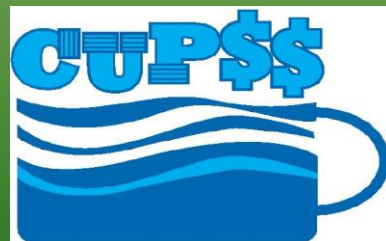




Kure Beach Sewer Asset Management Project Overview

Engineering Services, PA | January 30, 2026



Funding

- DWI Grant #: AIA-W-ARP-0133
- NCDWI AIA Grant: \$150,000

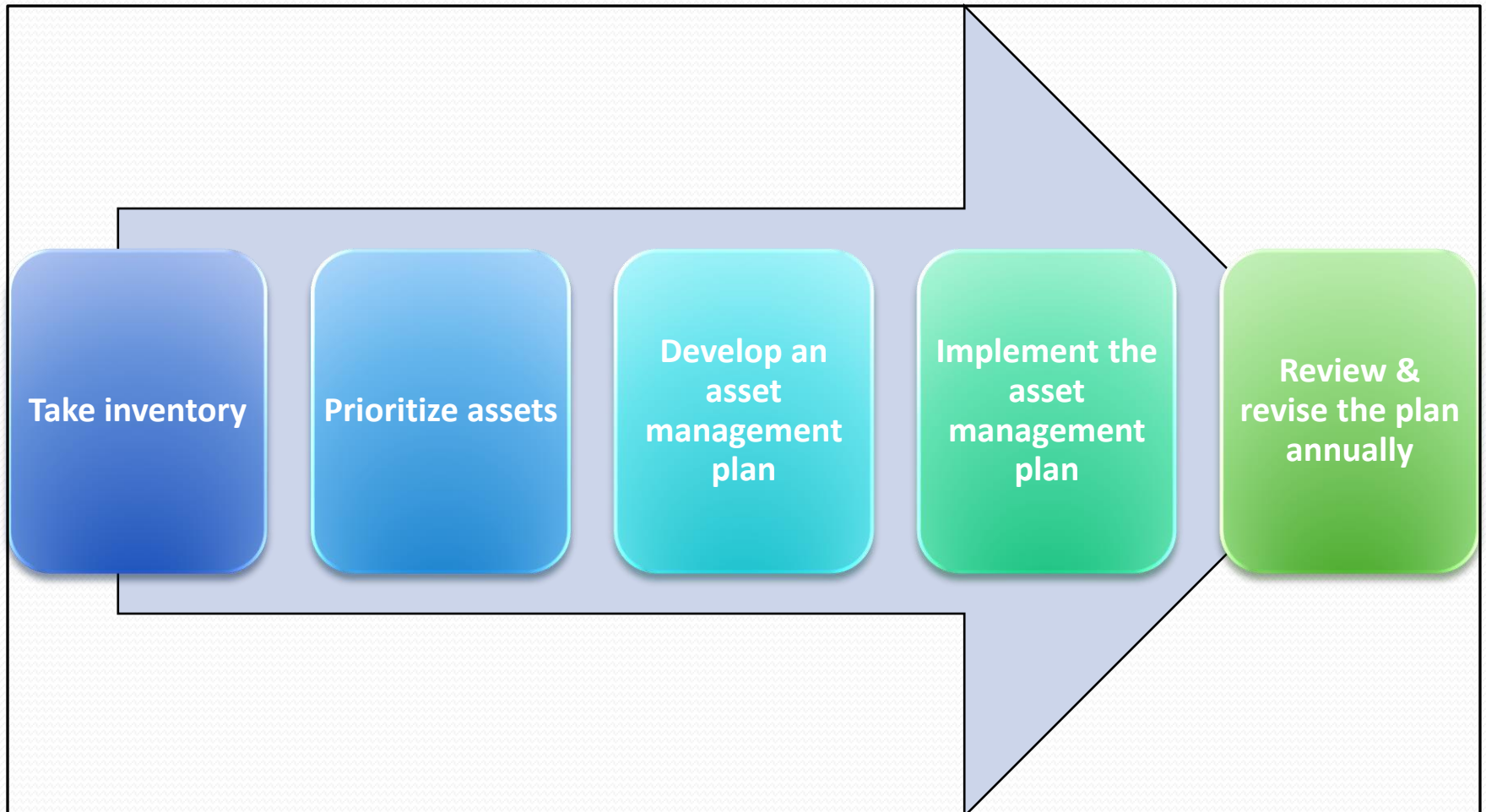
Asset Management Plan Overview

- Describes how the sewer system will be managed
- Provides an inventory & assessment of all sewer assets along with associated databases
- Outlines operation & maintenance (O&M) procedures
- Provides priority projects recommendations & associated costs
- Updated GIS mapping of sewer assets

