



Asset Management in Public Works Road & Bridge Division

**FACERS
November 2019**

About Volusia County, FL

- Population 494,000 (2010 census)
- 400+ employees in the Public Works Department
 - Road & Bridge/Stormwater
 - Traffic Engineering
 - Mosquito Control
 - Utilities
 - Solid Waste
 - Coastal
- Asset management software (Lucity) used since October 2007
- ArcServerWeb map (EMS)



Road & Bridge Assets

- 1,047 centerline miles of roadway
- 282 miles of sidewalks
- 49 bridges (47 fixed/2 bascule)
- 160 miles of open channels
- 323 miles of roadside ditches
- 8,224 drainage structures
- 200+ miles of storm pipes
- 268 retention ponds

Asset Management Transition to GBA/Lucity



- LA Consulting hired to evaluate program
- Data collection process began in 2006
 - Video van for County maintained roads
 - Southeastern Survey for canals
- Superusers identified in each division
- Records continually managed in Lucity and assets updated in GIS



Asset Management

Work Orders Improved

- Unit of measure updated

- Retention area maintenance (mowing) = acres
- Roadside ditch cleaning = linear feet
- Street sweeping = curb miles

- Tasks expanded and associated to assets

- Retention areas – maintenance, repairs, spraying
- Drainage pipes – installation, cleaning, repairs
- Drainage structures – installation, cleaning, repairs
- Canals – mowing, spraying, cleaning
- Roads – swale construction, roadside ditch cleaning & spraying



Asset Management Planning

- Schedules provided & reviewed bi-weekly
- Productivity reports reviewed monthly
 - Average Daily Production (ADP) & costs
 - High or low ADP's
- Work planned yearly
- Routine v. response maintenance identified



Asset Management Productivity Reports



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RB Eastside SE

Work Status Detail Report October - September FY 2019

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
4216 LITTER REMOVAL UOM Ton	1.6 2.1 0.1 \$2,074.96	1.6 1.6 0.5 \$575.10	1.6 4.3 0.5 \$704.23	1.6 14.5 0.3 \$803.67	1.6 2.2 0.4 \$635.23	1.6 1.1 0.2 \$807.20	1.6 2.5 0.4 \$647.25	1.6 2.9 0.2 \$1,233.54	1.6 1.9 1.9 \$1,552.00	1.6 4.8 4.8 \$1,552.00
4218 SHOULDER REPAIR-MECH UOM Square Foot	1.9 17.2 319.8 \$1.30	1.9 11.1 3,599.9 \$0.15	1.9 9.6 573.2 \$0.86	1.9 4.4 988.7 \$0.82	1.9 0.5 2,666.7 \$0.29	1.9 40.9 3,591.1 \$0.13	1.9 1,011.8 \$0.79	1.9 1,552.00 \$0.00	1.9 4.8 \$0.00	1.9 4.8 \$0.00
4228 SHOULDER MAINTENANCE - MECHANICAL UOM Linear Feet	10.1 0.0 \$0.00	10.1 1.7 \$0.12	10.1 4.7 \$0.27	10.1 7.5 \$0.22	10.1 10.0 \$0.06	10.1 6,508.0 \$0.07	10.1 5,894.2 \$0.00	10.1 0.0 \$0.00	10.1 0.0 \$0.00	10.1 0.0 \$0.00
4229 ROAD & BRIDGE ASSET INSPECTION UOM Miles	2.3 1.1 \$13.92	2.3 4.6 \$39.64	2.3 0.5 \$12.84	2.3 2.4 \$14.73	2.3 3.0 \$17.50	2.3 24.0 \$47.91	2.3 12.1 \$0.00	2.3 0.0 \$0.00	2.3 0.0 \$0.00	2.3 0.0 \$0.00
4300 BRUSH CUTTING-HAND UOM Linear Feet	5.1 6.4 \$0.40	5.1 8.2 \$1.15	5.1 5.7 \$0.33	5.1 12.1 \$1.12	5.1 0.0 \$0.00	5.1 0.0 \$0.00	5.1 0.0 \$0.00	5.1 0.0 \$0.00	5.1 0.0 \$0.00	5.1 0.0 \$0.00
4301 FLAT MOWING UOM Linear Feet	29.4 26.1 \$1.58	9.8 20.0 \$1.82	3.0 8.3 \$2.32	1.0 7.3 \$1.76	0.0 10.9 \$1.58	0.0 16.0 \$2.08	0.0 16.0 \$2.08	0.0 16.0 \$2.08	0.0 16.0 \$2.08	0.0 16.0 \$2.08

