

Public Works Infrastructure Asset Management System
Stormwater Management in the Tahoe Basin


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Presented By:
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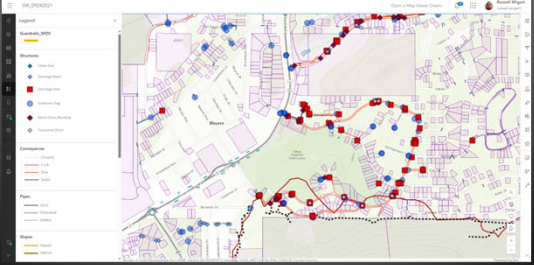
In Conjunction With:
DOT Maintenance
GIS Survey Division



1

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El Dorado County ArcGIS Online
Field Maps App

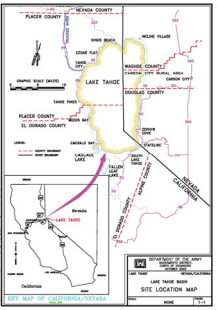


2

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El Dorado County – Tahoe Basin

- Population ~25,000
 - ~200 County road miles
 - ~8,500 homes
- Asset Management System
 - 17 years of development
 - 3 years field verification work
 - Conversion of CAD to GIS



3

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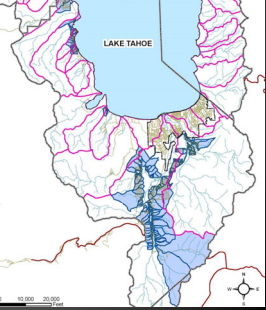
How Did We Get To Where We Are Today With Stormwater Asset Management?

- 2008 – NPDES Mandated Outfall Inventory
- 2010 – Multiple CAD file compilation to single map network
- 2012 – Began CAD to ArcGIS crosswalk
- 2013 - Created Data Dictionary for Collection
- 2014 – Finalized ArcGIS asset mapwork
- 2015 – Initiated Kerata data collection platform
- 2016 – Switched to Collector data platform
- 2017-19 (Collector Era)
 - Beta Test (2016-17)
 - Finalized Data Dictionary
 - Refine workforce layer application
 - Apply to other divisions (forestry, bridge crew, utilities etc)
- 2020 – Enter "Field Maps" App

4

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Watersheds – El Dorado Mapped



5

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Infrastructure Mapping First Take

- Utilized County staff and extra help to build a database of all existing County infrastructure in the Tahoe Basin.
- Consisted of: Drop Inlets, Sediment Traps, Storm Drain Manholes, Storm Drains, Culverts, Curb/Gutter, Channels, Treatment Basins, and Retaining Structures.
- Data was collected from Subdivision Maps, Record Drawings, and Field Observations using a handheld GPS unit.

6

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Infrastructure Discovery Learning Process

- Our County is a wonderland
- Discovery was a normal part of the process: what was shown on subdivision maps and drawings versus what was found in the field
- Knowledge slipping through the cracks with what, how much, age, size, location, what type and associated maintenance
- Leaned heavily on old timers in maintenance and engineering who remembered when

7

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8

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9

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Asset Management System

- Original Line work was stored in AutoCAD and the associated data was stored in MS Access
- All data has been converted over to ArcGIS
- Provides a valuable asset management tool. Has become a way to memorialize improvements in the ground ... less knowledge is now slipping through the cracks

10

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Infrastructure Mapbook

- Effective but a paper mess

11

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MAINTENANCE WORK ORDER FORM
El Dorado County D.W.T.

Work Order: NU1 - Culvert - 44122

From: AD-2 To: AD-2 Date: 10/13/2023

Location: El Dorado, near El Dorado on the east end of the road near ... See attached drawing.

Work Order Description: REPLACE BRICK BLOCK CULVERT, SLOPEMENT ADJUSTED
REPLACE BRICK BLOCK CULVERT WITH THE PROPOSED DESIGN AND LOCATION

Work Order Number: 20-2-13

Submitted Date: 10/13/2023 Submitted By: AD-2

Approved By: AD-2

Estimated Cost: 2 Estimated Labor: 2

Actual Cost: 2 Actual Labor: 2

Comments: AD-2, J. y MAS




THIS REPORT IS DATED BY: J. y MAS Date: 10-13-23

Depth (ft)	Flow (cfs)	Velocity (ft/s)	Velocity (mph)	Percentage of Full	Velocity (ft/s)	Velocity (mph)
1.5	1.5	1.5	3.3	75	1.5	3.3
2.0	2.0	2.0	4.5	100	2.0	4.5

12

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Electronic Data Collection

13

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Data Dictionary

Field Name	Field Type	Field Description
ASSET_ID	Integer	Unique identifier for the asset.
ASSET_NAME	Text	Name of the asset.
ASSET_TYPE	Text	Category of the asset.
ASSET_LOCATION	Text	Geographic location of the asset.
ASSET_STATUS	Text	Current status of the asset.
ASSET_CREATED_DATE	Text	Date when the asset was first recorded.
ASSET_UPDATED_DATE	Text	Date when the asset information was last updated.
ASSET_PHOTO_PATH	Text	Path to the photograph of the asset.
ASSET_MAINTENANCE_HISTORY	Text	Record of past maintenance work.
ASSET_PRIORITY	Text	Priority level for asset maintenance.
ASSET_CONDITION	Text	Current condition rating of the asset.
ASSET_EXPECTED_LIFE	Text	Estimated remaining useful life of the asset.
ASSET_COST	Text	Original purchase or construction cost.
ASSET_REPAIR_COST	Text	Cost of the most recent repair.
ASSET_OPERATOR	Text	Name of the person responsible for the asset.
ASSET_CONTACT	Text	Contact information for the asset manager.
ASSET_TAGS	Text	Additional descriptive keywords for the asset.
ASSET_ATTRIBUTES	Text	Other specific data points related to the asset.

