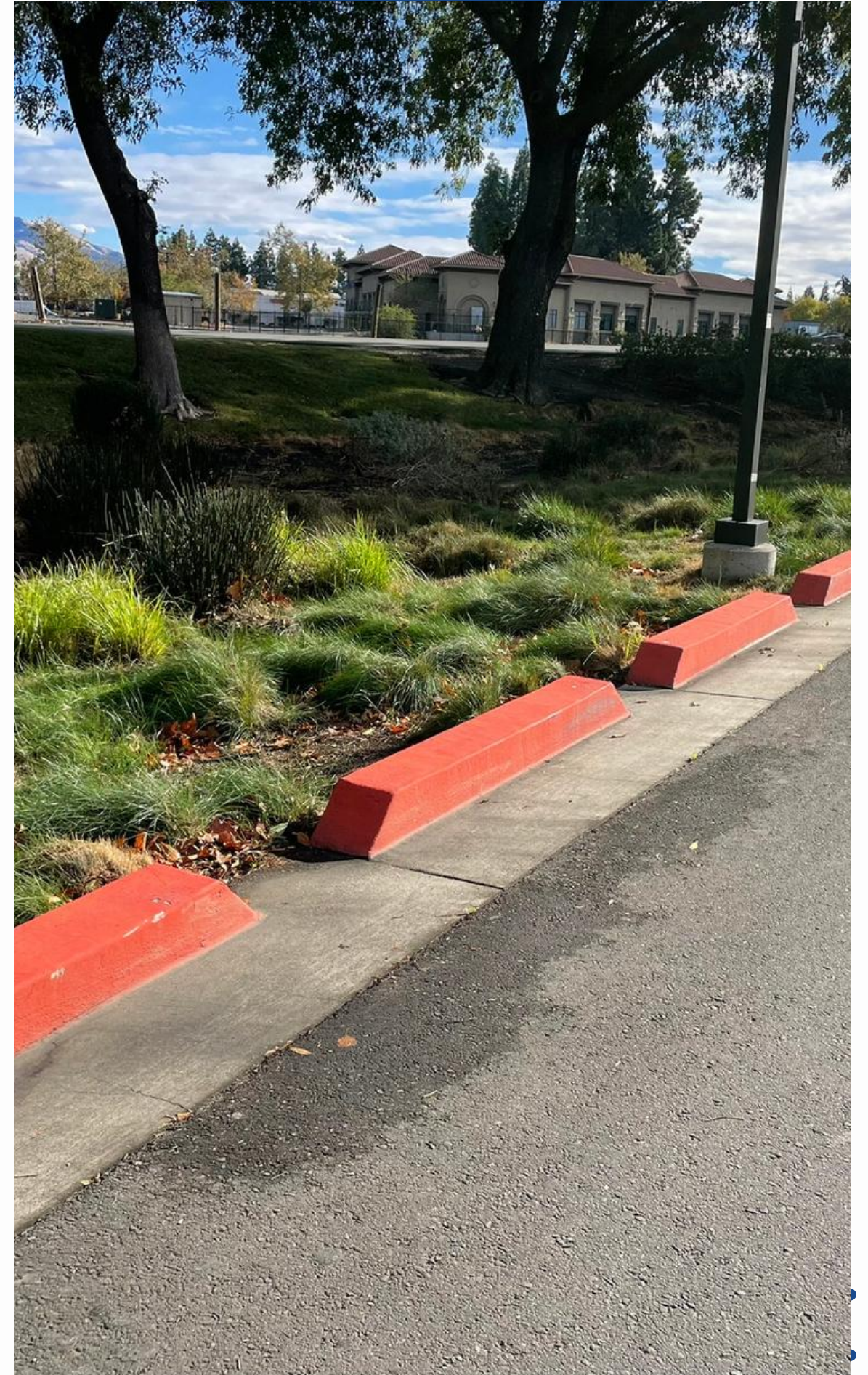




# Asset Management

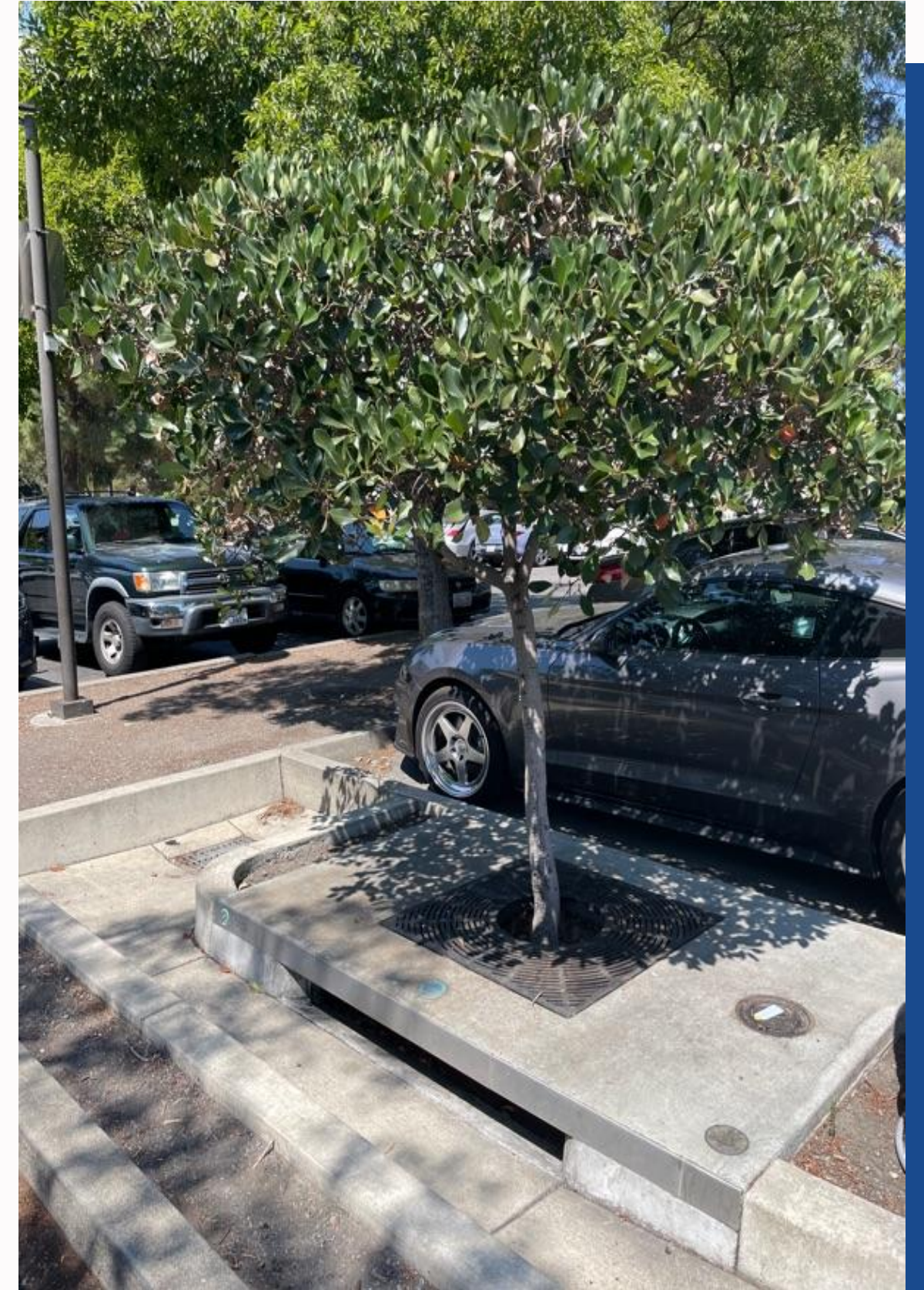
For Stormwater Quality Assets

Presented by:  
Jeff Sinclair, EOA INC.



# Content

- 01** What is Asset Management
- 02** Permit Requirements
- 03** Defining Assets
- 04** Asset Management Approach
- 05** Key Takeaways
- 06** Next Steps
- 07** Contact



# WHAT IS ASSET MANAGEMENT?

“Maintaining a desired level of service for what you want your assets to provide at the lowest life cycle cost” – EPA





Data-driven  
decision-making



Efficient use of  
resources



Improved financial  
planning

# PURPOSE

# MUNICIPAL REGIONAL STORMWATER PERMIT

Develop and implement plan to ensure the satisfactory condition of all **publicly-owned structural controls** that *protect water quality*.

## **Include:**

- Description of asset categories
- Inventory of existing assets
- Cost evaluation
- Operations and Maintenance Plan that describes processes for:
  - Evaluating risk
  - Condition assessments
  - Prioritizing and scheduling O&M



