Water Quality Program Rate Study

City of Chattanooga
Stormwater Regulations Board

Today's Presenters

- Bill Payne, City Engineer
- Jim Luebbering, Assistant City Engineer
- Consultant Team
  - Justin Bolender, HDR
  - John Damico, ERC

ERC Inc
Storm Water Professionals

CITY OF CHATTANOOGA CORPORATION SEAL TENNESSEE

HDR

Water Quality Program Rate Study

- Business plan based Level and Cost of Service Rate Study
  - LOS/COS
- April 2016 to Present
- Audit of Current LOS
- Planning of Required Level of Service
  - FY-19 thru FY-23
- Projection of Future Costs & Rates

Six Minimum Measures

- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping

Existing Programs / Mandated Responsibilities

Public Education / Outreach

- Attend & Host 35 events annually
- Materials and data to 25 civic, education, business organizations
- Outreach readily available to 195,000 event attendees annually

Green Demo Partners

Belgard Environmental

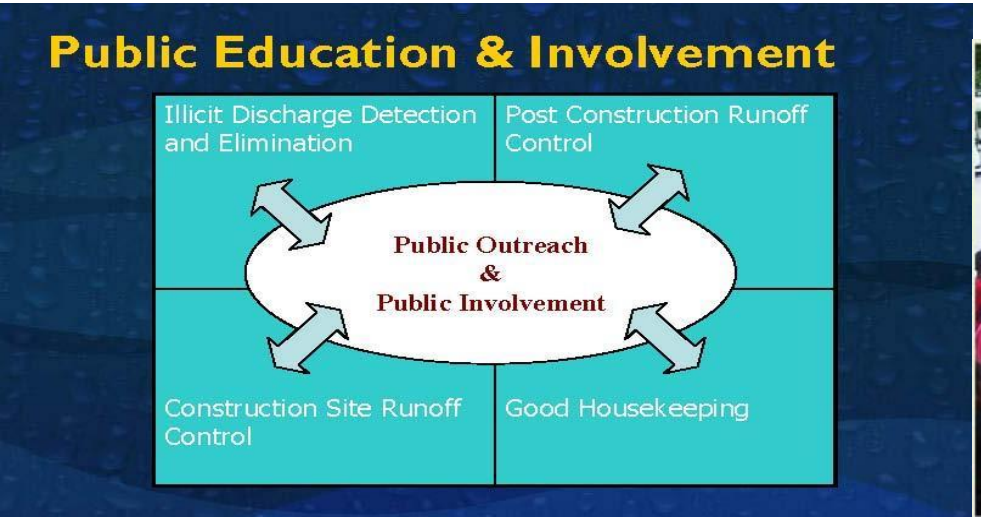
Chattanooga Fire Department

City of Chattanooga Water Quality Program

Normal Park Museum Magnet School

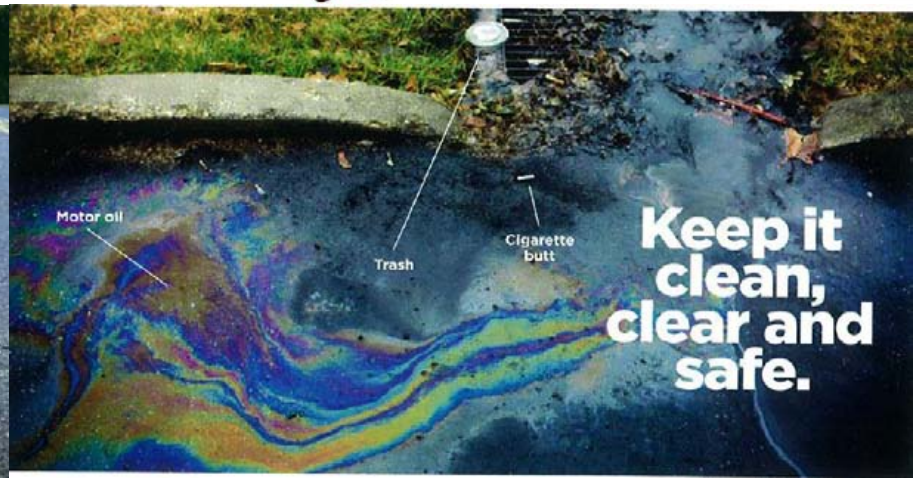
Tennessee American Water

Chattanooga Housing Authority



Public Participation / Involvement

- Examples - stream cleanups, volunteer days, demonstration projects
- ~1,500 staff hours per year



