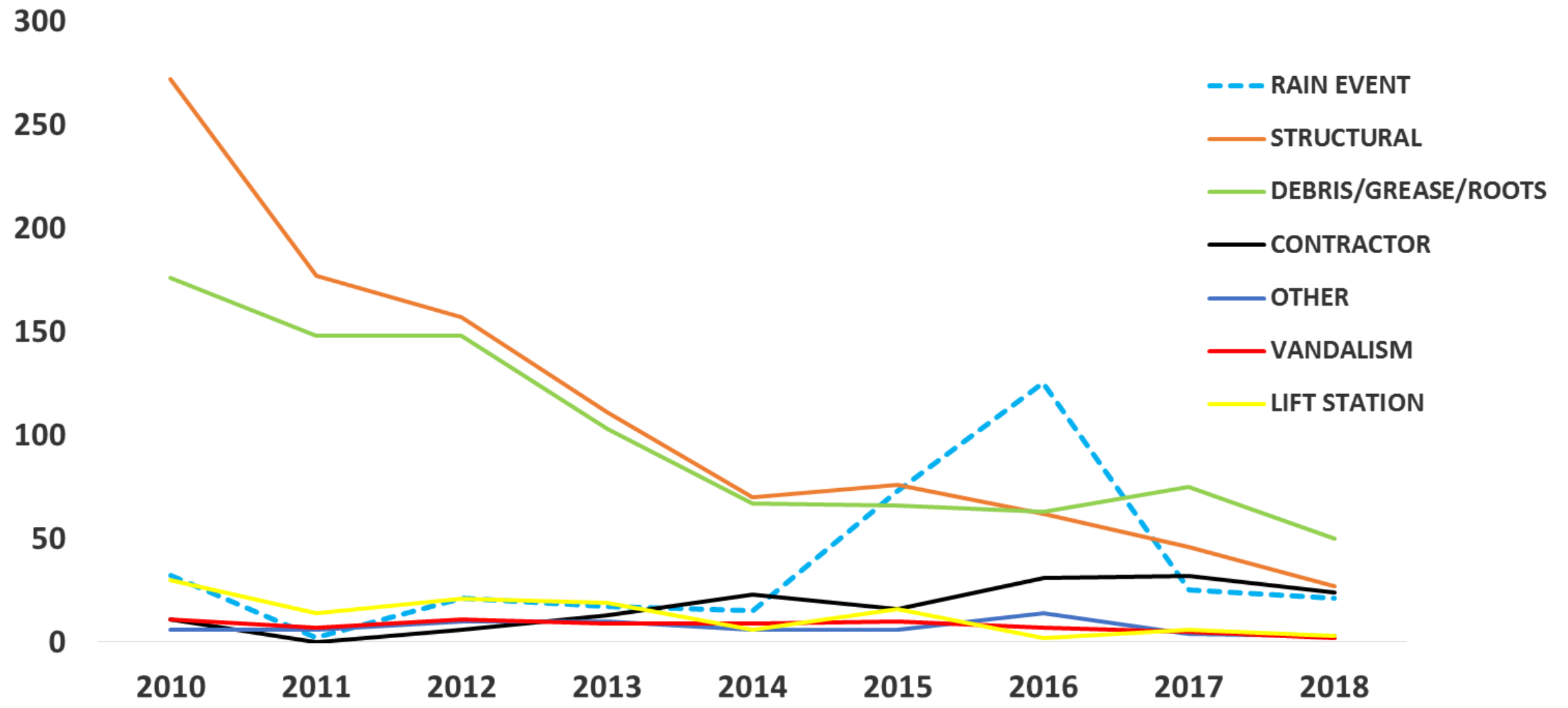
Technology

Customers: Dedicated Sewer Microsite