# Defining Assets and Categories



LID/GSI  
Systems

Non-LID  
Systems

Trash  
Controls

# Control Types



# LID/GSI



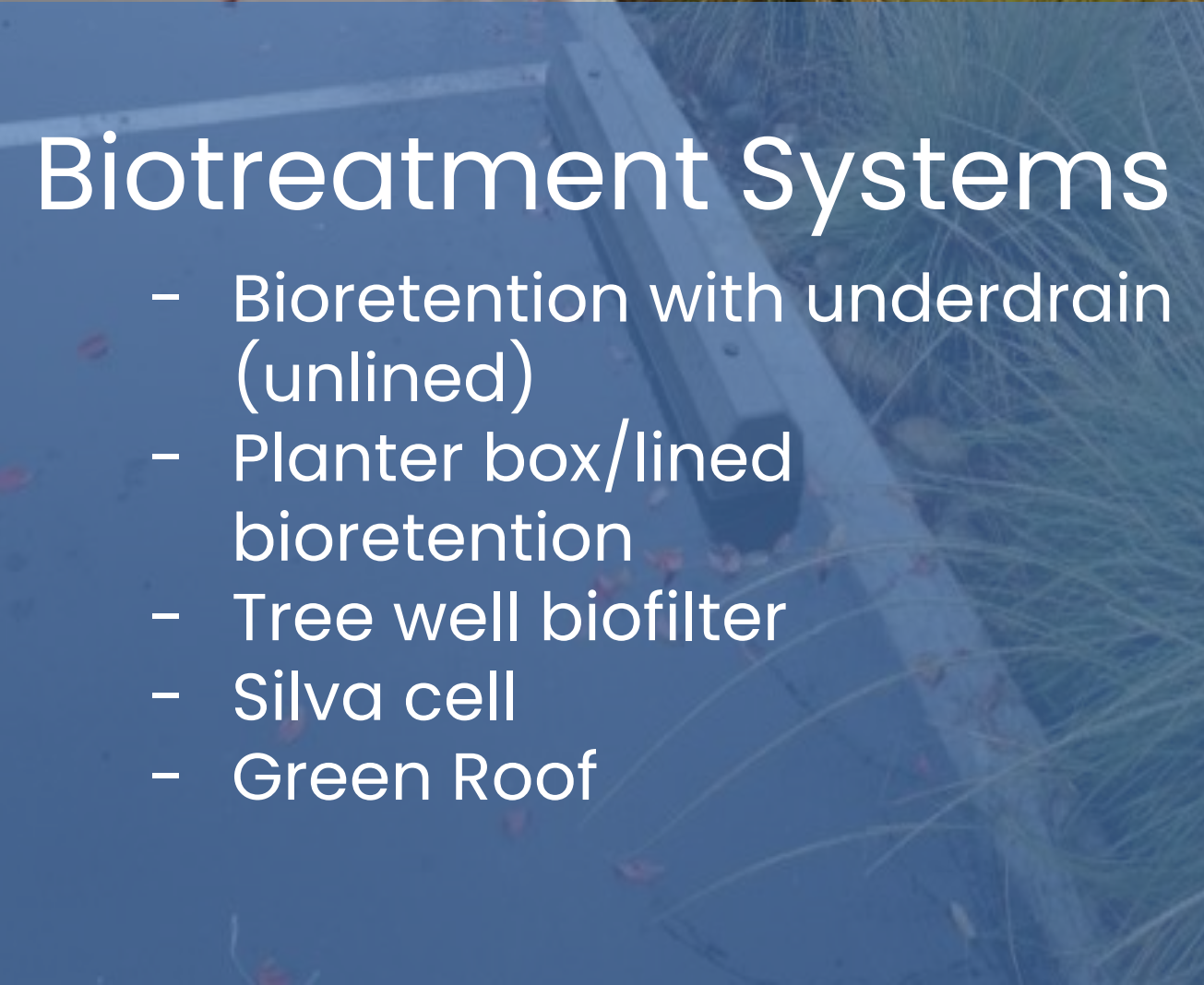
## Infiltration Systems

- Infiltration Trench
- Subsurface infiltration system
- Pervious Pavement  $\geq 3,000$  square feet



## Biotreatment Systems

- Bioretention with underdrain (unlined)
- Planter box/lined bioretention
- Tree well biofilter
- Silva cell
- Green Roof



## Capture & Use Systems

- Above-ground cisterns
- Below-ground cisterns



## High flow rate media systems

- Media filters (e.g., Vault-based high flowrate media filters)
- Media filter with vegetation (e.g., Tree-box-type high flowrate biofilters)
- Sand filters