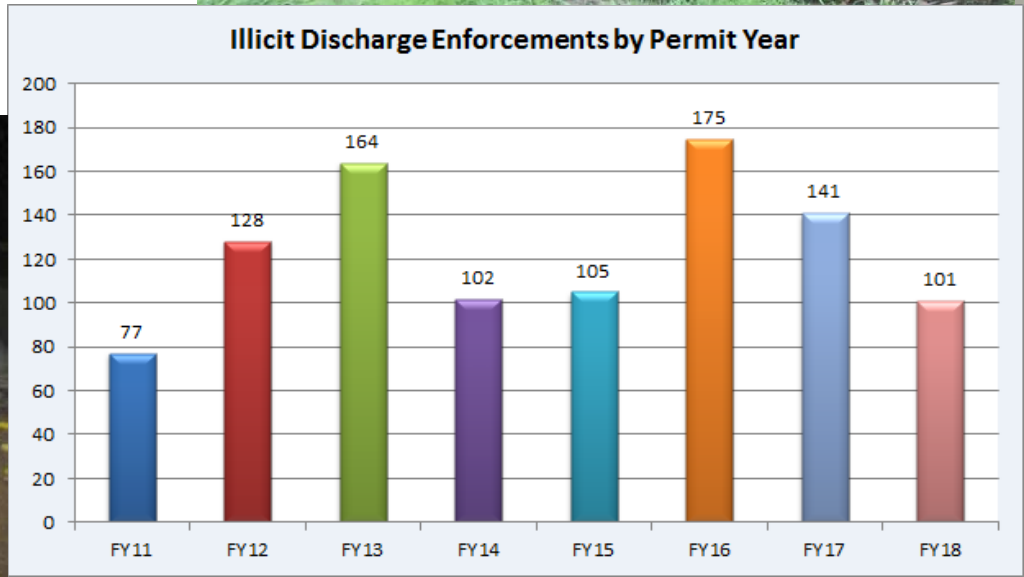
Illicit Discharge Detection and Elimination (IDDE)

IDDE is a complex and broad reaching program element.

Purpose: Eliminate “non-stormwater” discharges to the MS4 or “Waters of the State”.

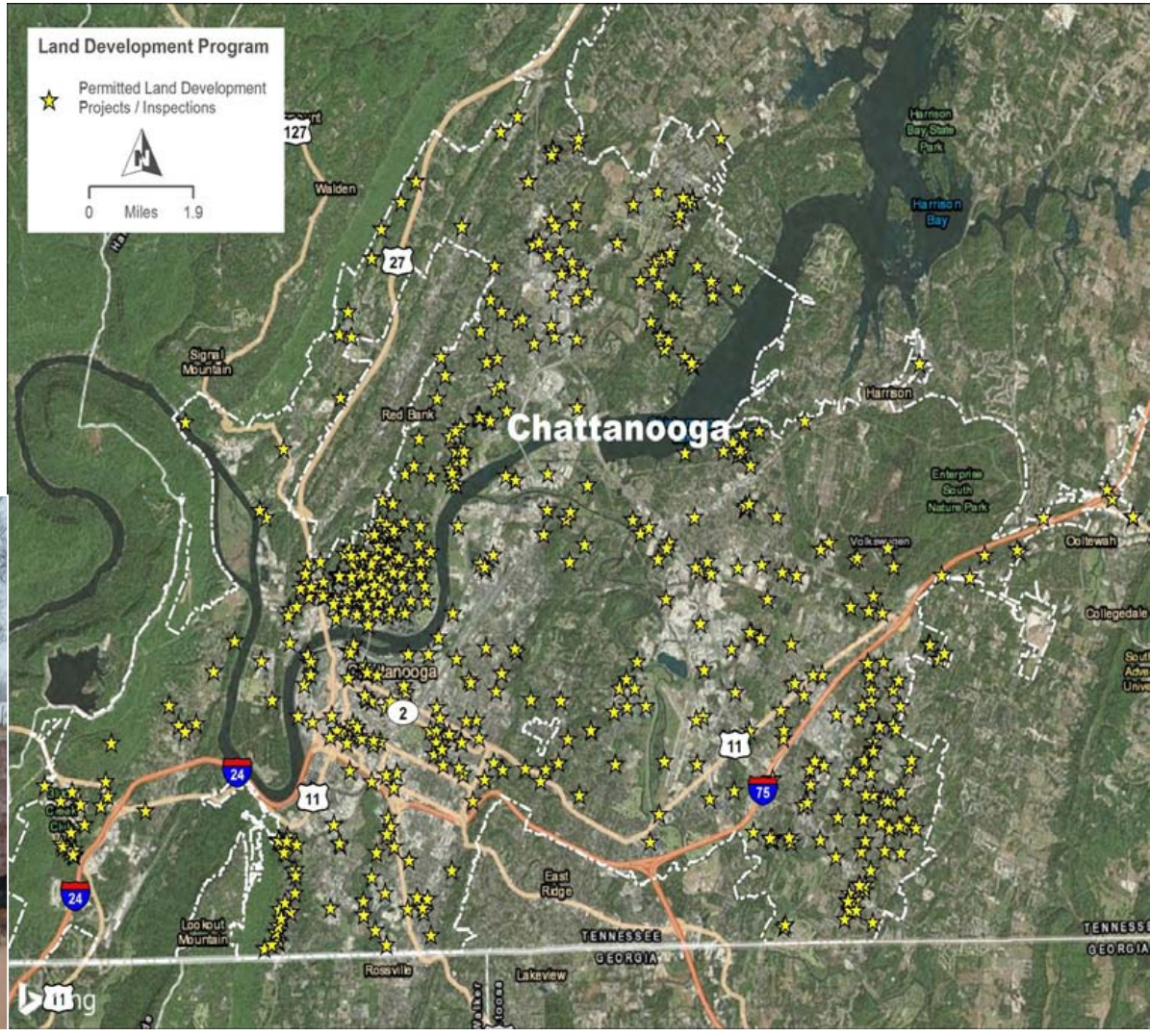
Key components of the City’s IDDE program include education, enforcement, and inspection.