14

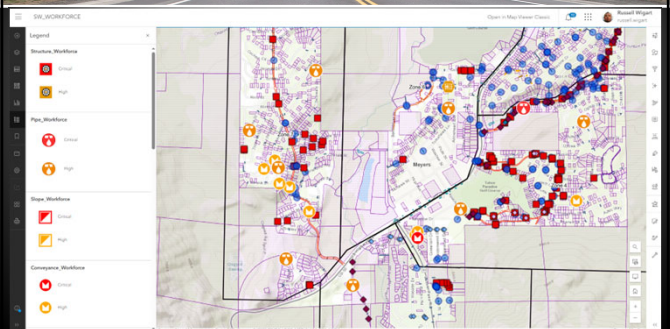
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Field Maps Use by Maintenance

- Established in 2017 after many years of development
- Inventory includes detailed attribute data as well as photographs of assets
- Ipads with Vector truck, field inspectors and maintenance supervisors. All staff have access on their Smart Phone.
- County assets inspected prior to maintenance and labeled as Critical, High, Med, Low
- Assets are then maintained and marked as "completed"

15

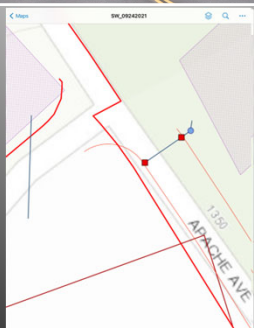
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16

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Inspection and Maintenance Example



17

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Atmospheric Hotspots



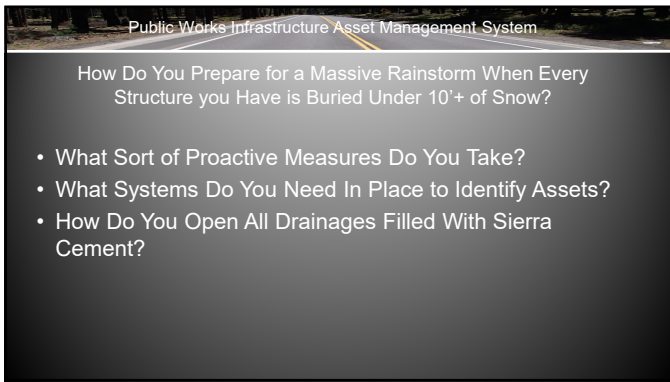
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19



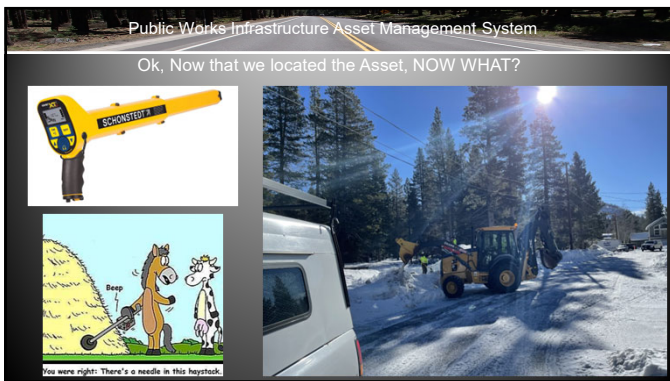
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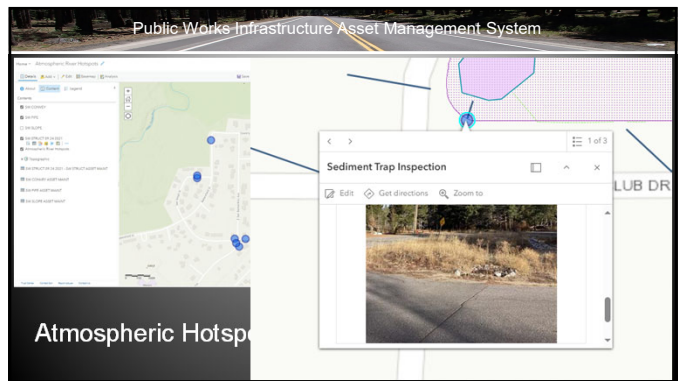
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22



23



24

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Atmospheric Hotspots

- Limits guesswork to potential flooding and areas prone to flooding
- Allows for annual maintenance records for areas prone to flooding / liabilities
- Allows for streamlined maintenance prior to potentially catastrophic storm events.
- Keeps high priority sites on the radar to reduce liabilities.

25

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Field Maps Data

- Exporting data – All data is logged in Collector and stored in ArcGIS Online
- Data can be queried for record keeping, logging or tracking information. Work in Progress...
- All inspection records are accessible to both management and supervisors
- Information can be seen online in field maps or exported to excel
- Information is now being used to track RAM data

26

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Next Steps

- Continued refinements of the tool
- More efficient data querying
- Incorporate Cost Data
- Continue West Slope Data (in progress)
- Continue use on Ipads, Iphone, Android
- Public Utility Assets and Road Rehab
- Incorporate PCI
- Training

27

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Questions?



28