

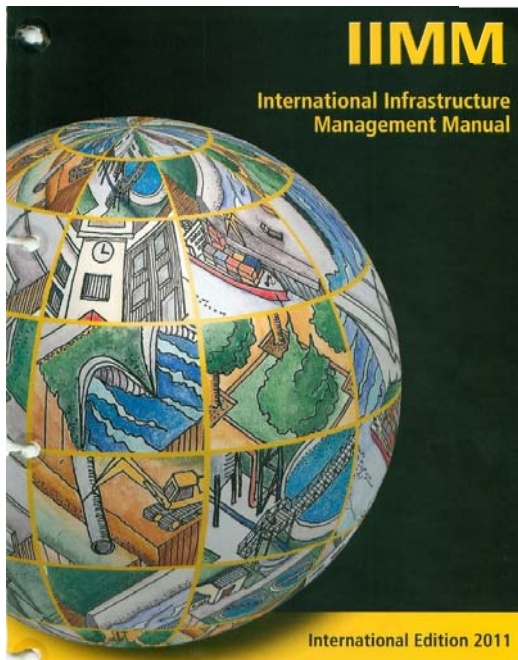


PRESENTATION TITLE:

Infrastructure Asset Management Program

Presenter: Joshua Jacomb and Linda Logan
Missouri Department of Conservation

Our Program: Key Elements for Success



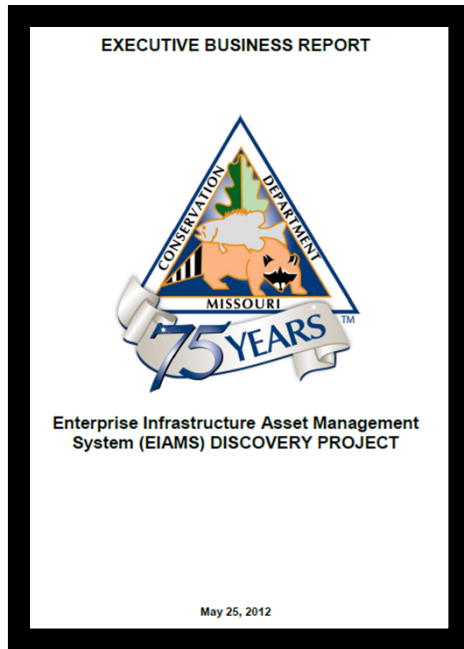
conservationengineers.org

Key elements:

- Define service levels and monitor performance
- Lifecycle approach
- Manage risks
- Long term financial planning



Our Program: Discovery Phase



Discovery project:

- Evaluate Regulatory Requirements
- Benchmark Industry Best Practices
- Tailor Best Practices for MDC Unique Mission
- Coordinate with new Enterprise GIS and Lands Systems
- Tracking System Requirements
- Evaluate Potential Software Systems



Our Program: Building a Framework



Deliverables:

- Developed Best Practices & Guidelines for Organizational Asset Management
- Standardized Data Organizational Structure and Service Definitions
- Identified 262 asset types & Detailed Data Requirements
- Developed Condition Rating Models
- Developed Asset Decay curves
- Developed Replacement cost models

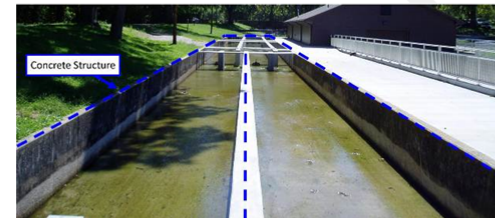
2.32 Raceway

2.32.1 Asset Details

The following table provides additional details for the asset.

Asset Description/Definition	Tier 2 Major Subsystem Type	Tier 3 Minor Subsystem Type
Non-earthen structure with flowing water for raising fish; constructed in place	Building	Aquaculture Features
Non-earthen structure with flowing water for raising fish; constructed in place	Fish Production	Aquaculture Features

Key components to assess Raceway condition



1. Concrete Structure

2.32.2 Condition Assessment Details

The following table provides details pertaining to the scheduling, preparation, and completion of the asset's condition assessment.

Condition Assessment Approach	Location Specific Population Based Sampling type
Sampling Approach Methodology	Sample 10% (Site Based)
Number of People Required to Complete Assessment	1
MDC Expected Life	50 years
Decay Curve Type	Delayed Decay Curve



Our Program: Best Management Practices



INFRASTRUCTURE ASSET MANAGEMENT POLICY

POLICY

The Missouri Department of Conservation (MDC) has adopted this infrastructure asset management policy to enhance its service delivery by effectively managing infrastructure assets. The Department commits to the utilization of sustainable approaches to infrastructure asset management that incorporates whole life-cycle cost principles by implementing a consistent approach to providing, maintaining, and renewing its infrastructure assets in a cost-effective manner. The Department commits to achieving this through the adoption of recognized infrastructure asset management best practices.

[Revision Dates (as applicable)]

PROCEDURES

The Infrastructure asset management program will be focused on optimization of asset life-cycles, maintenance costs, and operational costs in a manner that will maximize service delivery in each functional Division for both present and future customers.

All Department staff must support the procedures developed to implement the overall Infrastructure Asset Management program. The adopted procedures are designed to actively manage the lifecycle of individual infrastructure assets to maximize the service delivery and useful life of individual asset while achieving the lowest total cost of ownership principle. Policies and procedures will be developed relating to planning, development, operation, maintenance, and condition monitoring of the assets to ensure all phases and aspects of infrastructure assets are covered.

Decision-making related to infrastructure asset management will be based upon the following factors:

- Department responsibilities and resources related to infrastructure asset management are clearly identified.
- Infrastructure asset management is performed in a coordinated, structured, and consistent manner.
- Service levels or performance standards have been developed and assigned.