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Drainage

Work Status Detail Report October - September FY 2019

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2202 ROW SPRAYING UOM Acres	4.3 12.2 1.8 \$303.57	4.3 9.8 2.0 \$280.77	4.3 4.3 1.5 \$357.95	4.3 11.5 2.1 \$272.42	4.3 0.0 0.0 \$0.00	4.3 6.9 2.7 \$208.30	4.3 8.0 2.5 \$216.60	4.3 4.3 3.7 \$149.96	4.3 1.5 0.0 \$0.00	4.3 0.0 0.0 \$0.00	4.3 36.4 3.0 \$245.90	4.3 0.0 0.0 \$0.00
2203 ROW SPRAYING - STRUCTURE UOM Each	0.2 11.6 \$41.57	0.2 0.0 \$0.00	0.2 0.2 \$94.18	0.2 0.0 \$0.00	0.2 0.0 \$0.00	0.2 0.0 \$0.00	0.2 0.0 \$0.00	0.2 0.2 \$18.79	0.2 0.0 \$0.00	0.2 0.0 \$0.00	0.2 0.0 \$0.00	0.2 0.0 \$0.00
2205 RETENTION AREA SPRAYING UOM Acres	7.1 6.1 \$87.82	7.1 19.8 \$59.36	7.1 7.1 \$0.00	7.1 0.0 \$186.95	7.1 0.0 \$0.00	7.1 1.1 \$0.00	7.1 7.1 \$0.00	7.1 7.1 \$0.00	7.1 0.0 \$0.00	7.1 0.0 \$0.00	7.1 0.0 \$0.00	7.1 0.0 \$0.00
2206 RETENTION AREA SURVEY UOM Each	2.5 1.5 \$17.20	2.5 4.9 \$16.33	2.5 2.5 \$21.76	2.5 1.3 \$38.10	2.5 0.2 \$119.36	2.5 2.5 \$18.87	2.5 2.5 \$0.00	2.5 2.5 \$37.30	2.5 0.0 \$0.00	2.5 0.5 \$318.84	2.5 1.2 \$82.06	2.5 0.6 \$17.33
2301 ROADSIDE DITCH SPRAYING UOM Acres	16.7 16.1 \$188.23	16.7 16.7 \$266.93	16.7 16.7 \$200.94	16.7 16.7 \$209.36	16.7 0.0 \$0.00	16.7 23.5 \$0.00	16.7 2.2 \$0.00	16.7 0.0 \$0.00	16.7 0.0 \$0.00	16.7 16.7 \$182.93	16.7 16.7 \$444.67	16.7 16.7 \$390.24
2302 DITCH CLEAN - HAND UOM Linear Feet	10.7 0.6 \$1.88	10.7 4.0 \$12.04	10.7 0.0 \$0.00	10.7 16.6 \$0.42	10.7 27.6 \$3.90	10.7 10.7 \$2.93	10.7 10.7 \$0.99	10.7 10.7 \$1.29	10.7 10.7 \$0.99	10.7 10.7 \$0.99	10.7 10.7 \$0.99	10.7 10.7 \$0.99
2303 ROADSIDE DITCH CLEAN/MECHANICAL UOM Linear Feet	86.7 98.8 \$1.58	86.7 55.4 \$1.82	86.7 66.7 \$2.32	86.7 67.1 \$1.76	86.7 67.1 \$1.76	86.7 67.1 \$1.76	86.7 67.1 \$1.76	86.7 67.1 \$1.76	86.7 67.1 \$1.76	86.7 67.1 \$1.76	86.7 67.1 \$1.76	86.7 67.1 \$1.76

Summary Totals

Labor Days	Work Qty	ADP	Unit Cost
Plan: 51.6	258.0	5.0	\$114.00
Actual: 97.2	234.3	2.4	\$257.26

Labor Days	Work Qty	ADP	Unit Cost
Plan: 2.0	100.0	50.0	\$11.76
Actual: 6.9	191.0	27.7	\$21.81

Labor Days	Work Qty	ADP	Unit Cost
Plan: 85.5	1,368.0	16.0	\$41.12
Actual: 66.5	760.0	8.8	\$70.40

Labor Days	Work Qty	ADP	Unit Cost
Plan: 30.0	600.0	20.0	\$24.50
Actual: 17.4	398.2	22.8	\$22.46