## Non-LID Systems

## Others

- Extended detention basin
- Vegetated swale
- Constructed wetlands
- Hydromodification vault
- Hydromodification basin
- Water Quality Pond



# Trash Controls

## Partial Trash Capture Devices

- Auto retractable screen (ARS)
- Fixed screen



## Full Trash Capture Systems/Devices

- Hydrodynamic separator
- Gross solids removal device (GSRD)
- Netting devices
- Surface inlet baskets/screens
- Outflow screens (e.g., CPS)



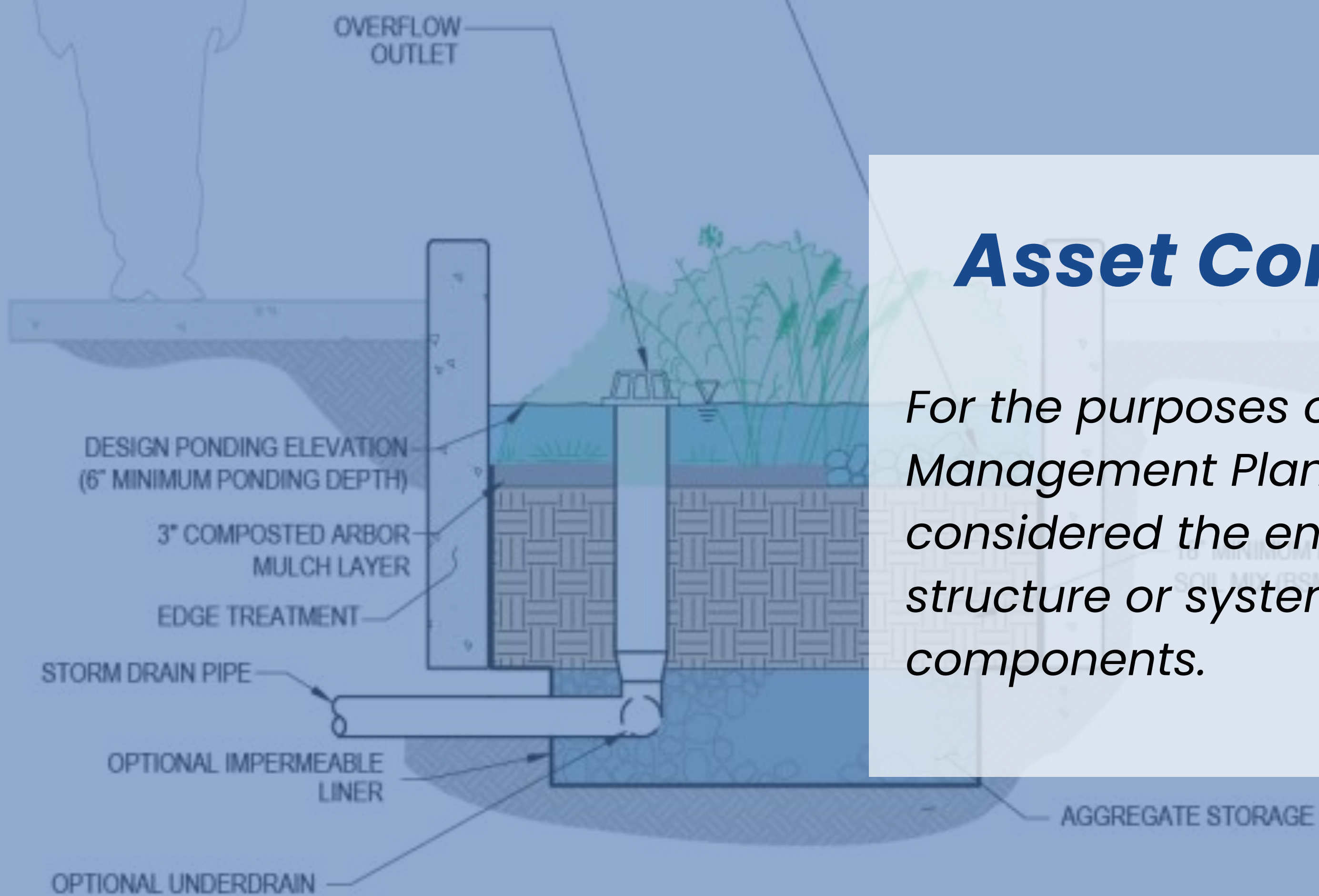
## Other types of trash control devices

- Interceptors
- Debris Rack
- Media Filters



# Asset Components

*For the purposes of the Asset Management Plan, a single asset is considered the entire water quality structure or system and all of its components.*