IIMM

International Infrastructure Management

Capital Project Rating Criteria and Guidelines

To effectively allocate financial resources to capital projects, the Missouri Department of Conservation (MDC) will utilize a capital project rating process that evaluates all potential capital projects against a set of established rating criteria. This approach enables the Department to conduct an objective review of projects, develop a prioritized rating approach for competing projects, and enable more informed decision-making for the allocation of limited financial resources. Decisions regarding approved projects will be based upon the value each project provides to a number of departmental goals including: accomplishment of department mission and adopted goals, responsible financial practices, and maintaining existing infrastructure in good operational condition. The most important consideration is that the Department provides enough detail and support to ensure that the information developed and presented by different process participants is accurate, appropriate and comparable.

A. Benefits of Utilizing Capital Project Rating Criteria

By their nature, capital projects are often large, infrequent and subject to change during development. All of these factors often hinder the systematic review of alternatives. This has changed in recent years as more units of government have adopted capital project rating systems as a standard business practice to support a more data-driven, objective decision process.

The capital project rating approaches used by governments generally fall into one of two categories.

- Limited use of ratings directly related to overarching organizational goals.
- More extensive use of ratings covering a wide array of decision criteria.

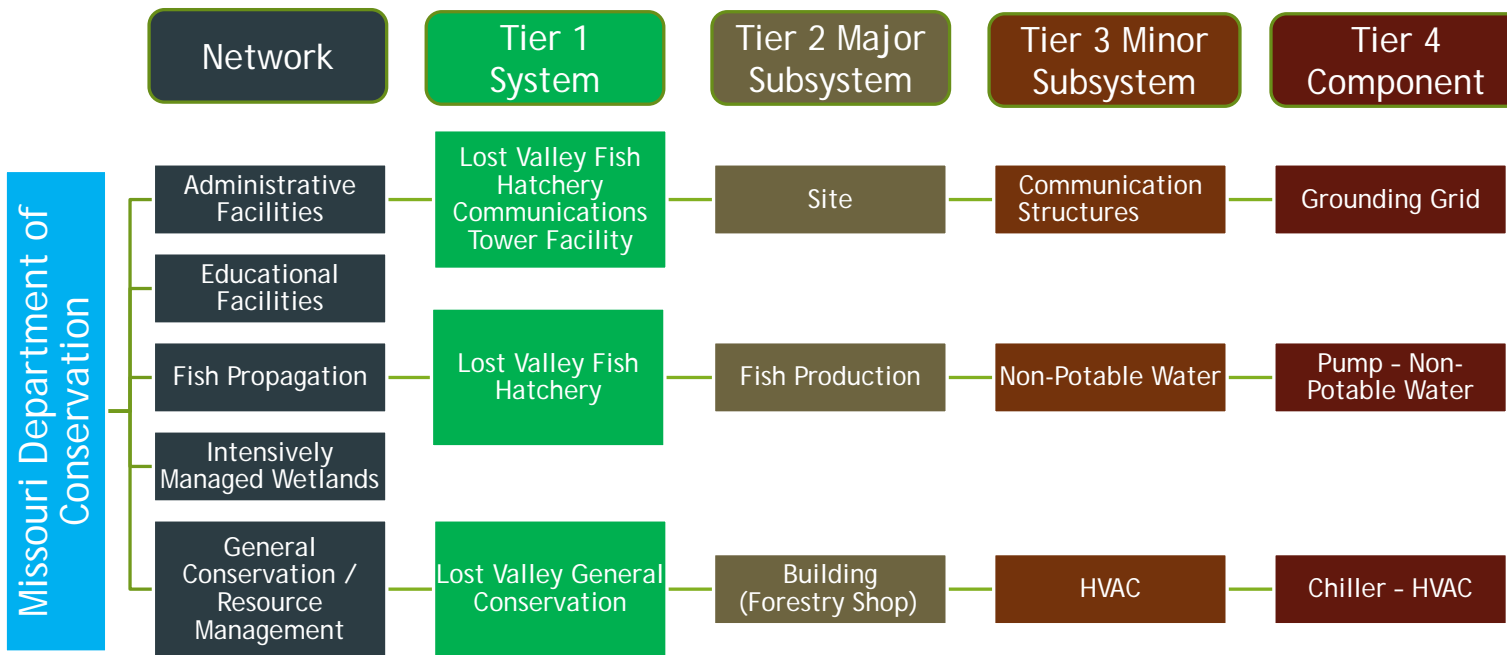


What is an infrastructure asset?

- Constructed or manufactured
- Life span > 1 year
- Stationary
- Not computer related equipment
- Value > \$5,000, or
- Essential to service delivery, or
- Special interest to the Department, or
- Special maintenance required, or
- Required for state or federal compliance