Labor Days	Work Qty	ADP	Unit Cost
Plan: 200.0	800.0	4.0	\$160.25
Actual: 194.9	455.8	2.3	\$265.18

Labor Days	Work Qty	ADP	Unit Cost
Plan: 128.0	64,000.0	500.0	\$0.75
Actual: 63.5	25,024.4	393.9	\$1.19

Asset Management

Routine Maintenance



- Certain tasks scheduled by frequency per year
- Work orders document the asset maintained
 - Templates used
 - Auto-generated
 - Staff time saved

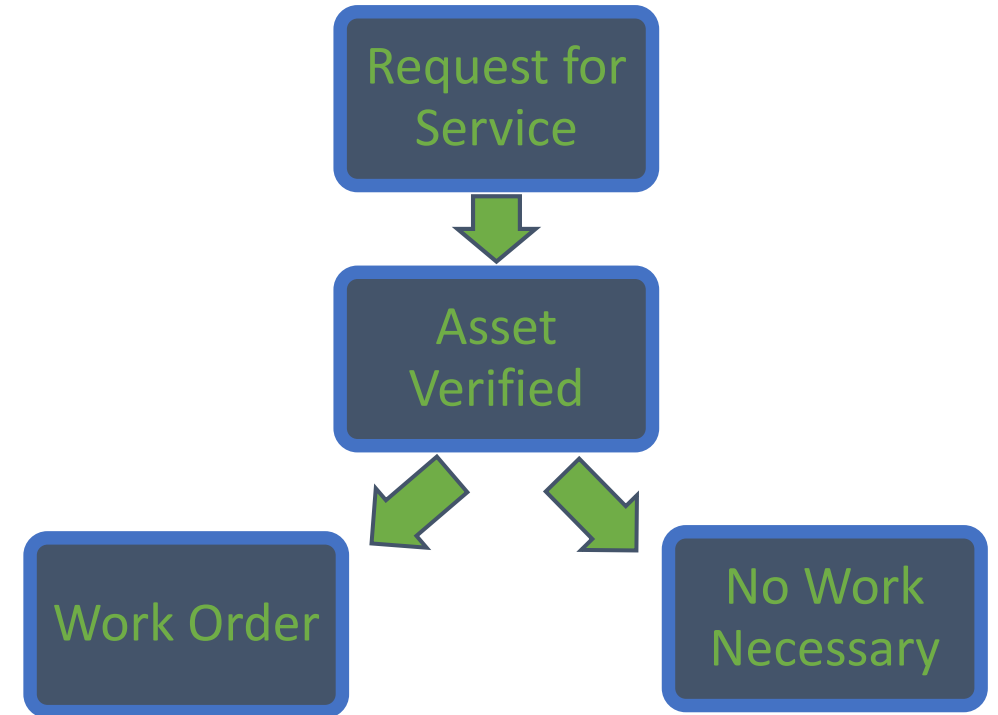
Scheduled tasks by frequency in Volusia

- ✓ Mowing thoroughfare roads = 8x/year
- ✓ Mowing local roads = 4x/year
- ✓ Grading dirt roads = 24x/year
- ✓ Retention area maintenance = 6x/year
- ✓ Street sweeping = 6x/year
- ✓ Chemical weed control = 3 to 4x/year

Asset Management

Response Maintenance

- Service requests for a specified location, such as:
 - Trees/limbs down
 - Inlet/pipe cleaning
 - Pothole/washout
- Once asset maintenance responsibility is verified, request is inspected, then:
 - Work order created, or
 - No work necessary (noted on request)



Asset Management Work Order Process

- Work order created by supervisor
- Specific task, manpower, equipment, materials to complete project added to work order
 - Units for task populated by staff
 - Auto-populated from asset
 - Provided from vendor-supplied materials, such as asphalt



Work Order Number: 18-01019

Category: Structures
 Problem: Flooding
 Cause: STORMWATER
 Main Task: REPAIR DRAINAGE SYSTEMS
 Priority: _____
 Crew: _____
 Supervisor: _____
 Status: _____

Work Order Start Date/Time: 1/11/2018
 Work Order End Date/Time: 1/11/2018
 Daily Units: _____
 Unit of Measure: Repairs

Requester Information
 Name: KATHLEEN DAVIS
 Phone #: 386-214-9459
 Address: 359 WATER OAK LN
 Home Phone #: 386-214-9459
 Work Phone #: _____