Typical Bioretention Planter At-Grade Section

# Program Development

SCVURPPP Asset Management  
approach

## 01 Asset Inventory

Data fields, collection, and  
visualization with dashboards



## 02 Condition Assessments

Designed specifically for  
water quality assets

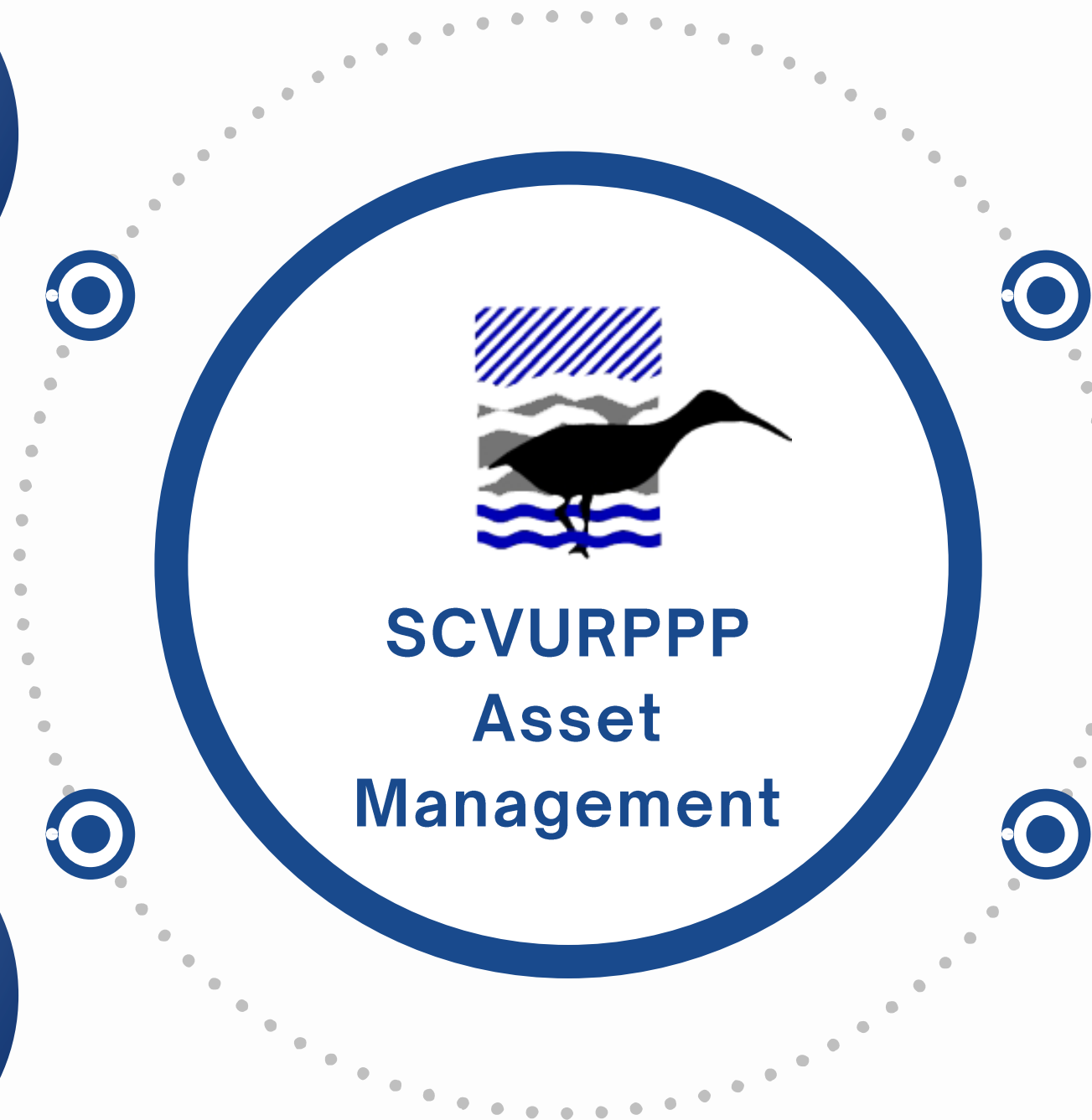
## 03 Risk Analysis

Evaluation of likelihood and  
consequence of failure



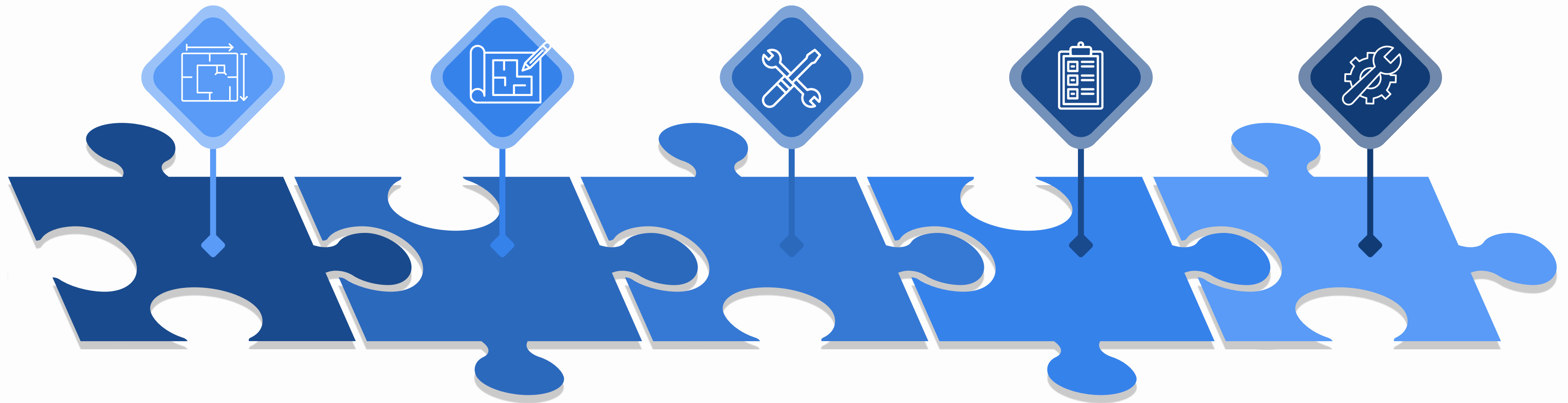
## 04 Cost Evaluations

Tracking and forecast  
based on best available  
