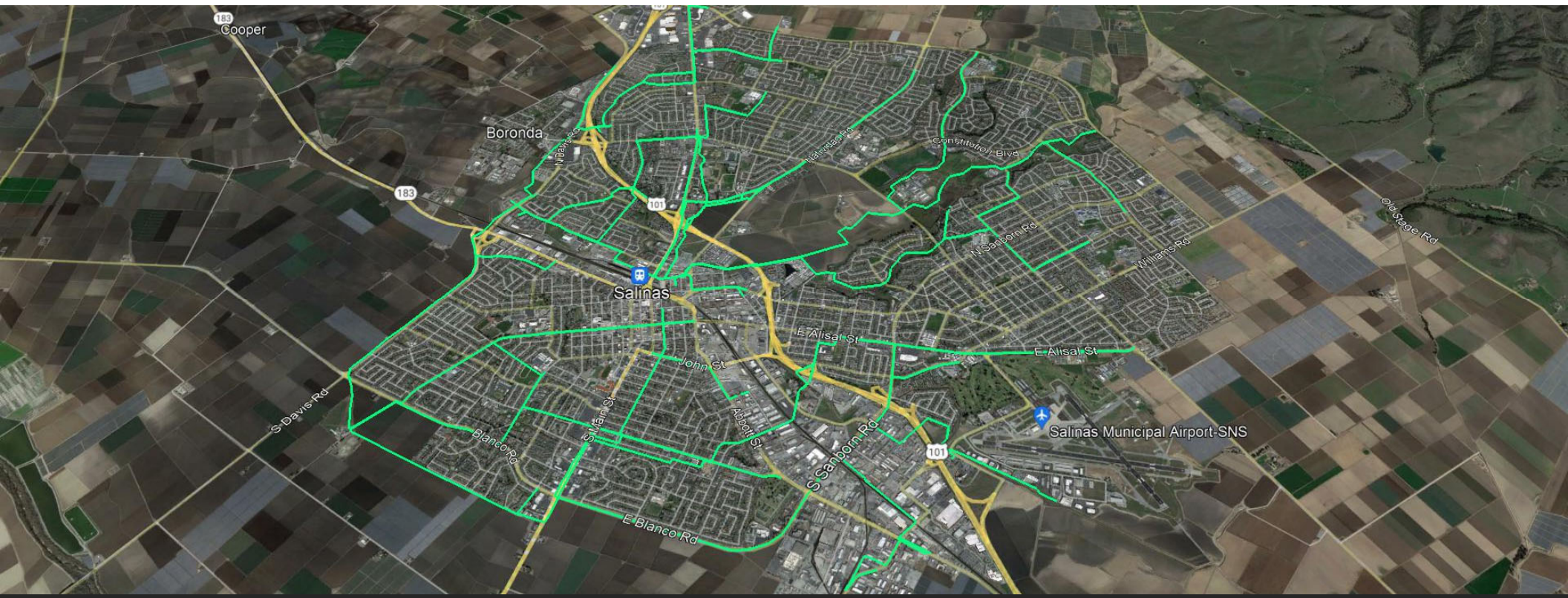




City of Salinas

Draft Sanitary Sewer Master Plan Update (SSMPU)

Prepared by Wallace Group
 Kari Wagner, PE Principal/Director of Water Resources
 Andrea Kingsbury, PE Civil Engineer