Comments from Request
 Here is my issue. I live on the corner of Water Oak and Cherokee. Every time we have a heavy rain the street flood in the corner of these streets and comes up my driveway. We've had cars stuck there for days, water splashing almost into my garage etc. The issue is the drain is getting filled up with leaves, etc. I've had to go out on numerous occasions and clean it out to get the water to go down. This is very dangerous, I've almost been hit by cars, I've had to do this in thunderstorms, etc. I'm not sure why I am having to maintain this drain. It seems to get clogged once a week. Maybe there is another solution. It was so bad this morning I could not get out of my driveway and had to drive over the lawns to get out to take my children to school and for me to go to work. I am hoping some one could get back to me with some kind of solution to this on going problem.

Task Start Date/Time: 1/11/2018
 Task Code: 4210
 Task End Date/Time: 1/11/2018
 Task Description: REPAIR DRAINAGE SYSTEMS

Employee Number	Employee Name	Hours	Type
0000018378	VERWYS, MARTIN E	10.00	DTT LABOR RATE
0000024356	WOODY, ZACHARY T	10.00	DTT LABOR RATE

Equipment Code	Equipment Description	Hours
176529	CAT MINI EXCAVATOR	10.00
176530	FLATBED TRAILER	10.00
176538	FORD F550	10.00

Material Code	Material Description	Units	UOM
R-21030014	20- LB PAIL, HYDRAULIC CEMENT	4.00	Each
R-89021001	GRATES STEEL 27 3/4"X 35 1/2"	2.00	Each
R-13508001	BRICKS CLAY 3 HOLE	50.00	Each
R-21036003	SLABS, TOPS (4'X4')	2.00	Each