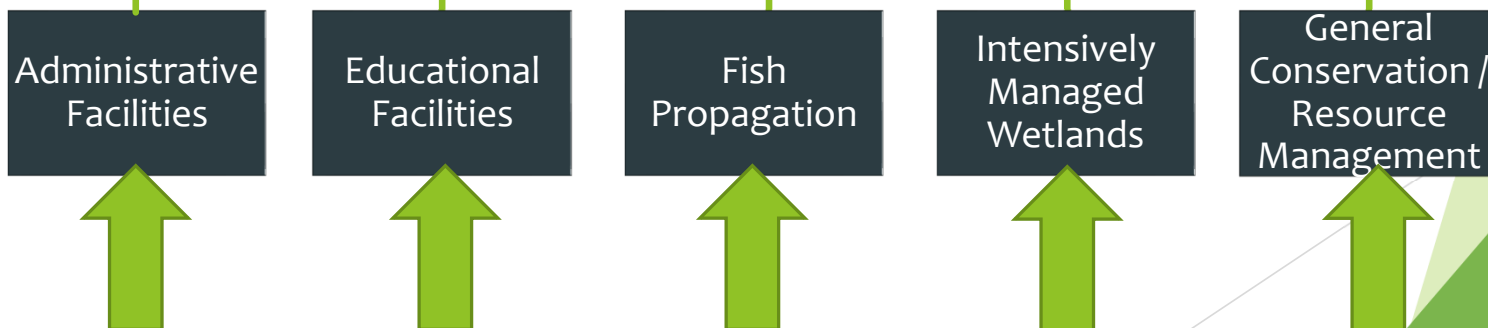
Asset Hierarchy



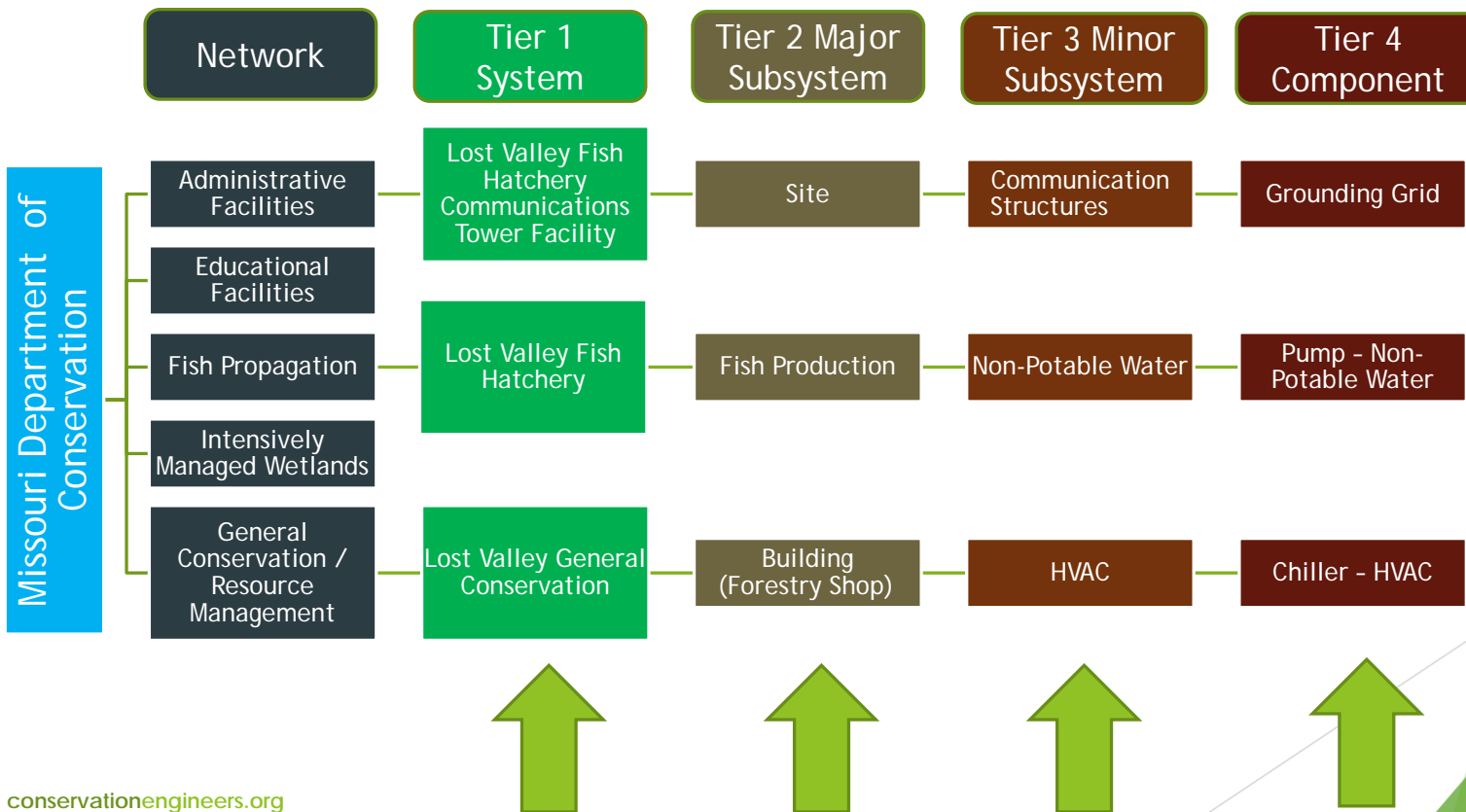
Networks as a Classification System

A Network is a grouping of infrastructure assets that collectively provide a major service for MDC.