data



# Asset Management at All Phases

Each phase contributes to the overall purpose and goals of asset management



**Planning**

**Design**

**Construction**

**Inspection**

**Maintenance**

01

02

03

04

05

# Data Management

Guiding questions can help identify useful data.



- What do we own?
- Where is it?



- What are its attributes?
- What condition is it in?



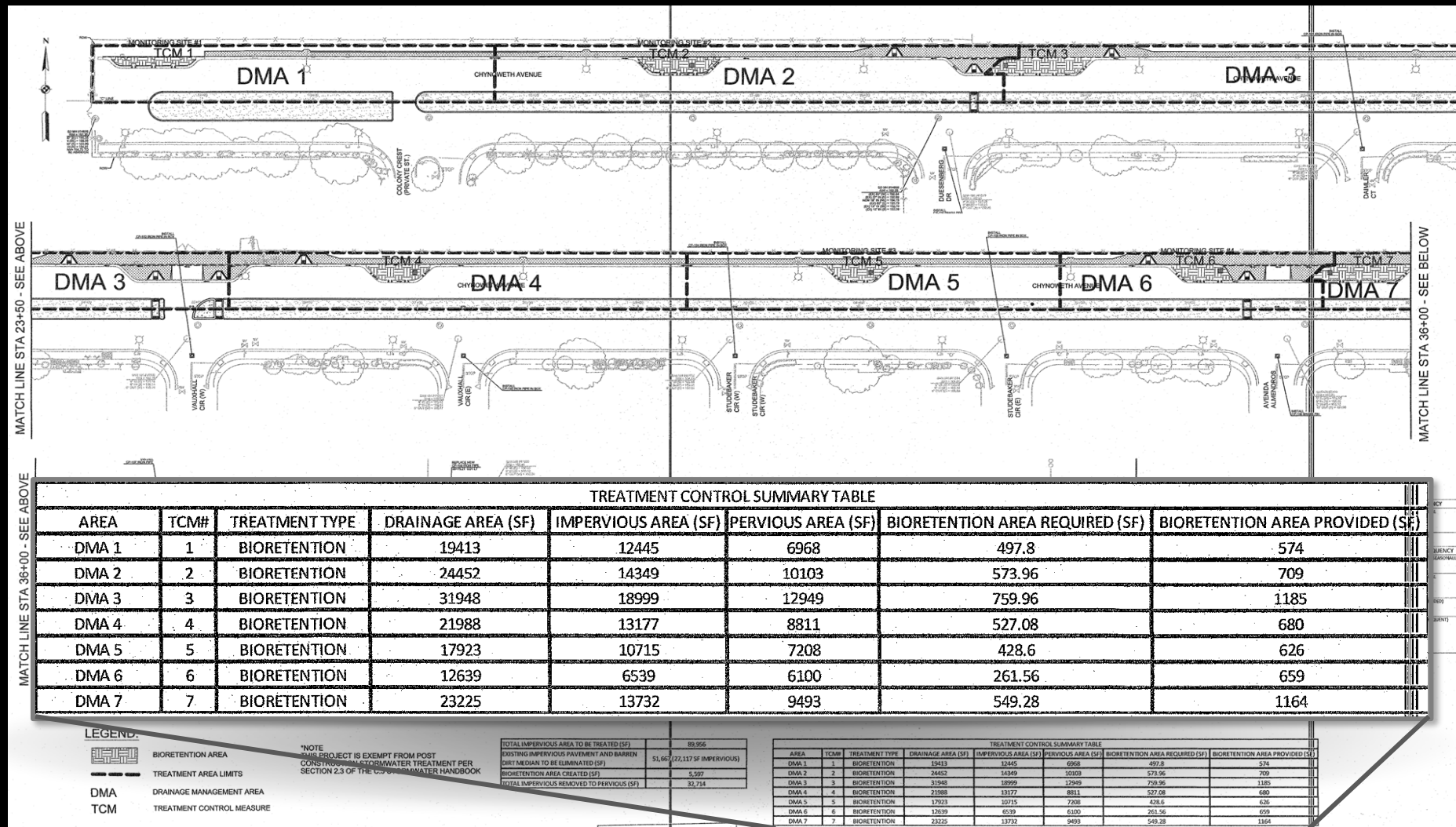
- How do we prioritize?
- How long will it last?
- What will it cost?