Presentation Overview

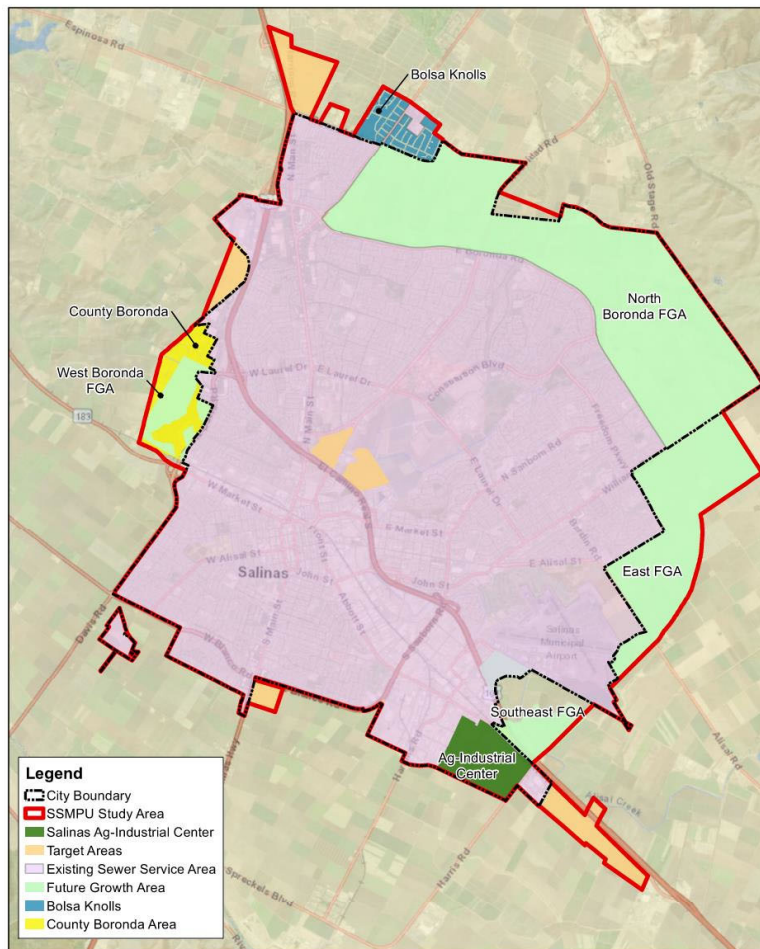
- Master Plan Objectives
- Study Area
- Flow Monitoring
- Existing & Future Sewer Flows
- Sewer Model Overview & Results
- Capital Improvement Program
- Next Steps

SSMPPU Objectives

- Comprehensive Update to City's 2011 Sewer Master Plan
- Provide City with working, living, functional document to use for budgets, schedule improvement, and plan for the future
 - Calibrated Sewer Model
 - Prioritized Capital Improvement Program (existing and future conditions)

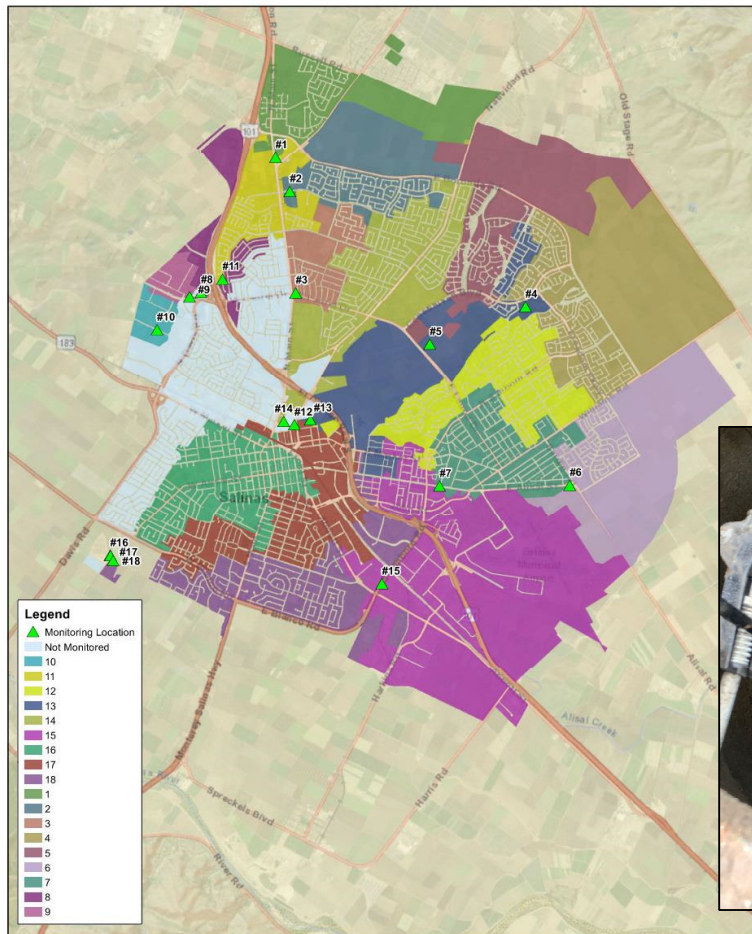
SSMPU Study Area

- Existing Service Area
- Future Growth Areas
- Target Areas
- Bolsa Knolls



Flow Monitoring

- Velocity, level, and direction of flow
- 18 monitoring locations
- 45 days
- Insignificant rainfall to determine Inflow and Infiltration