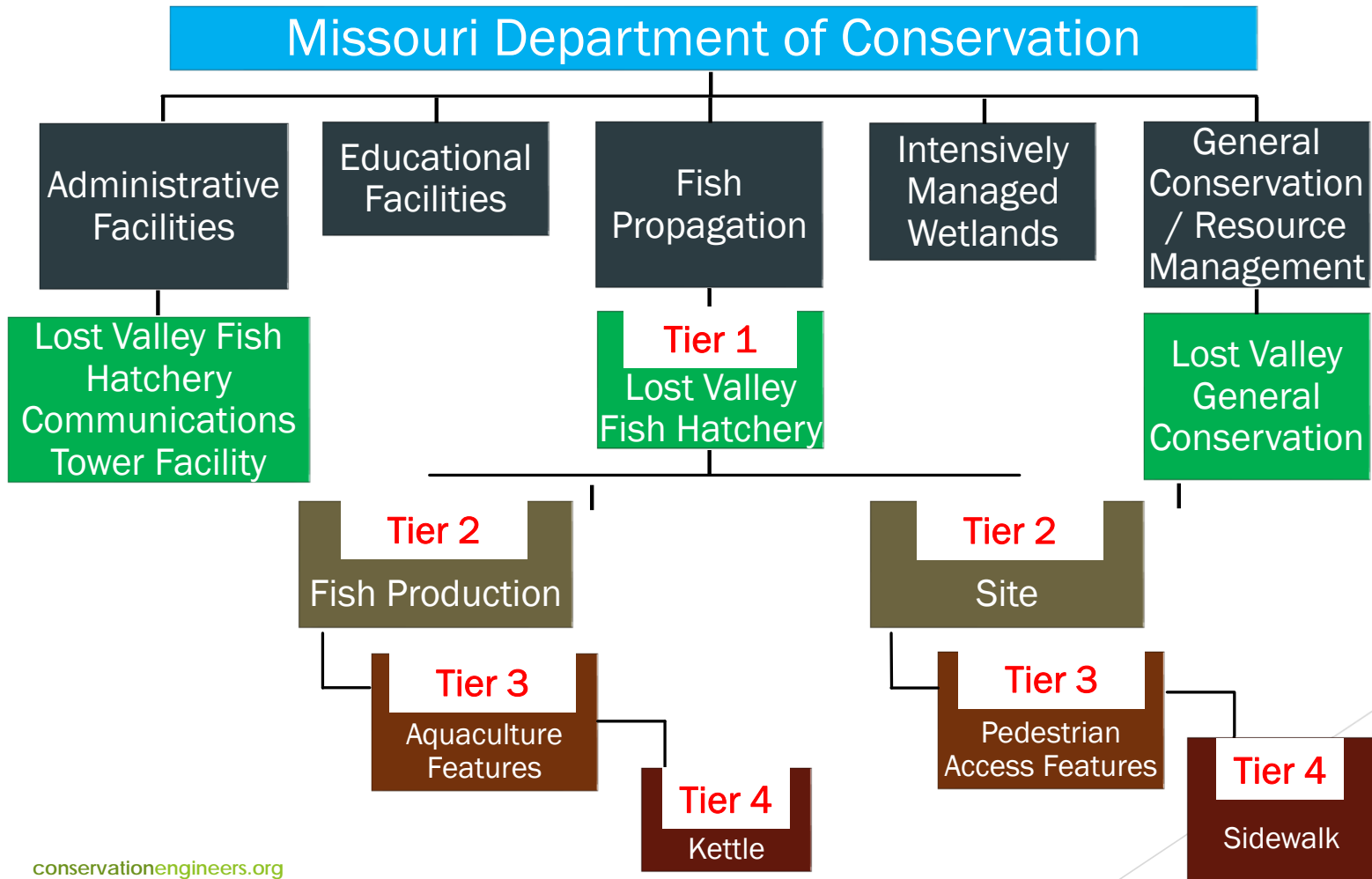
Missouri Department of Conservation Infrastructure Networks



Asset Hierarchy



Network Hierarchy Example



Asset & Attribute Details



... is a character

Value(s)	Units
	Tons



Collection
(Listed)
Captured

Conservation Name
Conservation Number
Control Point



... entered)
Office - O&M Manual,
Shop Drawings



(System populated based on GIS data or manually entered)
(System populated



... ned at



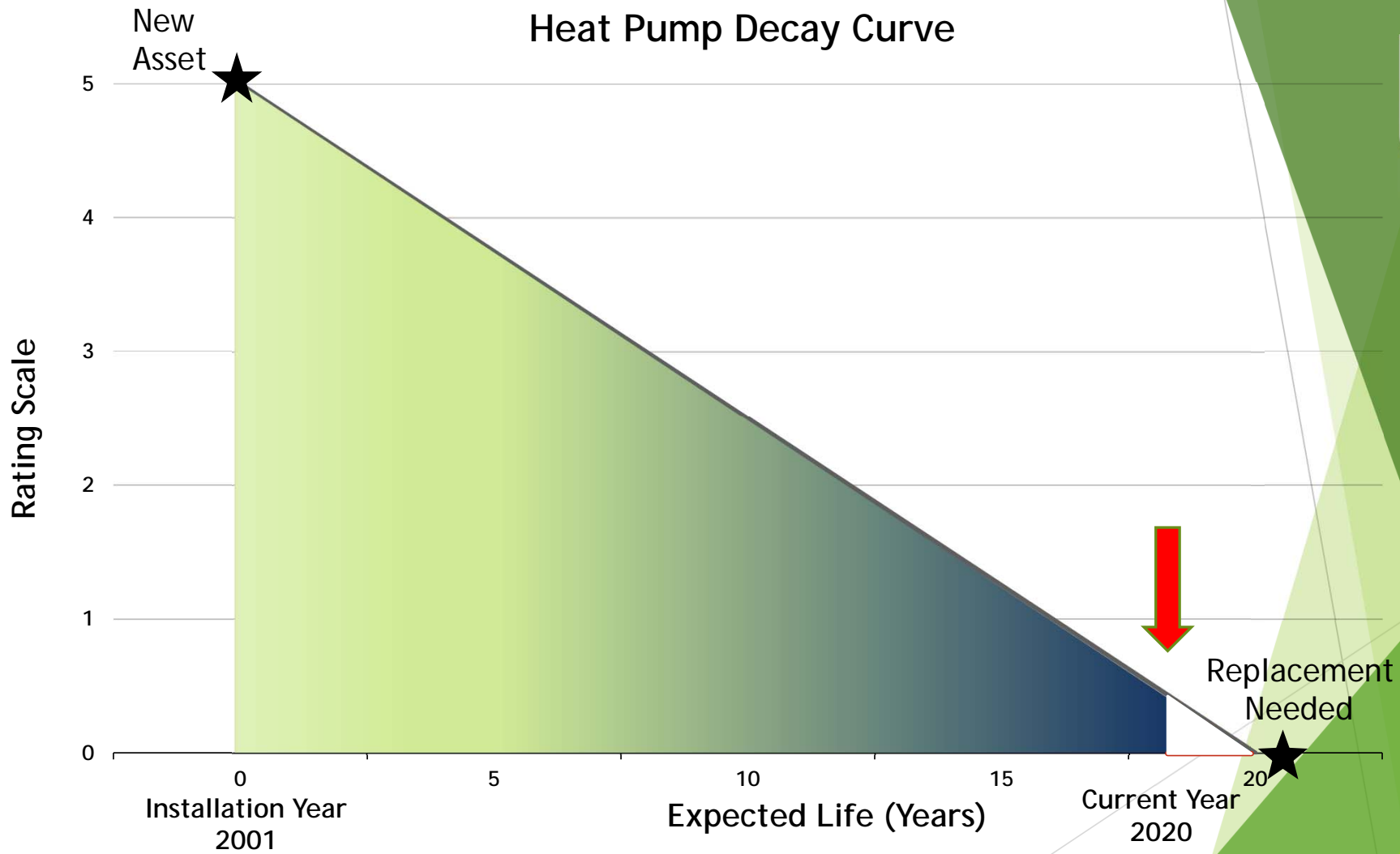
Condition Assessment

2 Simplified Rating Scale

The Simplified Rating Scale demonstrates the basic approach utilized when more defined rating elements are not required.