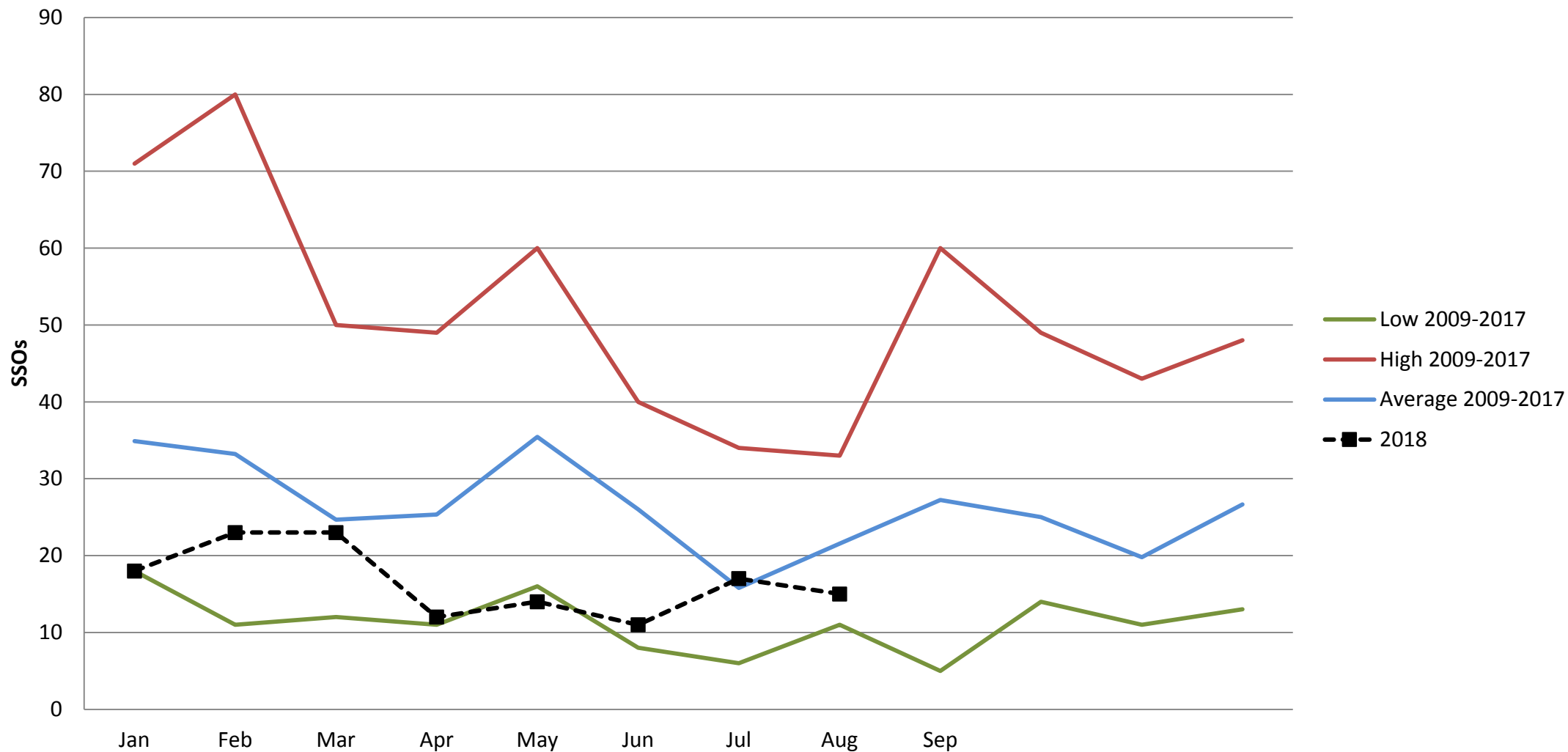
- <http://sewer.saws.org/>
- Address or landmark name
- Provides project timelines