# Data Collection

## Data Fields:

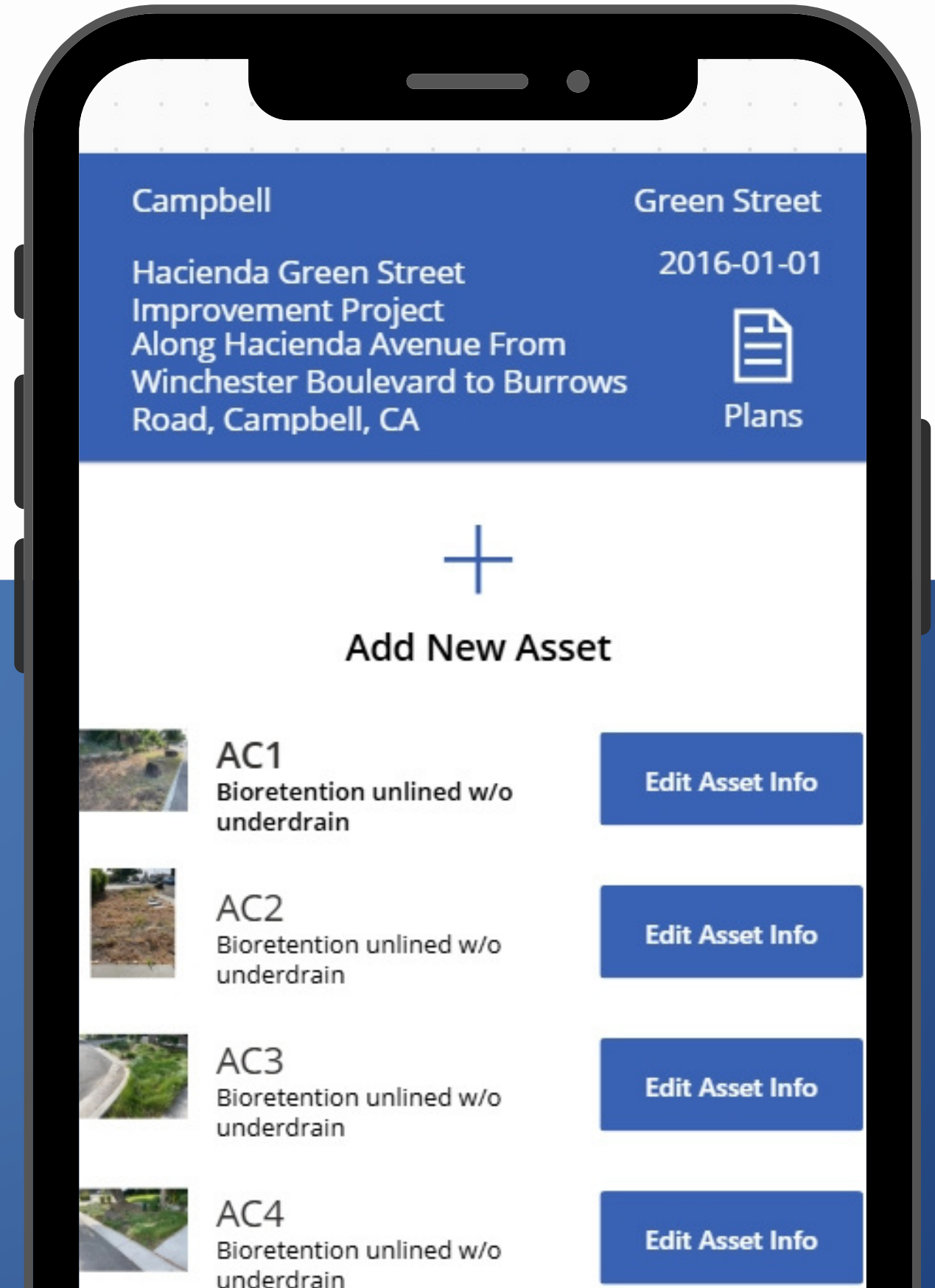
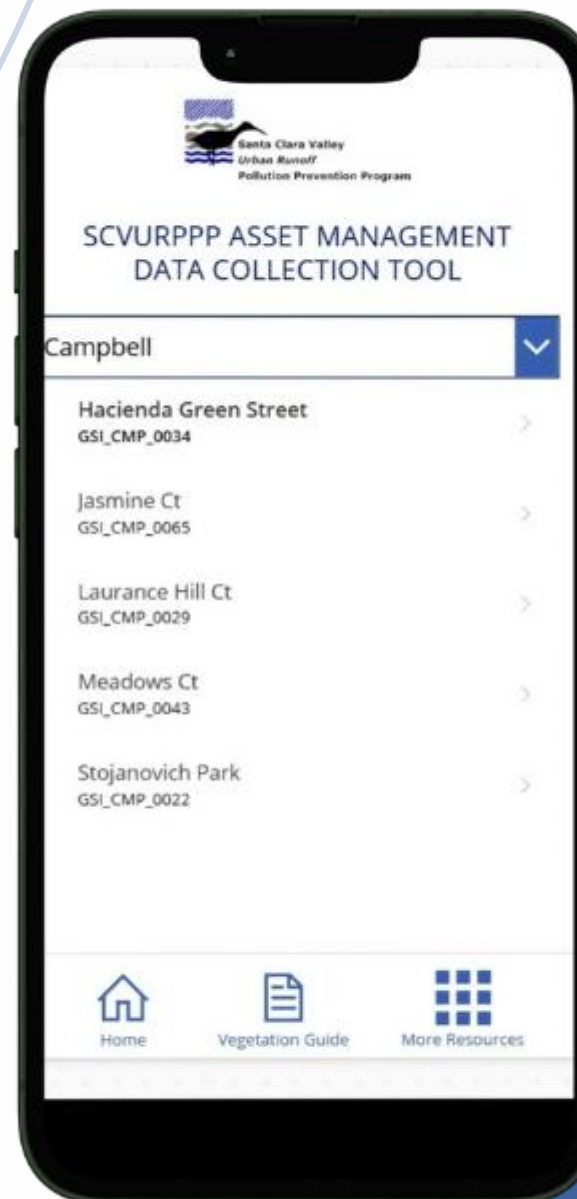
- Project Name
- Project ID
- Operator
- Control Type
- Asset Category
- Asset Class
- Asset ID
- Asset Name
- Size
- Drainage Area
- Impervious Drainage Area
- Irrigation
- Pump