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SALINAS SEWER MASTER PLAN UPDATE

FIGURE 4-1
FLOW MONITORING
LOCATION & SEWERSHEDS

NOTES:
ESRI BASEMAP
WALLACE GROUP DID
NOT PERFORM BOUNDARY
SURVEY SERVICES FOR THIS
MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED FEBRUARY 2023.

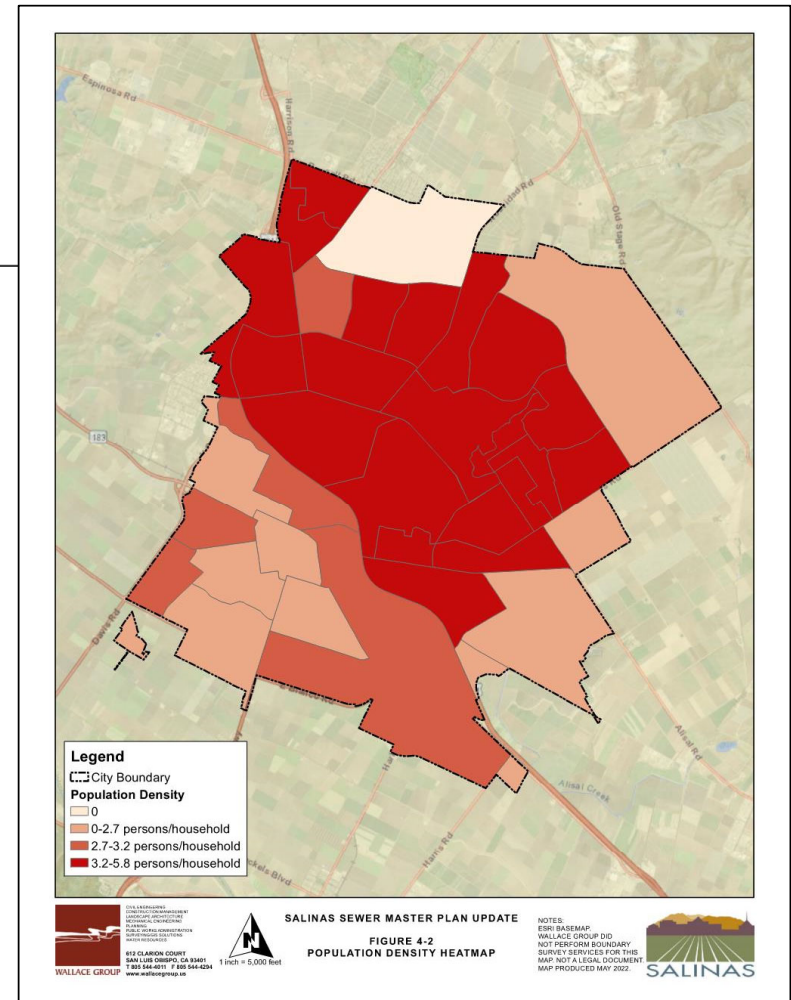


Existing Sewer Flows

- Flow factors based on land use type and population
 - Water Use Data
 - Flow Monitoring Sewersheds
 - Densification per 2020 Census Tract data