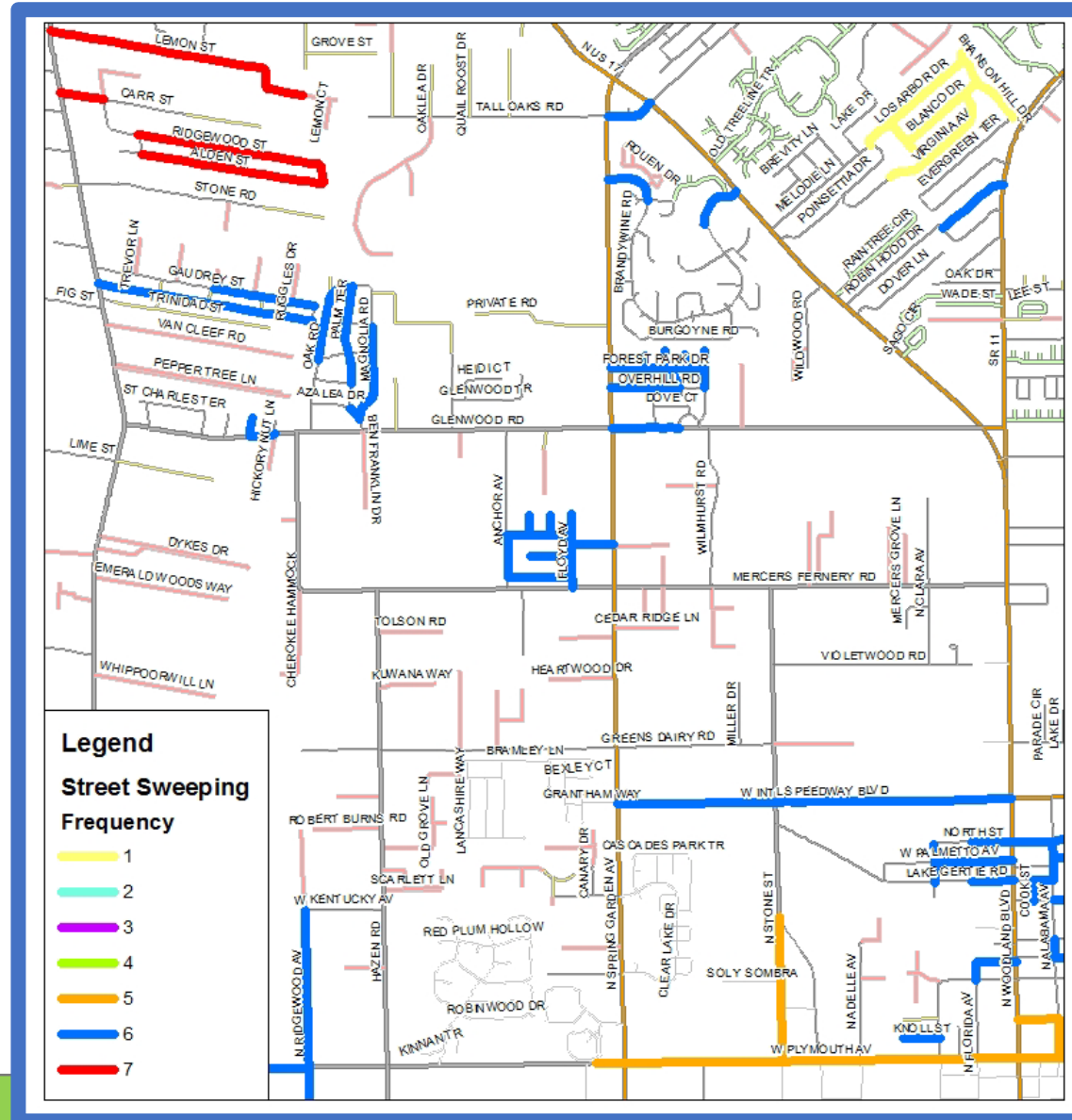
Asset Management Billing Generator

- Records are locked on the 10th of each month
- Deadline provided for supervisors to complete work orders and support staff to post hours
- Reports generated for billing purposes
 - Accurate data based on work orders
 - Fund accountability for services provided



Asset Management Frequency Map

- Generated by using specific task and period of time
- Determines if scheduled maintenance goals are being met



- Easily identify problem areas
- Another layer of QA/QC

Asset Management Report Generator



- Employee Usage Summary Report
- Cost Reports
- FEMA Reports

IRMA 2017 - CAT A (DEBRIS REMOVAL) 09/04/17 to 09/11/17 <i>Field supervision and meeting tasks excluded</i>			FEMA Fringe Benefit Rates			Road and Bridge Volusia County Florida <i>Employees utilized from other Divisions have their home Division fringe rate applied</i>							
Group	Resource Code	Resource Name	Reg Hrs	OT Hrs	Equip Hrs	Material Qty	Emp Hr Rate	Unit Cost	Labor Cost	Equip Cost	Materials Cost	Contractor Cost	Total Cost
Asset ID1	Asset ID2	Asset Detail			La/Long	Community	Completion Date						
001890	100770 - 0												
001787	100771 - 0												
001889	100771 - 0												
001904	100771 - 0												
005643	100771 - 0												
005645	100790 - 0												
005646	100790 - 0												
005696	100793 - 0												
005695	100793 - 0												
001476	100796 - 0												
001262	100898 - 0												
<i>pushing the debris and cutting tree</i>													
9/11/2017 BRUSH REMO													
1	Employee	000001654											
1	Equipment	178455											
2	Employee	000001611											
2	Equipment	159231											
3	Employee	000002301											
3	Equipment	161446											
4	Employee	000002241											
4	Equipment	195500											
Trees - Hanger/Leaner To													

Road Centerline Costing Report
Excludes Traffic Engineering Study Related Work
From 10/1/2017 thru 9/30/2018

Control IDs in order entered as parameter(s):
008611,008638,008637,008625,011554,008607,008613,008614,008609,008626,008624,036903