# Data Collection

## Data Fields:

- Lat/Long
- Asset photo
- Date installed
- Condition
- Maintenance Need
- Maintenance Activities



# Asset Inventory

Planning

Design

Construction

Inspection

Maintenance

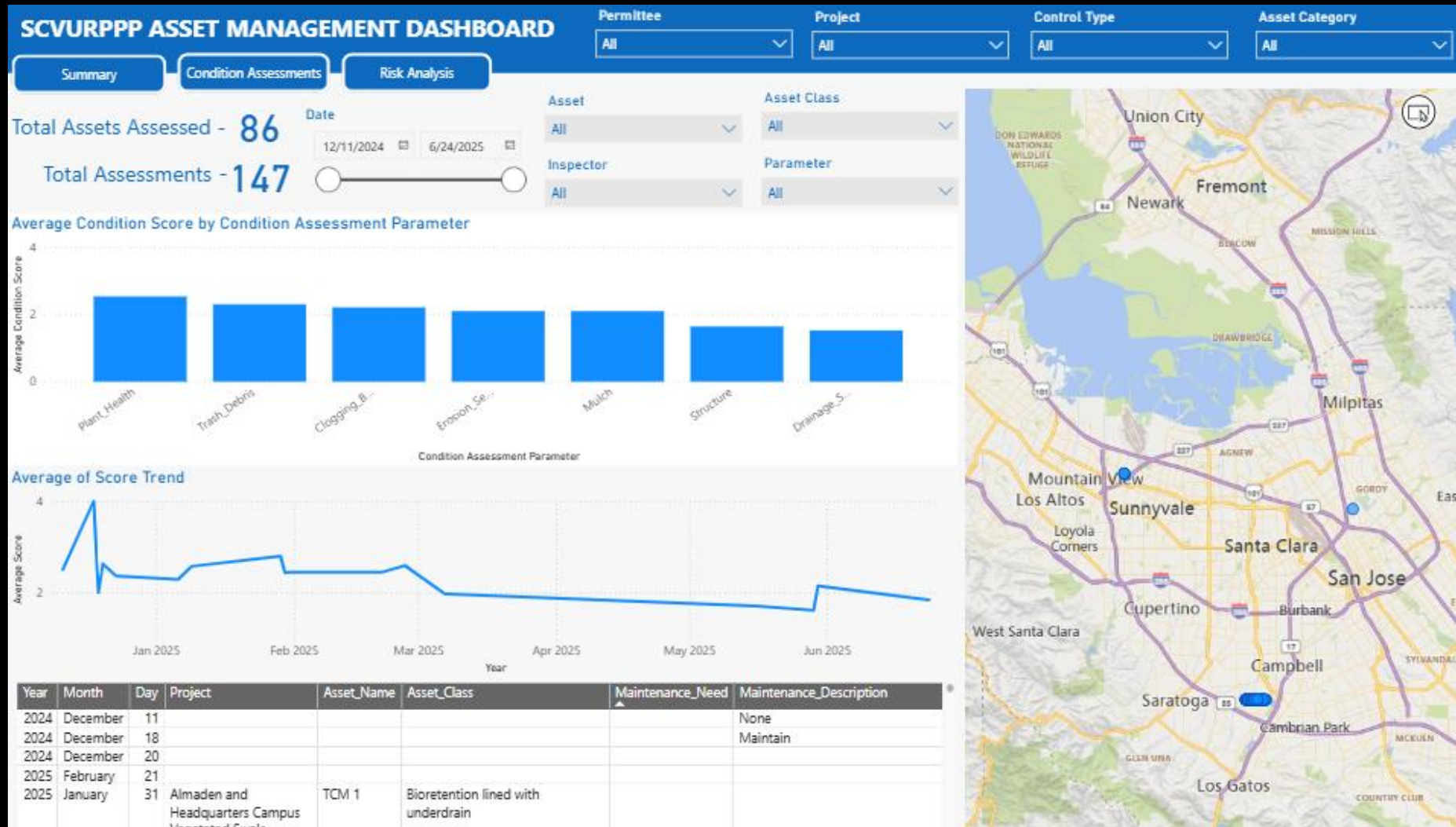
# Data Analysis & Visualization

## Vision:

Develop a dashboard to allow Co-permittees access to real time data analytics to help inform management decisions

## Mission:

- Identify the key questions that we need answered regularly
- Develop visuals and analytics to address the questions
- Update dashboards as needed



# CONDITION ASSESSMENTS

Condition Assessments are intended to:

1

Generate score based on aggregated assessment (including good & bad)

2

Identify trends and set frequencies

3

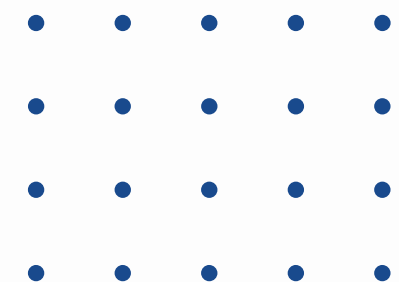
Identify maintenance need category



*Condition Assessments can be a part of inspections or work orders but require less focus on capturing specific issues for correction*

# Condition Assessment Parameters:

- ▶ Plant Health
- ▶ Weeds
- ▶ Mulch
- ▶ Trash
- ▶ Erosion/Sedimentation
- ▶ Structure
- ▶ Drainage & Standing Water
- ▶ Clogging & Blockage



## Scoring Rubric

### 01 Excellent

- New asset or no noticeable issues.
- No action required.

### 02 Good

- Minor noticeable issues and currently adequate.
- Observe for future maintenance need.

### 03 Moderate

- Noticeable issues that may impact functionality.
- Prioritize inspection and maintenance.