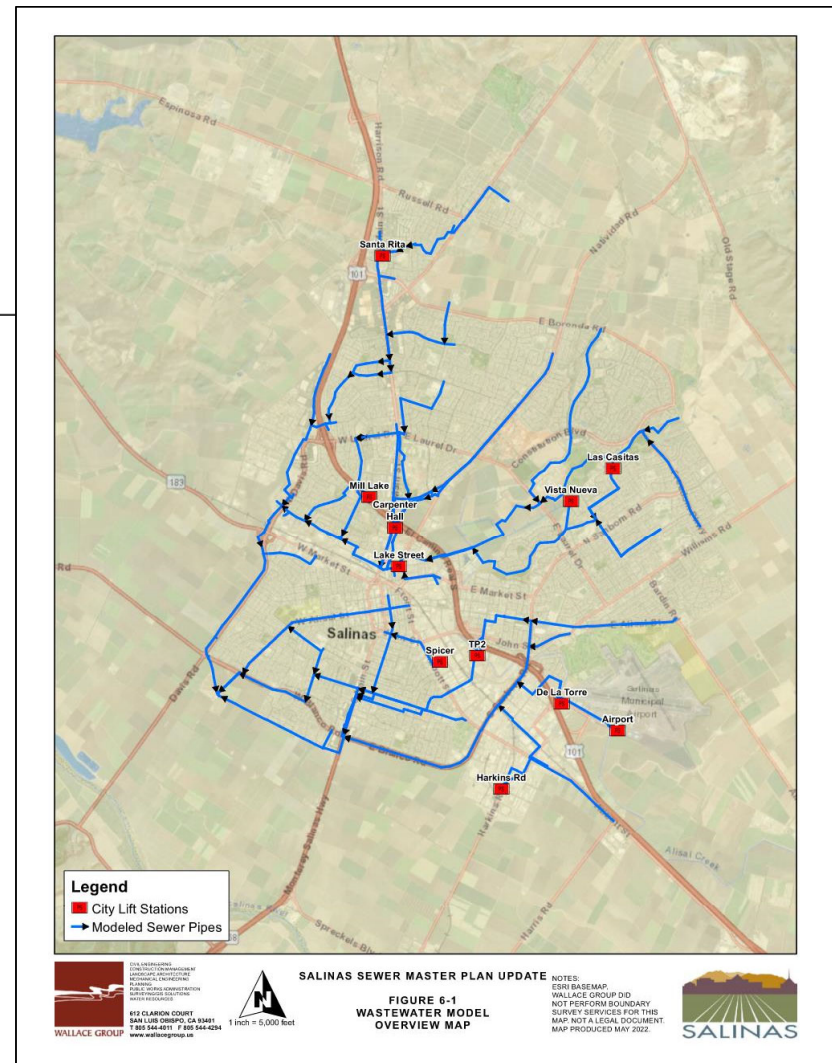
TABLE 4-4. EXISTING FLOW FACTORS

	QUANTITY	UNIT	FLOW FACTOR (GPD/UNIT)	EXISTING AVERAGE FLOW (GPD)
RESIDENTIAL	159,143	Persons	54.5	8,673,200
MOBILE HOME	4,399	Persons	30	131,900
HOTEL	649	Rooms	19.5	12,600
COMMERCIAL	16,289,742	SF	0.08	1,221,700
INDUSTRIAL	7,087,044	SF	0.04	248,000
SCHOOL	38,365	Students	4.5	172,600
EXISTING AVERAGE DAILY FLOWS				10,460,000