Drainage

CLEAN CURB & GUTTER MECHANICAL TOTAL	10,570.40
ROADSIDE DITCH SPRAYING TOTAL	1,970.95

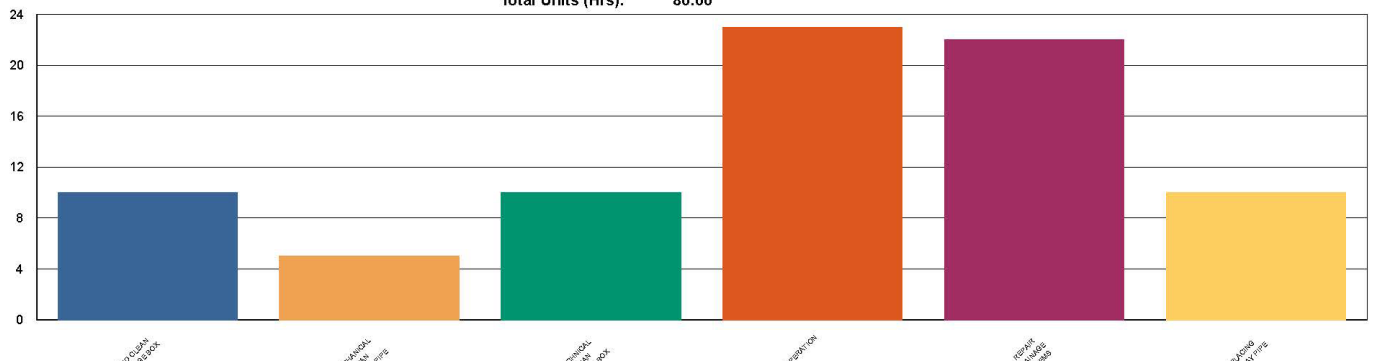
Road and Bridge

Employee Usage Summary Report

8/11/2018 thru 8/24/2018

DR EQUIPMENT OPERATOR II
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Employee	Task	Units (Hrs)	Percentage %
FONTAINE, ANTHONY 0000024266	HAND CLEAN DRAINAGE BOX	10.00	12.50%
	MECHANICAL CLEAN DRAINAGE PIPE	5.00	6.25%
	MECHANICAL CLEAN DRAINAGE BOX	10.00	12.50%
	PIT OPERATION	23.00	28.75%
	REPAIR DRAINAGE SYSTEMS	22.00	27.50%
	REPLACING DRIVEWAY PIPE	10.00	12.50%
Total Units (Hrs):		80.00	



Asset Management Data Uses

- National Flood Insurance Program
Community Rating System
 - Flood prevention activities
 - Volusia County's rating is a 5 = 25%
reduction in flood insurance costs
- NPDES Permit and nutrient removal
activities
 - Street sweeping
 - Ditch cleaning



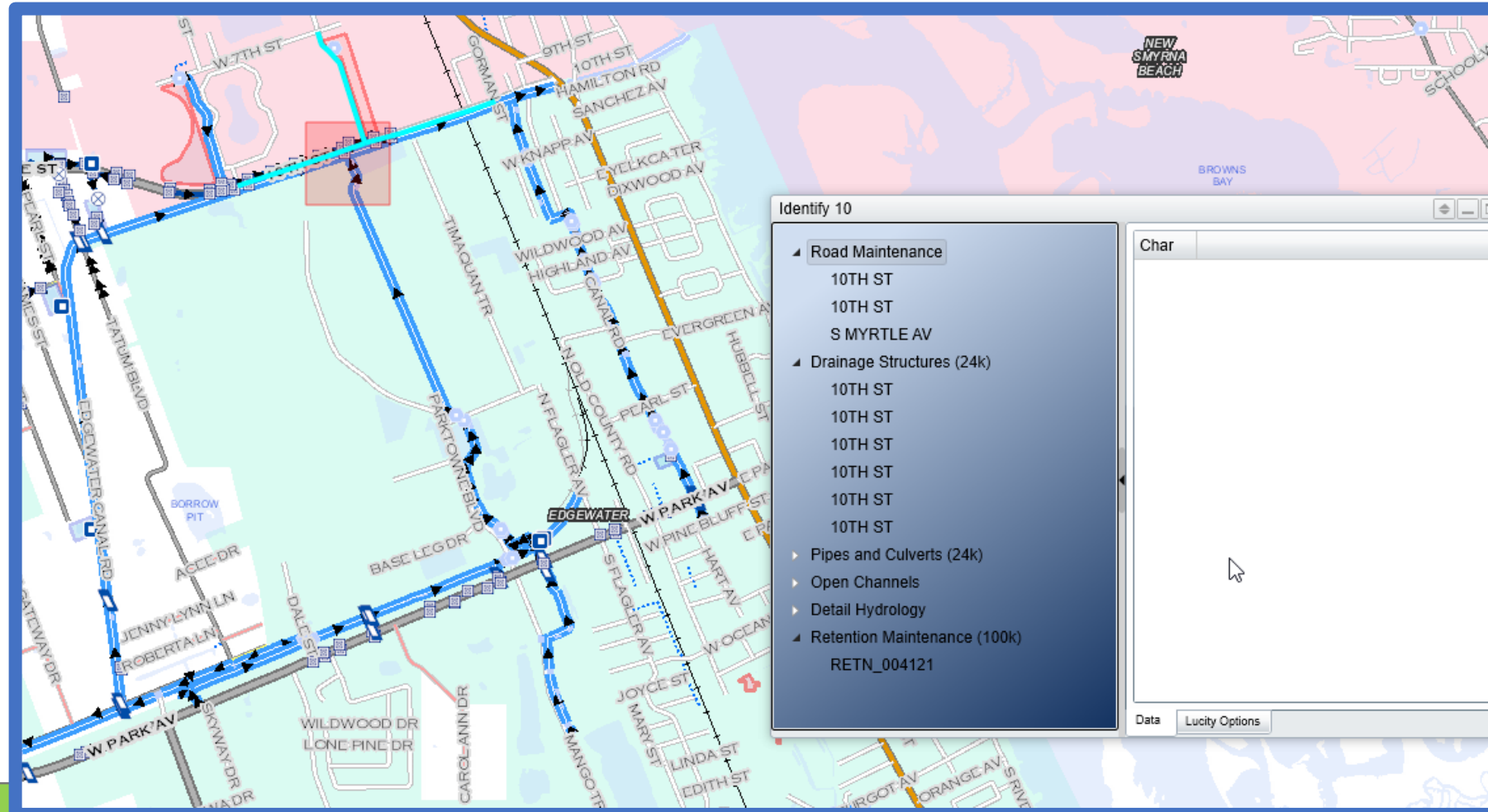
[Environmental Topics](#) [Laws & Regulations](#) [About EPA](#)