- Approximately 125 anomalies corrected yearly
- Multiple inspections required per anomaly



Construction Site Runoff Control

- Performed by LDO
- Via plans review & inspections
- E&SC significantly protects the environment
- 665 permitted sites in 2017



Post-Construction Runoff Control

- Performed by DPW
- Managing conveyance, flood control & pollutants
- ~400 sites inspected annually
  - +/- 1,000 BMP's (Best Management Practices)
  - Oil Skimmers
  - Bioswales
  - Rain Gardens / Vegetation
  - Green Roofs
  - Pervious Pavements
  - Retention / Detention Ponds

Pollution Prevention / Good Housekeeping

- What's good for the goose...
- Goals: Inspection procedures, reducing pollutants from roadways and city owned facilities
- 12 Municipal sites inspected quarterly
- Employee training mandates: Maintenance of parks, open space, fleet, buildings, new construction, land disturb, sw systems

Industrial Inspections

230 sites w/NPDES permit

- 100 high risk (chemical facility)
  - 3-year cycle

Commercial sites “near” industrial distinction

- distribution site (not manufacturer)

2,000 annual hrs staff time managing

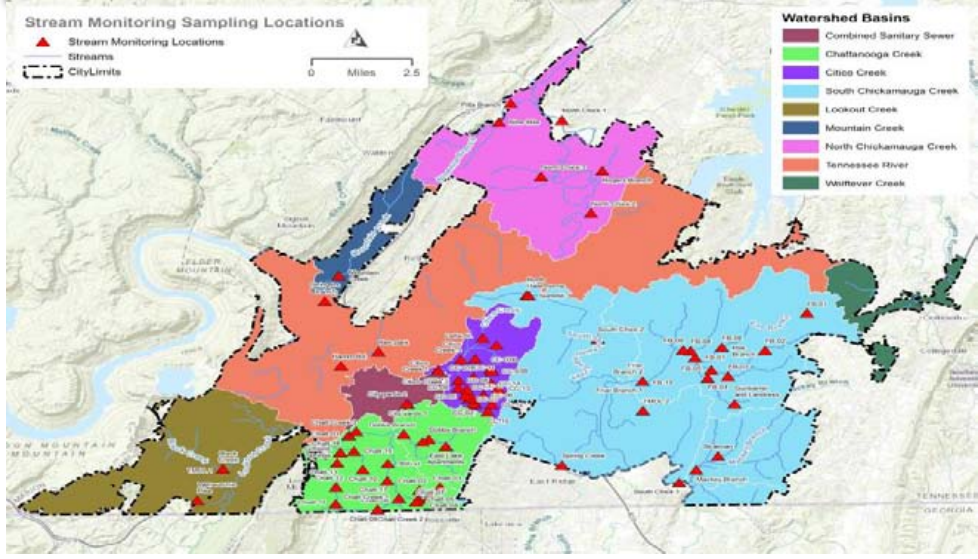
- 33 high risk + 15 other = 48 annual

Industrial Pollutants:

- nitrates/phosphates from fertilizer
- petroleum
- heavy metals
- temperatures

Biological Sampling & Monitoring

- Wet-Weather Sampling:
  - 5 Homogeneous Land use – 3 times/yr
  - 4 Industrial Sites – 1 time/yr
    - COD, pH, BOD5, TSS, TP, TOC, N, Temp
  - 5 Municipal Sites – 1 time/yr
    - muni. WM facilities, CWS, Summit LF, Moccasin Bend LF, 36th St.
    - Metals, chromium, copper, lead, nickel, zinc, nutrients…..
- Watershed Characterizations (7 Total):
  - Sampled monthly, quarterly, semiannually
- Biological Monitoring: 3 sites semiannually
- TMDL Monitoring: 28 locations
- Staffing Levels:
  - 6 employees + 1 supervisor



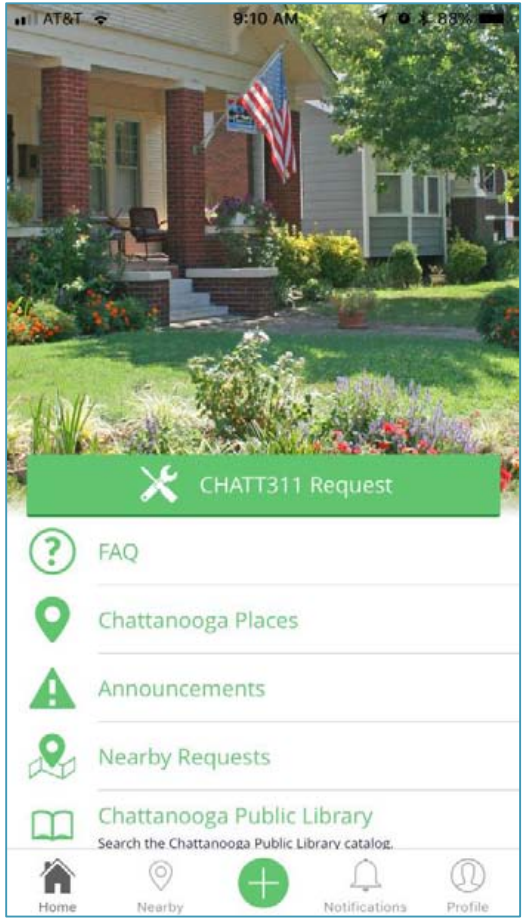
Spill Response

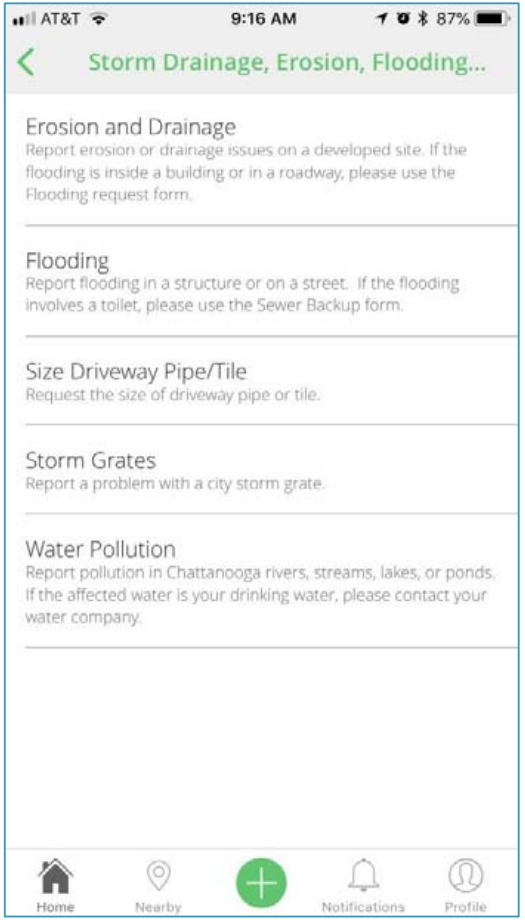
Spill can be of caustic and toxic chemicals requiring quick response.