Benefits of an AMP

- Increase system knowledge—know what you have
- Identify asset location, condition, & importance
- Prolong asset life through sound decision-making
- Reduce costs for operations & capital expenditures
- Improved O&M
- Meet federal/state regulatory requirements
- Improve access to federal/state financial assistance (additional application points)

Process



Project Elements

- Inventory assets (gravity sewers, force mains, lift stations, etc.)
- Assess asset conditions
- Develop an O&M plan
- Identify & prioritize capital needs w/ cost estimates
- Project deliverables
 - Asset Inventory
 - Asset Management Plan
 - 10-year Capital Improvement Plan (CIP)
 - Updated GIS Mapping - DiamondMaps

Sewer System GIS Base Mapping



Asset Evaluation Process

- Field surveys & visual inspections
- Approximate asset age/industry-standard useful life
- Material type
- Condition assessment
- Criticality/importance to system
- Redundancy
- Institutional knowledge
- System maps, as-built/engineered drawings

CUPSS Software Program

- Check Up Program for Small Systems (CUPSS)
- USEPA-developed asset management software
- Used for asset inventory & assessment
- Developed using information provided by staff, field surveys, investigative methods, existing maps, & as-built drawings, etc.
- Asset useful life guidance provided by NC Division of Water Infrastructure

CUPSS Asset Inventory Entry Screen

Check Up Program for Small Systems (CUPSS)
Set-up | Switch Utility | Create User | Help | Training | Exit

My Home My Inventory My O & M My Finances My Check Up My CUPSS Plan

City of Whiteville Sewer System

[Print Asset Details](#) | [Print Blank Worksheet](#)

The asset inventory form allows you to enter information about your assets. This information will then be used in several of the CUPSS reports and to generate your prioritized asset list.

(*) Indicates required fields Last Updated 12/16/2019 09:26 AM

Basic Information

* Asset Name: LS #1 - Pump #1 Select Associated Asset

* Location: 416 Mill St. LS #1 [Add](#)

* Asset Category: Pumping Facility * Asset Type: Pumping Equipment

ID: Size: 50 HP

Material: Storage Capacity:

Linear Feet: Acres of land:

Latitude: Longitude:

Notes: LS #1 is the system's primary lift station

Status and Condition - Required to Calculate Priority

* Condition: Excellent * CoF: Catastrophic (CoF of 10)

* Redundancy: 100% - 0.90 Can this asset be repaired? Yes No

* Asset Status: Active Can this asset be rehabilitated? Yes No

Select Asset Replaced: Select Asset Being Replace Show asset in the schematic? Yes No

* Capacity: Oversized

Cost and Maintenance

* Installation Date: 01/01/2017 Original Cost:

Asset Risk Matrix [Click to Expand](#)

Consequence of Failure

Probability of Failure

■ Mouse over to view asset name

Inventoried Asset List

- [-] Pumping Facility
 - [-] LS #1 - Pump #1
 - [-] LS #1 - Pump #2
 - [-] LS #1 - Pump #3
 - [-] LS #1 - Building
 - [-] LS #1 - Wetwell
 - [-] LS #1 - Piping/Valves
 - [-] LS #1 - Electrical Controls
 - [-] LS #1 - Generator
 - [-] LS #2 - Pump #1
 - [-] LS #2 - Pump #2
 - [-] LS #2 - Building
 - [-] LS #2 - Wetwell
 - [-] LS #2 - Piping/Valves
 - [-] LS #2 - Electrical Controls
 - [-] LS #3 - Pump #1
 - [-] LS #3 - Pump #2
 - [-] LS #3 - Building
 - [-] LS #3 - Wetwell
 - [-] LS #3 - Piping/Valves
 - [-] LS #3 - Electrical Controls
 - [-] LS #5 - Pump #1

Sewer System Snapshot



Kure Beach WWTreatment Plant



LS #7 - Shop (Main)

Sewer System

- Inventoried 145 assets
- 33 (23%) identified as High-Risk (critical) assets
- 106 (73%) identified as Medium-Risk assets
- 6 (4%) identified as Low-Risk assets
- Certain assets (WWTP; lift stations; outfalls) are more important than others, but any asset failure could be tied to an environmental/public health risk and/or an NCDEQ violation
- Rates adjusted regularly with the Water & Sewer Fund Operating Ratio (OR) consistently above the recommended 1.0 threshold.
- Establish dedicated Capital Reserve Fund to fund future capital needs.
- Estimated sewer capital improvements over the next 10 years total **\$3,278,541**