National Pollutant Discharge Elimination
System (NPDES)

Asset Management Data Uses

Real-time asset
identification

- Road maintenance
- Drainage structures
- Pipes and culverts
- Open channels
- Detail hydrology
- Retention
maintenance

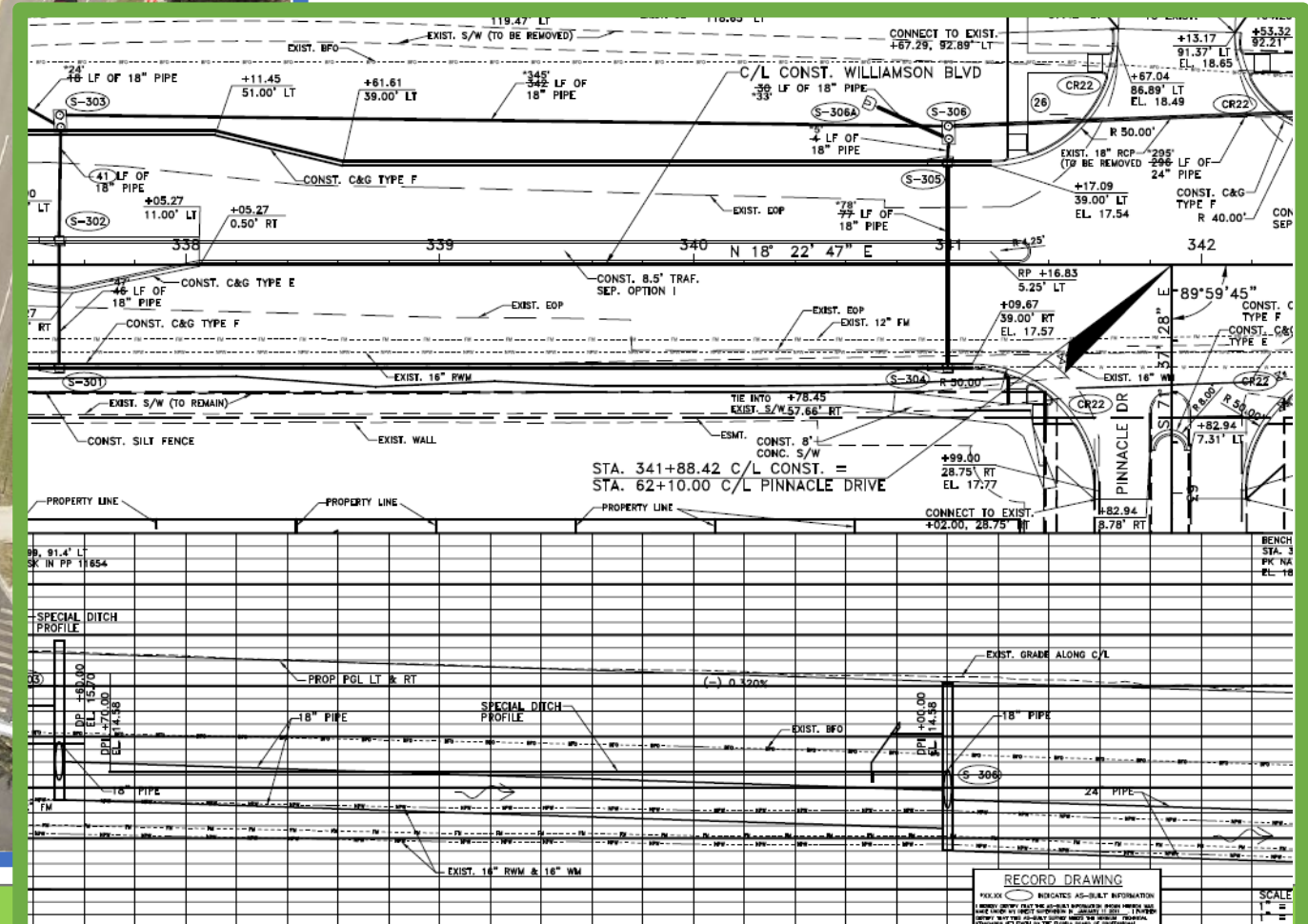