Rating	Description
5	Very Good Condition: <ul style="list-style-type: none"> Only the prescribed, scheduled routine preventive maintenance required Shows no appreciable signs of deterioration Fully provides the services intended Within first 1/3 of MDC expected life There are no issues with obtaining replacement parts or performing service or maintenance functions The cost of operation of the existing equipment is comparable to the cost of operation of new equipment
4	Good Condition: <ul style="list-style-type: none"> Minor deterioration, but no problems providing the intended service No rectification or repairs required to satisfy elemental function of the asset Minor maintenance required plus the prescribed, scheduled routine preventive maintenance Within first 2/3 of MDC expected life There are no issues with obtaining replacement parts or performing service or maintenance functions The cost of operation of the existing equipment is comparable to the cost of operation of new equipment
3	Moderate Condition: <ul style="list-style-type: none"> Significant or continuous non-scheduled maintenance required to maintain service Detectable damage, but it is still working and providing the intended service (not failed) Showing signs of defects but still supports the required function of the asset and it provides the intended service Identified future major repairs or component replacement projected to be needed within the next 4-6 years There are no issues with obtaining replacement parts or performing service or maintenance functions Not exceeded its MDC expected life by more than 10% The cost of operation of the existing equipment is greater than the cost of operation of new equipment, but cost savings of replacement does not justify replacement with new equipment
2	Poor Condition: <ul style="list-style-type: none"> A significant renewal/upgrade/replacement projected to be needed within the next 1-3 years to maintain service Projected as being within 1-3 years of needing complete replacement Projected to be near failure, but serviceable condition is still retrievable with repair, renewal or partial replacement Repair (rather than replacement) is an option that is still economically viable and possible. Repair may include partial replacement as an option to achieve Started having issues with obtaining replacement parts or performing service or maintenance functions Significantly higher operation costs of existing equipment than upgraded asset so replacement could be justified by lifecycle cost savings
1	Very Poor Condition: <ul style="list-style-type: none"> A significant renewal/upgrade/replacement is needed now to maintain intended service There are safety issues that need to be addressed before the asset is placed back into service The asset is unserviceable and complete replacement or disposal is required Repairs need to be made to address safety concerns, repairs are not economically viable (or possible) repair (rather than replacement) is not an option Cannot obtain replacement parts or cannot perform service or maintenance functions Significantly higher operation costs of existing equipment than upgraded asset so replacement is justified by lifecycle cost savings





Valuation Models & Replacement Cost



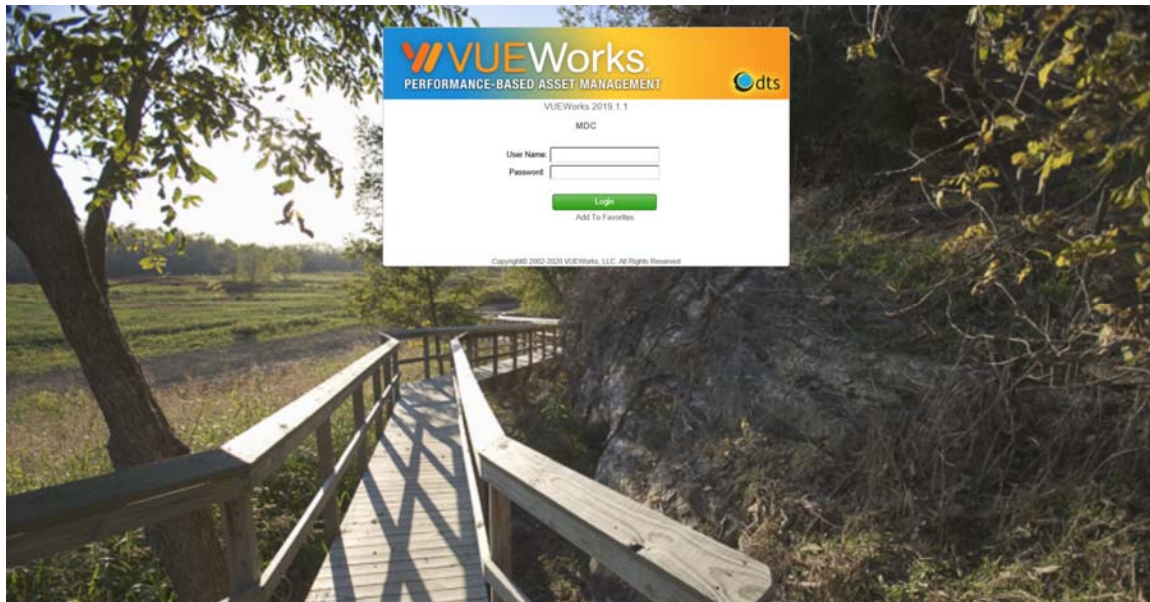
T2	T3	T4	Asset ID
Building (BS)	Building Envelope (BSEN)	Roof Sector -	
Attribute Name			
Material Type - Roof Sector	Select Value		
Surface Area - Roof Sector	-	Square Feet	
Gutter	Select Value		
Basis Year: 2014			
Item	Unit Cost	Total	Note:
Roof Sector	\$ -	\$ -	
Gutter	15%	N/A	
Rounded Total: \$ -			
Color Key			
Enter Value or Text			
Select Value from List			
Enter Value when Update Costs			
REFERENCE INFORMATION			
Drop Down Values - Yes/No			
Select Value			
Yes			
No			
Drop Down Values - Material	RSMeans Section or Other Source	Cost / SF	
Select Value			
Corrugated Metal / Plastic	07 41 13.20 0510	\$ 6.83	Use highest cost
Glass	Estimated value from Internet research	\$ 17.00	
Green Planting		\$ -	Since MDC has only one, calculate replacement cost at time of data collection.
Membrane	07 54 30.10 0160	\$ 3.53	
Membrane / Aggregate	07 51 13.20 5600	\$ 4.91	
Shingle	07 31 13.10 0500	\$ 4.36	
Slate Tile	07 31 26.10 1600	\$ 15.90	
Standing Seam Metal	07 41 13.20 0720	\$ 8.50	
Conversion Information			
Membrane	\$353.00	Cost per square (RSMeans)	
	\$3.53	Cost per sf	
Shingle	\$436.00	Cost per square (RSMeans)	
	\$4.36	Cost per sf	
Slate Tile	\$1,590.00	Cost per square (RSMeans)	
	\$15.90	Cost per sf	
Membrane / Aggregate	\$491.00	Cost per square (RSMeans)	
	\$4.91	Cost per sf	