Collection System Assets

Gravity Sewers

- 16.0 miles of gravity sewer: 6" – 12" pipe (1955-2009)
- CIPP/CLAY/DIP/PVC pipes
- 74% ≤ 40 years in age (CIPP/DIP/PVC)
- 26% ≥ 40 years in age (CLAY/PVC)
 - 6" CLAY gravity sewers (8" State minimum)
 - 8" CLAY gravity sewers
- Gravity sewers in **Poor-to-Excellent** condition

Manholes

- 384 total
- Brick/pre-cast/rehab
- 2% of manholes in **Poor** condition

Pumping System Assets

- Lift Stations (1982-2017)
 - 10 lift stations (LS)
 - 5 equipped with generators
 - LS #7 – Shop (Main) was replaced in 2017
 - LS's in **Fair-to-Good** Condition
- Force Mains
 - 6.0 miles: 4" – 8" pipe (1982-2001)
 - CI/DI/PVC pipe
 - FM's in **Fair-to-Good** condition

Pumping System Assets (Cont.)

- Air Relief Valves: 8" & 10" (1995; 2016)
 - 10 total ARV's
 - All ARV's located on LS #7 & LS #9 force mains
 - 50% of ARV's replaced in 2016; other 50% original to 1995 installation
 - ARV's in **Poor-to-Good** Condition
 - 60% of ARV's require replacement; either in **Poor** condition or operate beyond 30-year useful life

Treatment Assets

WWTP

- Placed into service early-to-mid 1960's, expanded 1986 & 1991
- Permitted capacity: **0.285 MGD**
- Avg. 2024 daily flow : **0.215 MGD**
- Avg. 2024 daily flow to Carolina Beach: **0.178 MGD**
- WWTP assets in **Fair-to-Excellent** condition
- Dechlorination system added in 2013
- Aerators & lagoon baffles/curtains replaced in 2018 & 2022
- Areas of need include replacing chemical feed systems – Chlor/dechlor systems

Specific Recommendations (5-year CIP)

Annual Collection System Maintenance Inspection

- System-wide smoke testing – Every 5 years
- Annual video-inspection - Minimum 10% of total system length; NCDEQ system requirement

Collection System

- Replace 417 LF of 6" CLAY gravity sewer; upsize to minimum 8"
- Rehab 6,885 LF of 8" CLAY gravity sewer
- Replace 6 air-relief valves
- Replace check/gate valves & electrical controls – LS #8 & LS #9
- Replace LS #9 2 x 30 HP pumps
- Replace LS #10 check/gate valves; electrical controls, & 50 KW generator
- Replace check/gate valves – LS #1 thru LS #6

Specific Recommendations (5-year CIP)

WWTP

- Replace chemical feed pumps & tubing – Chlorine Contact Chamber
- Replace chemical feed pumps & tubing – Dechlorination Chamber

Cost Estimates (5-year CIP)

Sewer System Improvements	Est. Cost	FY
Smoke Testing	\$5,855	FY 28
Annual Video Inspection	\$188,448	FY 26-FY30
6" CLAY Gravity Sewer Replacement	\$450,000	FY 26
8" CLAY Gravity Sewer Rehab	\$1,510,000	FY 26
ARV Replacements	\$60,000	FY 26
LS #1 thru #6 Check/Gate Valve Replacements	\$100,000	FY 26
LS #8 Upgrades – Valves & Electrical Controls Replacement	\$50,000	FY 26
LS #9 Upgrades – Pumps, Valves, & Electrical Controls Replacement	\$135,000	FY 26
LS # 10 Electrical Controls Replacement	\$50,000	FY 26
LS #10 Generator & Valve Replacement	\$95,000	FY 30
WWTP Chemical Feed Systems Replacements	<u>\$24,000</u>	FY 26/29
Total:	\$2,668,303	

Possible Council Actions

- No Action
- Adopt 10-year CIP & Update Regularly
 - 10-year CIP is a grant requirement
 - Incorporate into budgeting process
 - Receive 2 points in competitive funding applications.
 - Must be adopted w/in 2 years of application
- Adopt AMP & Update Regularly
 - Plan acceptance/adoption is a grant requirement
 - Receive 10 points in competitive funding applications
 - Must be adopted w/in 2 years of application



Questions?