### 04 Poor

- Functionality is inadequate and intervention is needed.





# Risk Analysis

## Likelihood of Failure

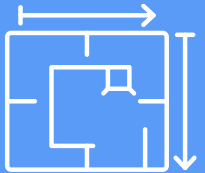
- Condition Assessment Score
- Location in high pedestrian traffic area
- Mechanical conveyance
- Significant Vegetative Debris

## Consequence of Failure

- Compliance (Drainage Area Size)
- Cost of Replacement (Capital Cost)

**Forecast costs based on existing data**

**Planning**



**Track per asset capital costs as developed**

**Design + Construction**



**Inform maintenance costs and frequency**

**Inspections**

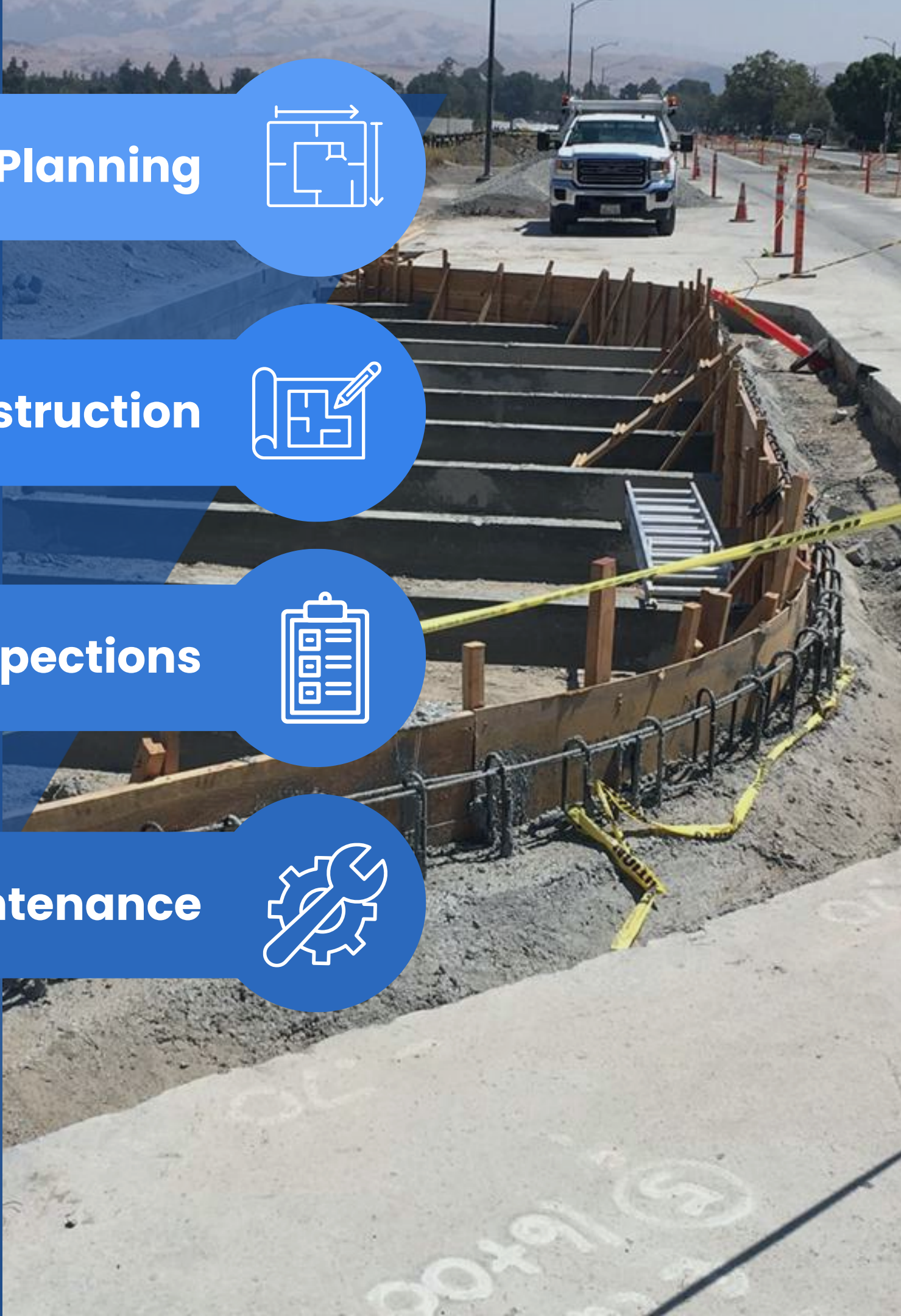


**Develop ongoing maintenance costs**

**Maintenance**



# **COST EVALUATION**



# Asset Management Program Implementation



## Coordination

Maintain interdepartmental coordination



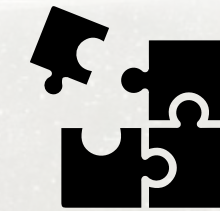
## Data Management

Update cost data and asset management system



## Procedures

Develop SOPs, guidance, roles, and schedules



## Adaptive Management

Establish mechanisms to make changes based on data

# Information Feedback Loops

Assess opportunities for information sharing across different phases of projects.



## Planning

Lessons learned from siting and asset class implementation

## Design

Lessons learned from inlet, overflow, erosion protection, grading, location, and sizing designs

## Construction

Lessons learned from installation and deviations from design

## Inspection

Lessons learned from parameter assessments and design field data collection

## Maintenance

Lessons learned on ease of maintenance and key design issues impacting maintenance

# Key Takeaways

01



Data Management is more robust



02

03



Costs are gaining importance



04

# Next Steps

**01**

Conduct Condition Assessments

**02**

Evaluate risk analysis collaboratively

**03**

Update guidance based on lessons learned

**04**





Develop internal guiding documents as needed (e.g., SOPs)





# THANK YOU!

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