Sewer Collection System Model

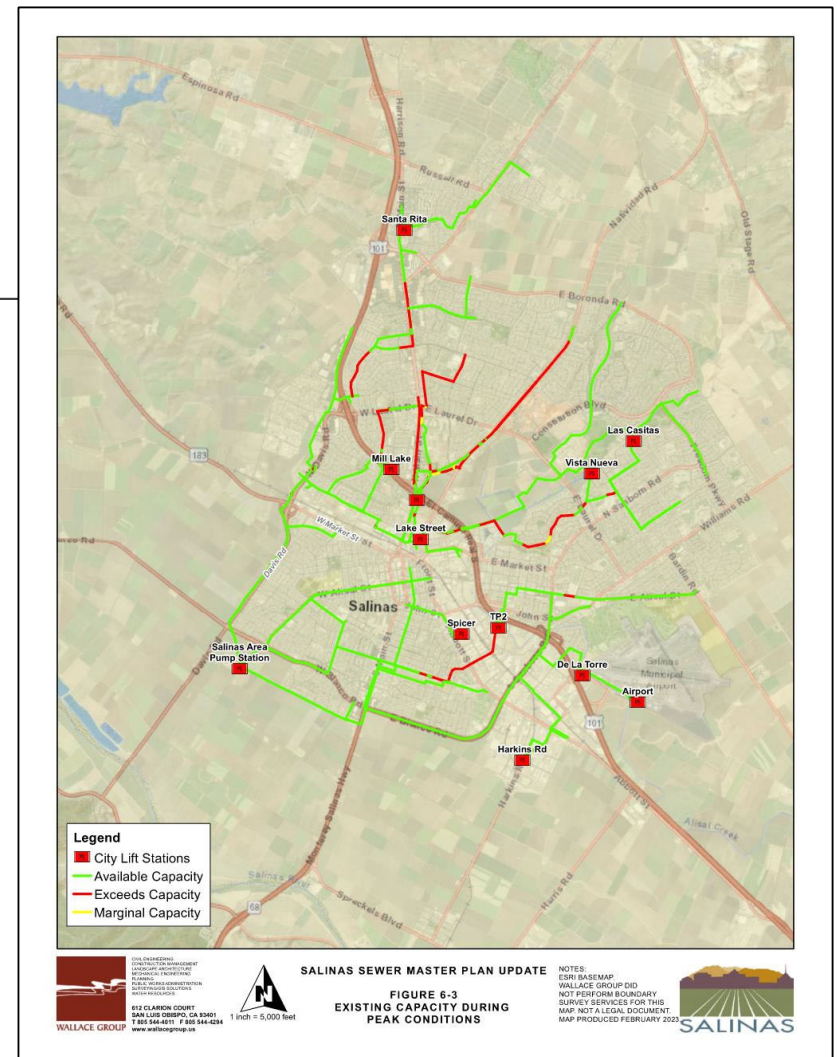
- Main Trunk Sewer (10-inch and larger)
 - Wallace Group surveyed 689 manholes
 - Manhole Rim and Condition; Pipe Invert and Diameter
 - As-built record drawings
- 11 City Lift Stations
- Flow Scenarios (Existing & Future)
 - Average Daily Flow
 - Max Day, Dry Weather Flow
 - Peaking Factor=1.5
 - Peak Hour Wet Weather Flow
 - Rainfall Dependent Infiltration and Inflow Rates
 - Existing: 1,200-3,000 gallons/acre/day
 - Future: 500 gallons/acre/day



Existing System Deficiencies

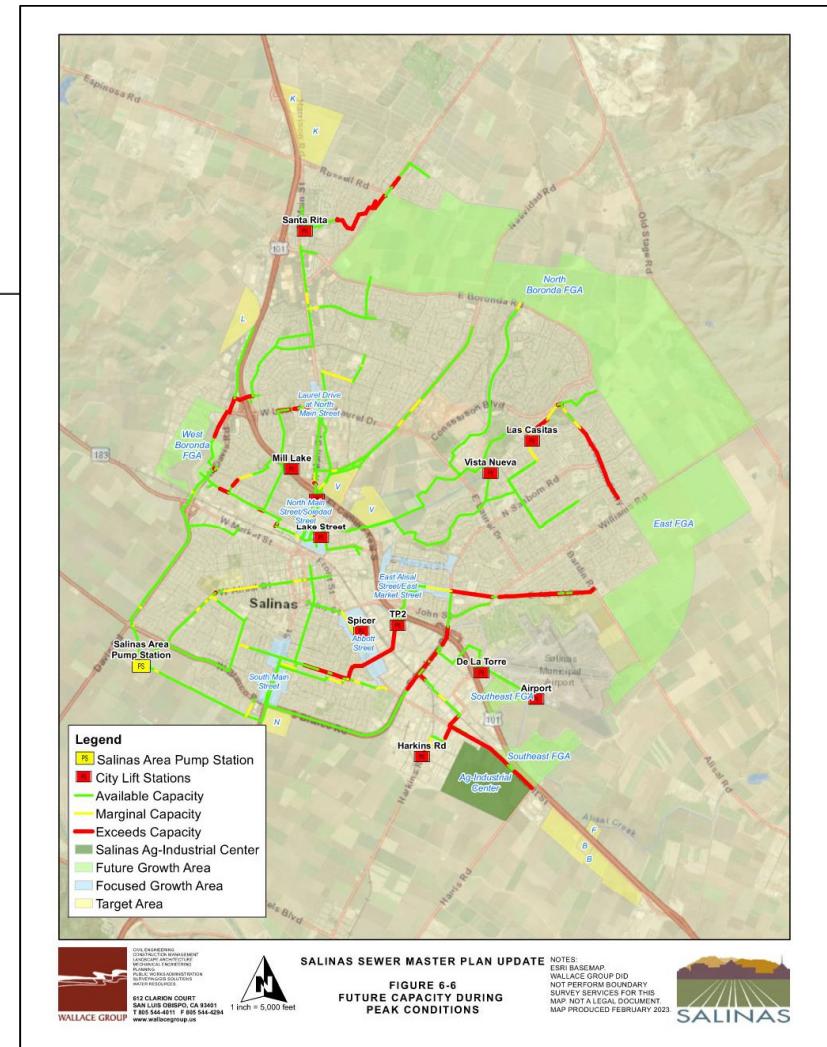
TABLE 6-1. HYDRAULIC CRITERIA FOR EXISTING SYSTEMS