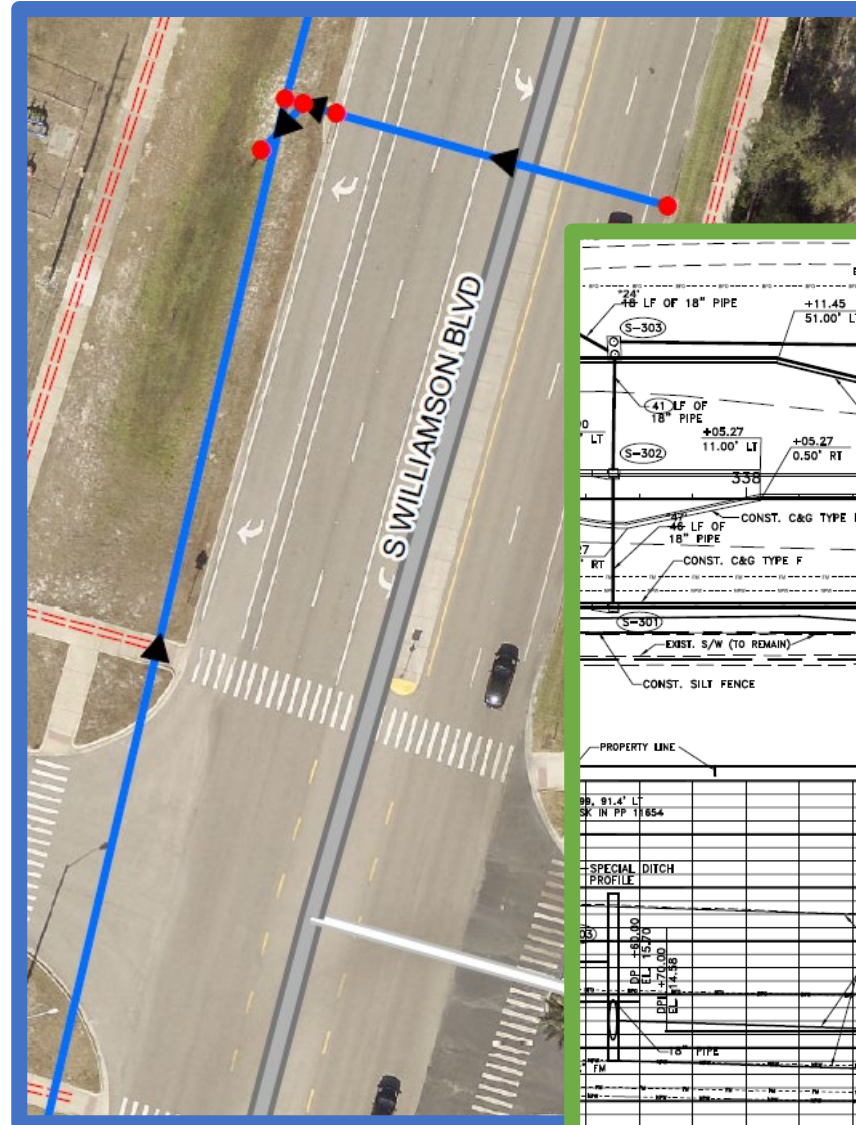


Asset Management

Data Uses



- Easy access to supporting documents such as pictures, project reports, construction plans, permits, and as-builts



Asset Management In Public Works



Questions?

Asset Management In Public Works