System Selection



VUEWorks Asset Management System



Manage Facilities

Filter is ON - 1 Item found

Facility Table Filter Reports

Views

Primary View View 1 View 2 View 3

- HP HVAC-EKO-2
- Cooling Tower
- Cooling Tower-Evaporati
- Exhaust Sys-10
- Exhaust Sys-11
- Exhaust Sys-12
- Heat Pump Loop-1
- HP Heat Pump (HVAC)-1**
- Pump (HVAC)-1
- Pump (HVAC)-2
- Unit Heater-1
- Unit Heater-2
- Unit Heater-3

Facility Type: Infrastructure Asset

Delete Facility New Facility Close

1 of 1

Details

R Replacement Cost GIS: Not Linked

Link to GIS

Value Roll Up

View History Save Cancel

Exclude from valuation summary Use Roll Up for valuation calculation Include in roll up valuation calculation

Remaining Life (years):	0.84
Age (years):	19.15
Year of Construction:	2001
Original Life Expectancy (years):	20
Years Added By Maintenance:	0
Expected Replacement Year:	2021
Present Value:	\$1,460.34
Accumulated Depreciation:	\$33,095.43
Value Added By Maintenance:	\$0.00
Historical Cost:	34555.77
Replacement Cost:	61544.62
Salvage Value:	\$0