STANDARD	CRITERIA
VELOCITY	Minimum: 2.0 ft/s for peak flows; 1.75 ft/s at average rate of flow Maximum: 8.0 ft/sec
MINIMUM SLOPE	6-inch: 1.0% 8-inch: 0.40% 10-inch: 0.26% 12-inch & above: 0.20%
FRICTION FACTOR	Manning's n (gravity)=0.013 for Vitrified Clay Pipe (VCP) 0.011 for Polyvinyl Chloride (PVC) Hazen-Williams C (pressure)=100 to 120 depending on pipe size, material, and age
MINIMUM PIPE SIZE	8-inch
MAXIMUM ALLOWABLE FLOW DEPTH	10-inch or less: $d/D=0.67$ 12-inch to 24-inch: $d/D=0.80$ 27-inch or greater: $d/D=0.90$
SURCHARGING	Allowed as long as the Hydraulic Grade Line (HGL) remains at least 5-Feet Below the rim elevation
FORCEMAIN HYDRAULICS	Minimum: 2.0 ft/s Maximum: 5.0 ft/s



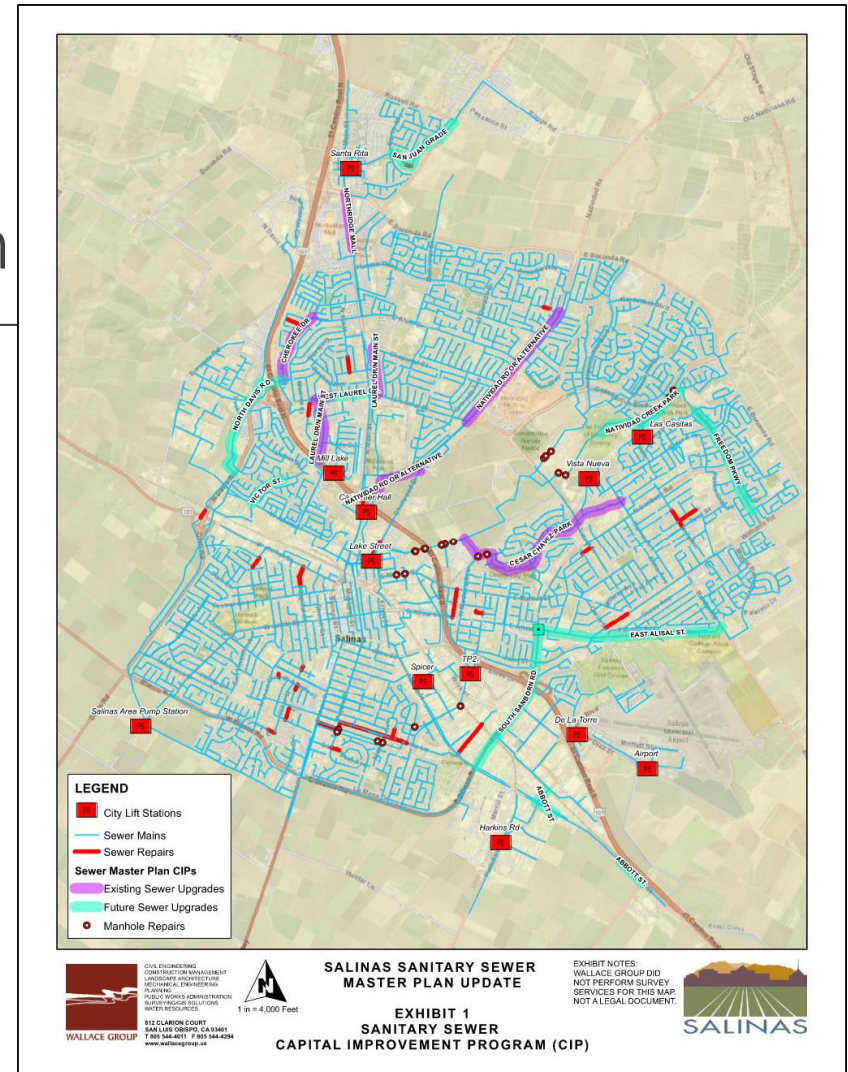
Future System Deficiencies

- Future Flow Total= 17,715,200 gallons per day
- Flow factors applied to future land use
- Future flow assumptions
 - Based on most probable connections
 - Assume gravity flow, no lift stations (except Ag-Industrial Center)
 - Based on projected land use, per the General Plan
- **Modeling should be performed during planning and design phases for future developments if different than the assumptions made in the SSMPU**



Salinas SSMPU Capital Improvement Program

- Existing CIPs
 - Implementation of existing CIPs to be completed over the next 1-7 years
 - Hydraulic Deficiencies and O&M Repairs
 - Lift Station Upgrades
- Future CIPs