SSO Root Cause



Program Effectiveness

193 SSOs for 2017 a record low!
Note: SAWS owns the lower lateral

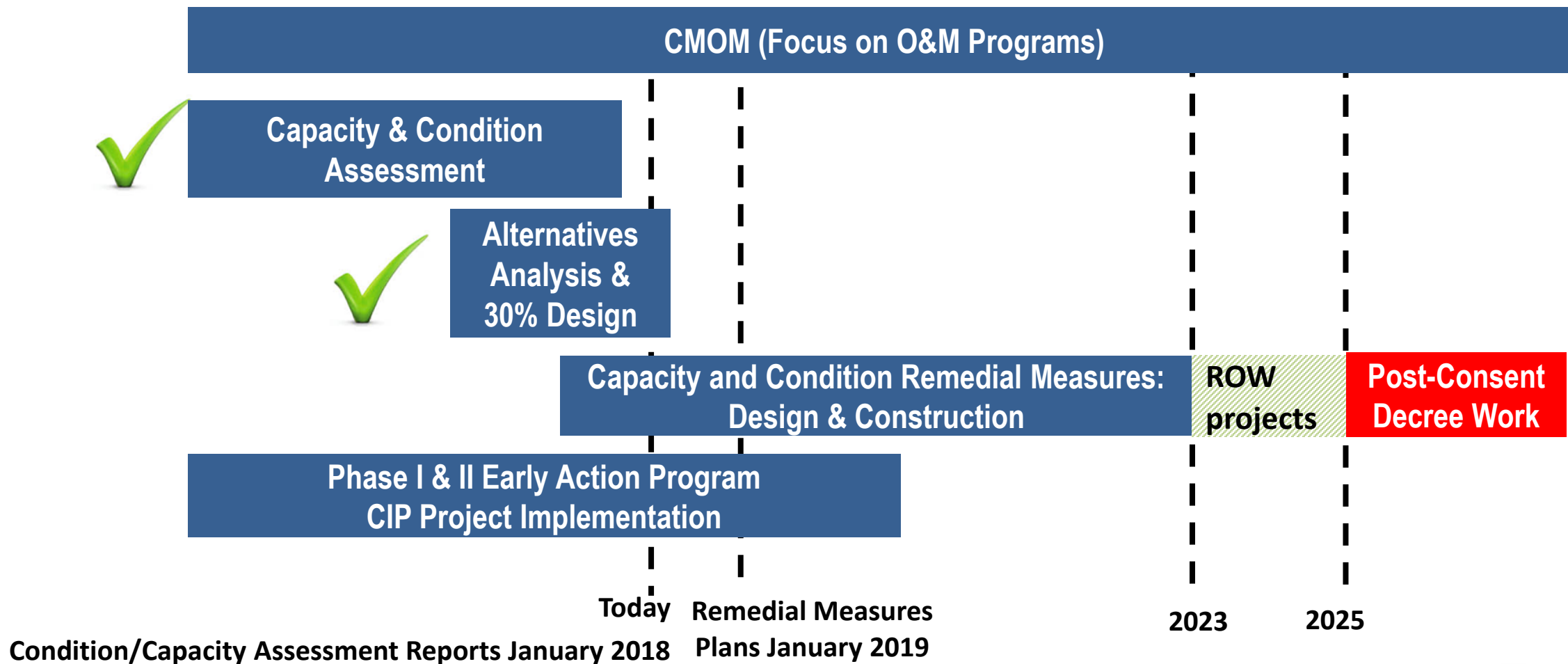


SSO: Achievements



SAWS Consent Decree Timeline

Nearing Completion of the Alternatives Analysis Phase

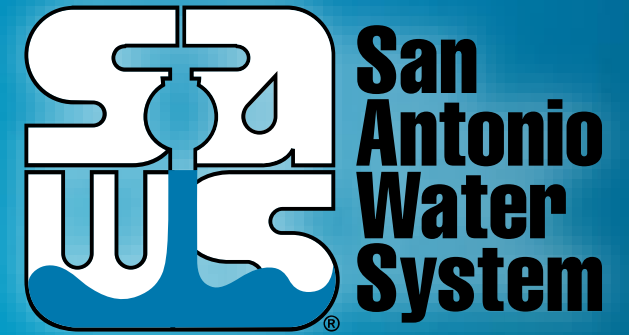


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