VALUE OVERRIDES

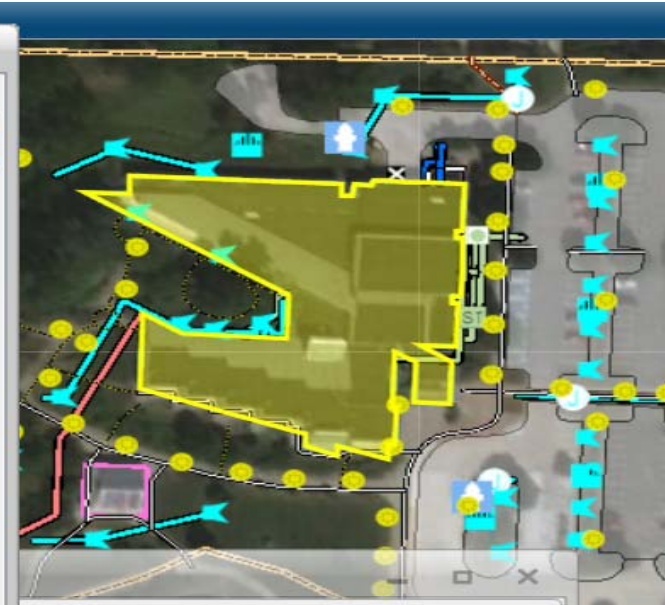
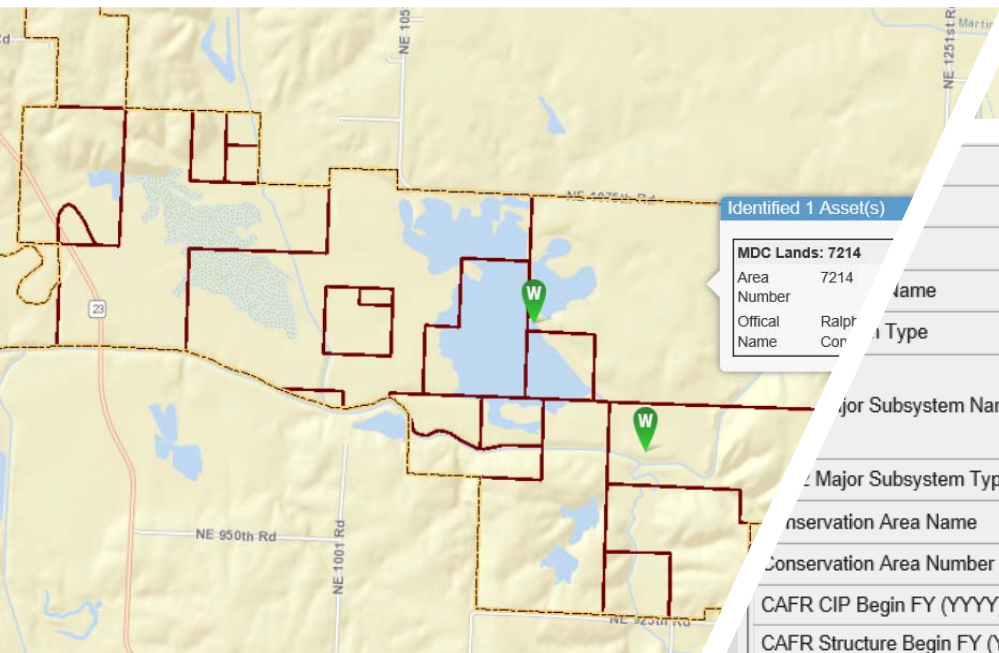
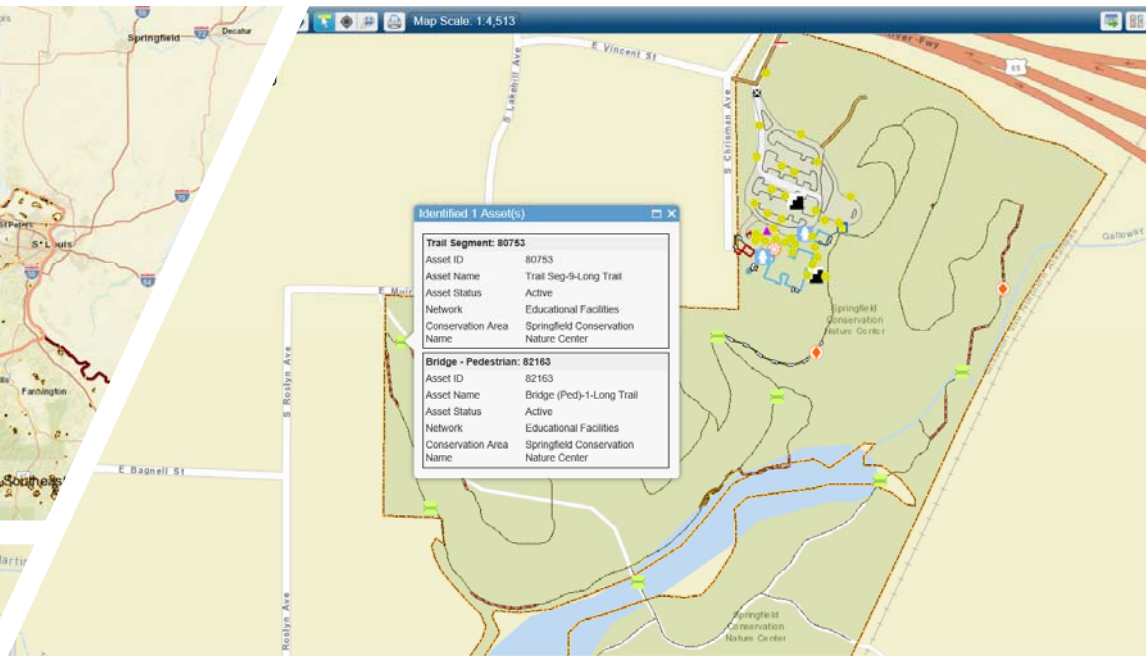
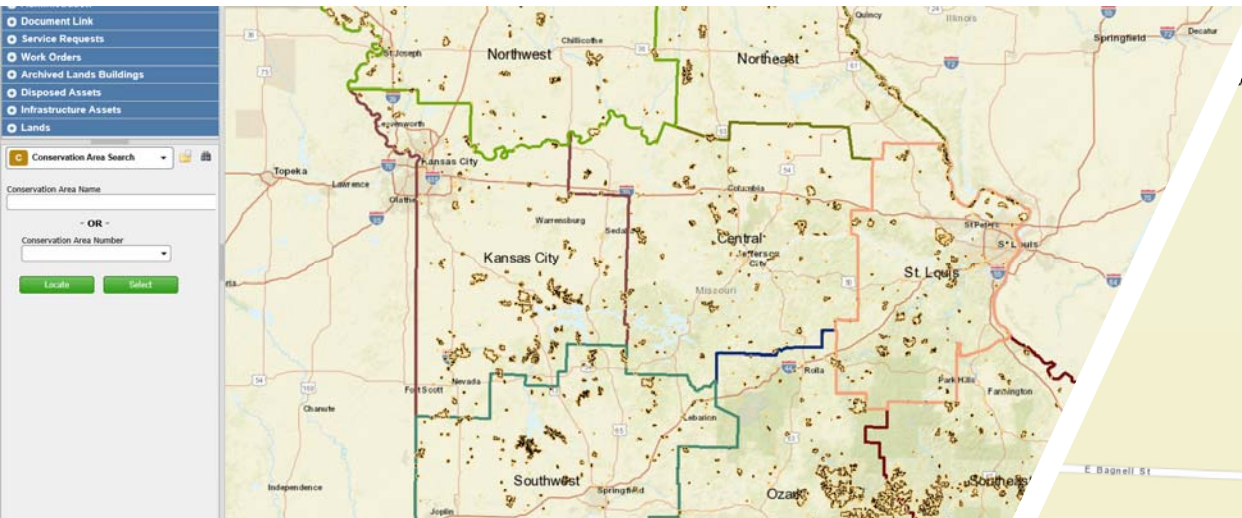


Image Document Preview

Close



Asset ID	195904Z3KA700034
Asset Status	Active
Network	General Conservation / Resource Management
Conservation Area Name	Little Dixie Lake General Conservation
Conservation Area Number	General Conservation Site
Asset Name	Bldg-Dixie Shop
Asset Type	Building
Conservation Area Name	Little Dixie Lake Conservation Area
Conservation Area Number	195904
CAFR CIP Begin FY (YYYY)	
CAFR Structure Begin FY (YYYY)	

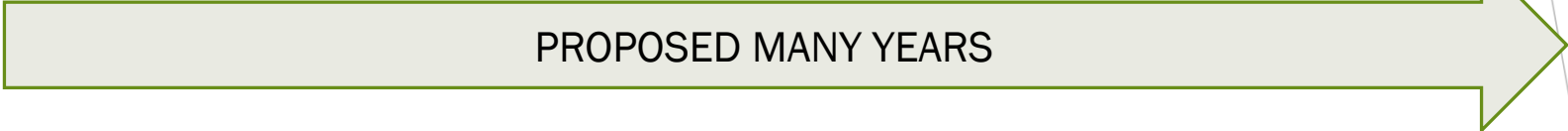
The Next Challenge

The logo consists of the letters 'ACE' in a bold, white, sans-serif font, centered within a white speech bubble with a tail pointing towards the bottom right. The speech bubble is set against a background of overlapping green geometric shapes.