 - Implementation of future CIPs to be completed as development comes on-line
 - Identified based on impact of future developments





Existing CIP Project #4: Northridge Mall

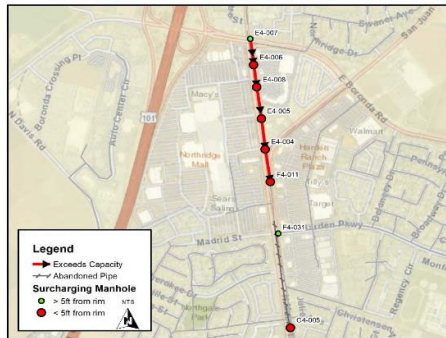
City of Salinas Capital Improvement Project Information Sheet
2022 Sanitary Sewer Master Plan Update

Project Trigger

- ☒ Existing Condition
- ☒ Future Condition

Project Components

- ☒ Upgrade Gravity Pipeline
- ☒ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole



Project Need

- ☒ Insufficient capacity for existing flow
- ☒ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost ¹	\$1,916,000
Planning, Engineering, CM, Legal/Admin (40%)	\$766,400
Total Project Cost	\$2,682,400

Project Description

The Northridge Mall Existing CIP project proposes the upsizing of approximately 2,300 ft of 15-inch pipe to 18-inch from MH E4-007 to MH F4-011 along N Main St. These pipe segments run 100% full during existing peak flow conditions. It is also recommended to connect the 18-inch pipe at F4-007 to the 27-inch pipe at MH F4-031, abandoning 1,800 feet of the parallel 12-inch line along North Main Street from MH F4-031 to G4-005. This connection will require trenching in a roadway where concrete has been identified. A cost per lineal foot to remove and replace the concrete has been added to the construction cost. With current conditions, six (6) manholes are surcharging within 5 ft of the manhole rim in the existing PHWWF condition.