ACE

The Department must know what we have, to accurately account for the cost and timing to maintain and replace infrastructure assets.

Commission Retreat – March 2017



NEED INFORMATION SOONER!



2 YEARS

Hybrid Approach



INFRASTRUCTURE
ASSET
PROGRAM TEAM



HOURLY STAFF
LOGISTICS/QA



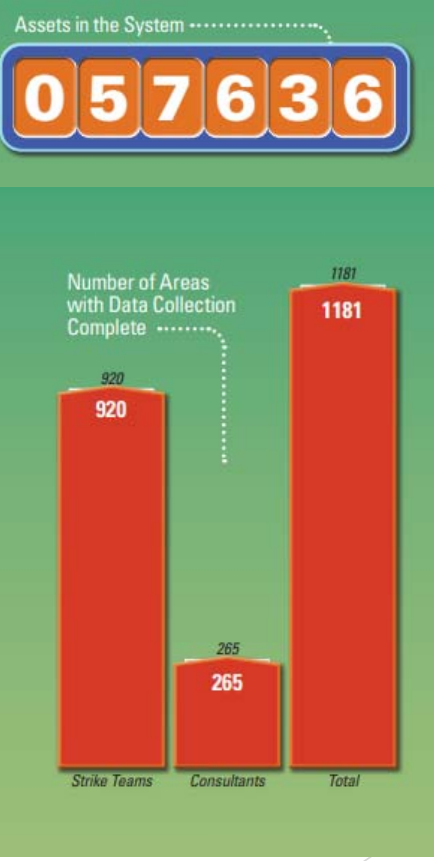
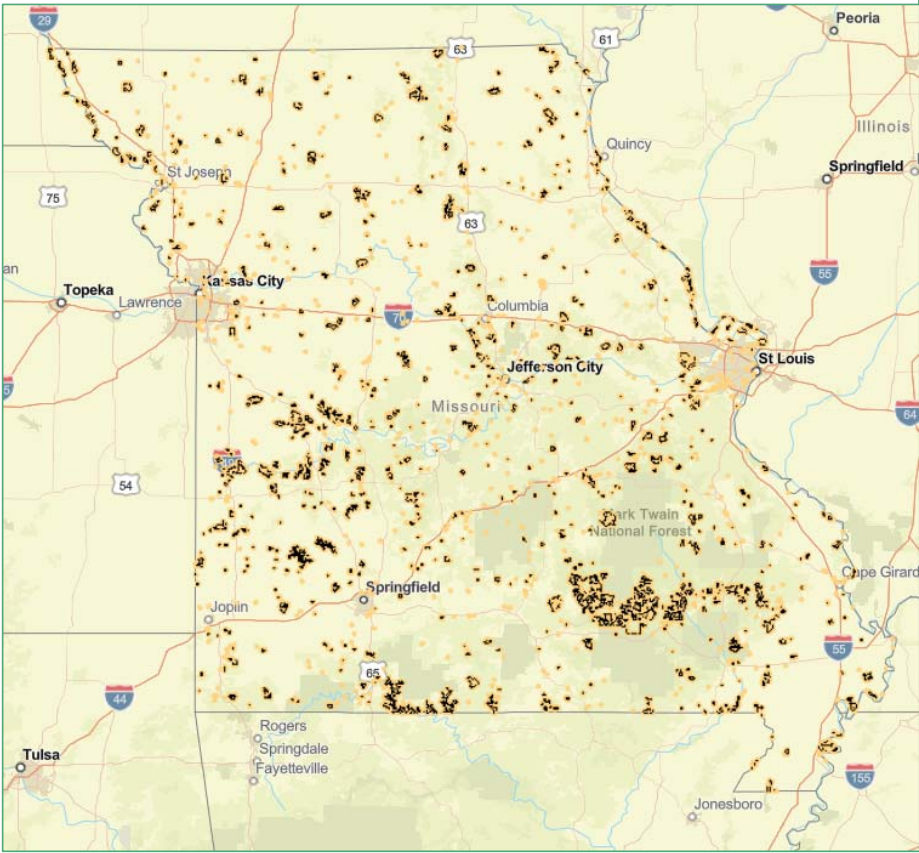
STRIKE TEAM
4 MDC STAFF
FROM EACH REGION

ZONE 1
CONSULTANT

ZONE 2
CONSULTANT

ZONE 3
CONSULTANT

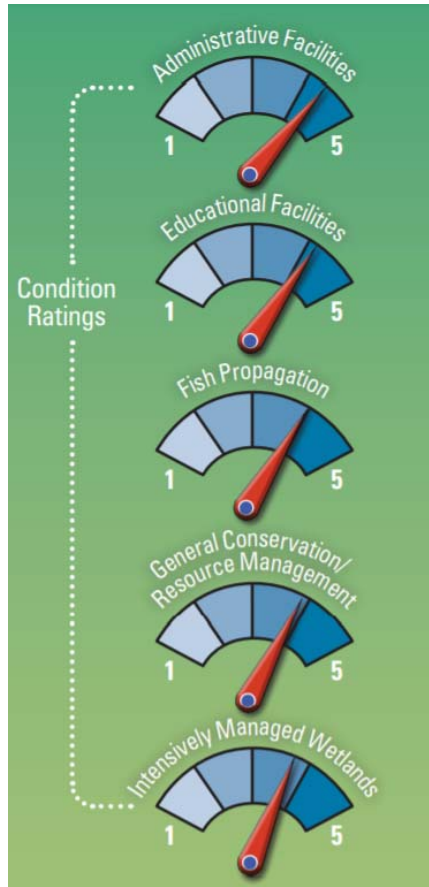
ZONE 4
CONSULTANT





Condition Rating per Network

Establish Policy on Condition Rating for Department to Maintain/Network



Capital Planning

- Identify At-Risk Infrastructure
 - Assets Nearing End of Expected Life
 - Low Condition Ratings
 - Replacement Cost



Serving nature and you®

Thank You!