1. Construction costs are expressed in Year 2022 dollars, using an ENR construction Cost Index of 13004, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY: AC & AK
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San Luis Obispo, CA

Existing CIP Project #4: Northridge Mall

Capital Improvement Program (Existing)

- Existing CIPs (\$90-\$120 million)
 - Six (6) projects identified as hydraulic deficiencies
 - Twenty-one (21) O&M Repairs
 - CCTV Program
 - Inflow/Infiltration Evaluation
 - Brick Manhole and Flushing Inlet Inspection/Replacement
 - Includes over \$30 million in lift station upgrades



TABLE 5-8. SUMMARY OF LIFT STATION UPGRADES BASED UPON VISUAL INSPECTION

Recommended Lift Station Capital Improvements Location	Repair/Replace Pump/Motor	Replace Control Panel/MCC	Repair Control Panel Disconnects	Install/Upgrade Generator Receptacle & Transfer Switch	Move Control Panel to Above Grade	Evaluate Generator Upgrade	Upgrade Level Controller/SCADA	Coat Wet Well / Dry Well	Install Emergency Bypass	Install Emergency Overflow	Provide Washdown Water	Address Safety/Falling Hazard Concerns
Airport	X		X				X	X		X	X	
Carpenter	X		X	X		X	X		X	X	X	
De La Torre	X		X	X	X		X	X	X	X	X	
Harkins Rd	X		X	X	X		X		X	X	X	
Lake Street	X	X	X			X	X			X	X	X
Las Casitas	X		X		X		X	X	X	X	X	
Mill Lake			X		X		X		X	X	X	
Santa Rita			X		X	X	X	X	X	X	X	
Spicer			X	X	X		X		X	X	X	
TP2	X		X			X	X		X	X	X	X
Vista Nueva	X						X	X		X	X	X

Capital Improvement Program (Existing Lift Station)

- Lift Station Evaluation performed by Fluid Resource Management (FRM)
- Lift Station CIPs
 - Lake Street Lift Station pumping capacity is undersized to meet existing peak flows
 - Several site upgrades needed at all lift stations



Future CIP Project: North Davis Rd.

City of Salinas Capital Improvement Project Information Sheet
2022 Sanitary Sewer Master Plan Update

Project Trigger

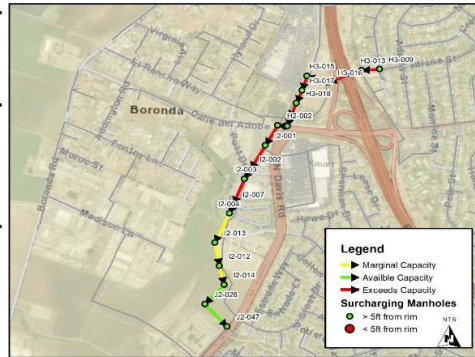
- ☐ Existing Condition
- ☒ Future Condition

Future Flows

West Area Specific Plan	74%
Target Area K	14%
Target Area L	4%
Bolsa Knolls	8%

Project Components

- ☒ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole



Project Need

- ☐ Insufficient capacity for existing flow
- ☒ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost ¹	\$8,430,000
Planning, Engineering, CM, Legal/Admin (40%)	\$3,372,000
Total Project Cost	\$11,802,000

Project Description

The North Davis Road Future CIP recommends upsizing approximately 240 ft of 18-inch to 24-inch from MH-H3-009 to MH-H3-013, 1,700 ft. of 24-inch to 30-inch from MH-H3-013 near Cherokee Dr to MH-H2-002 at Calle del Adobe, and 3,400 ft. of 30-inch to 32-inch from MH-H2-002 to MH-J2-047 at N Davis Rd. Under peak future conditions, this segment runs 43-100% full.
Note: This project assumes Existing Cherokee Drive CIP and Existing Northridge Mall CIP have been constructed.

1. Construction costs are expressed in Year 2022 dollars, using an ENR construction Cost Index of 13004, and will need to be escalated to the year or years scheduled for the work.

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Future CIP Project: North Davis Rd.

Capital Improvement Program (Future)

- Future CIPs (\$48.5 million)
 - Nine (9) projects identified as hydraulic deficiencies
 - Driven by future development and growth areas

Next Steps

- Finalize Sanitary Sewer Master Plan Update Report
- Development Impact Fee Nexus Study and Sanitary Sewer Rate Study

Thank You

Questions?