- ~22 responses per year
- Responsible to develop Enforcement Response Plan
- Address Repeat Violations
- Document:
  - event,
  - environmental impact,
  - response,
  - remediation,
  - subsequent measures,
  - and follow-up training for prevention

311 Response

- Accela 311 App
- Over 2,000 Annual Water Quality Inquiries and Requests for Investigation
- 6 FTE's to manage investigations, citizens, documentation and design.





Capital Projects

Anderson Ave. Green Infrastructure

- GI neighborhood retrofit
- Located in ROW of the 900 block of South Holly Street, and the 1600-1700 blocks of Anderson Avenue
- Improving drainage and water quality to Dobbs Branch
- Planning & in-house design started in 2013
- GI mitigates the effects of urbanization on the water quality - sustainable systems
- Storm conveyance reduces incidents in localized flooding.
- *Construction (Complete): June 26, 2017 – March 2018*
- *Total Cost: $1,760,715.53*

Anderson Ave. Green Infrastructure

Before

Anderson Ave. Green Infrastructure

Capital Projects

Valley Brook Subdivision

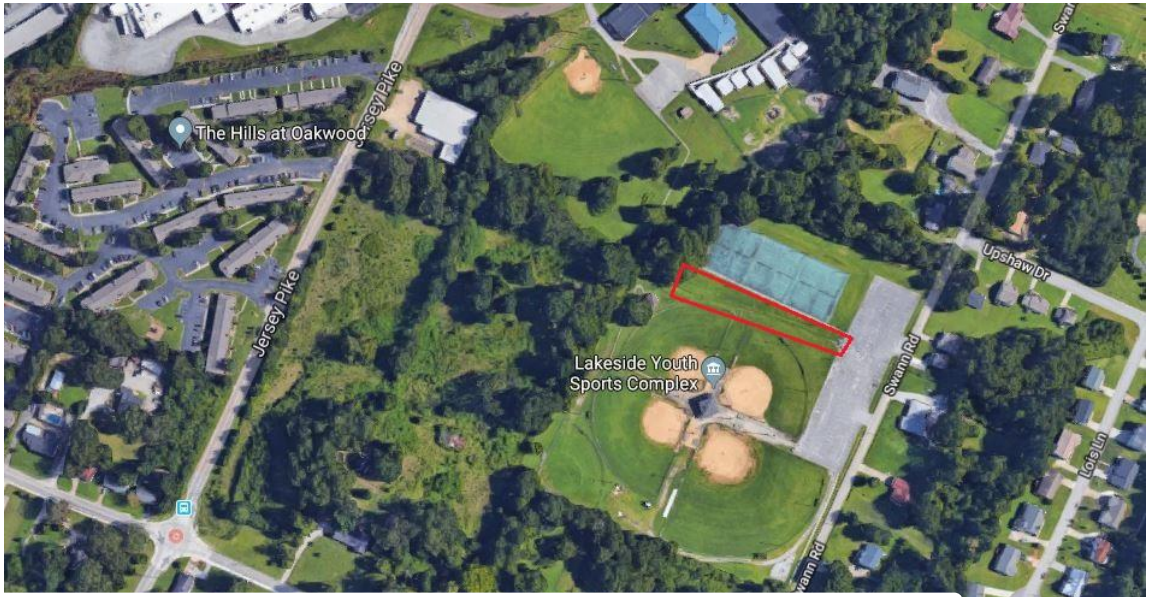
- Two major road crossings
- Upland watershed delivers more
- Roadway and private property flooding
- Crossing #1 - City crews worked from 4/17 to 10/17
- Crossing #2 - located at the tributary to Rogers Branch & Valleybrook Road; beginning this summer
- Increase conveyance from 2-yr to 25-yr storm
- Total Cost $304,000
- In-house Design & Construction

Valley Brook Subdivision

Capital Projects

Swan Road

- Current infrastructure replacement project
- Hwy 58 area. Existing, 18” pipe being replaced with ~1,200-feet of 48” pipe.
- Property flooding issues, High flow depths across Swan Road and the parking lot at the Lakeside Youth Sports Complex.
- Alleviate localized flooding and mitigate parking lot and ditch heavy scour issues.
- Construction Costs to date = $213,000
- In-house Design & Construction
- Work began Oct. 2017 & is estimated to be complete Oct. 2018




Swan Road

Capital Projects

Agawela Dr. Stream Restoration

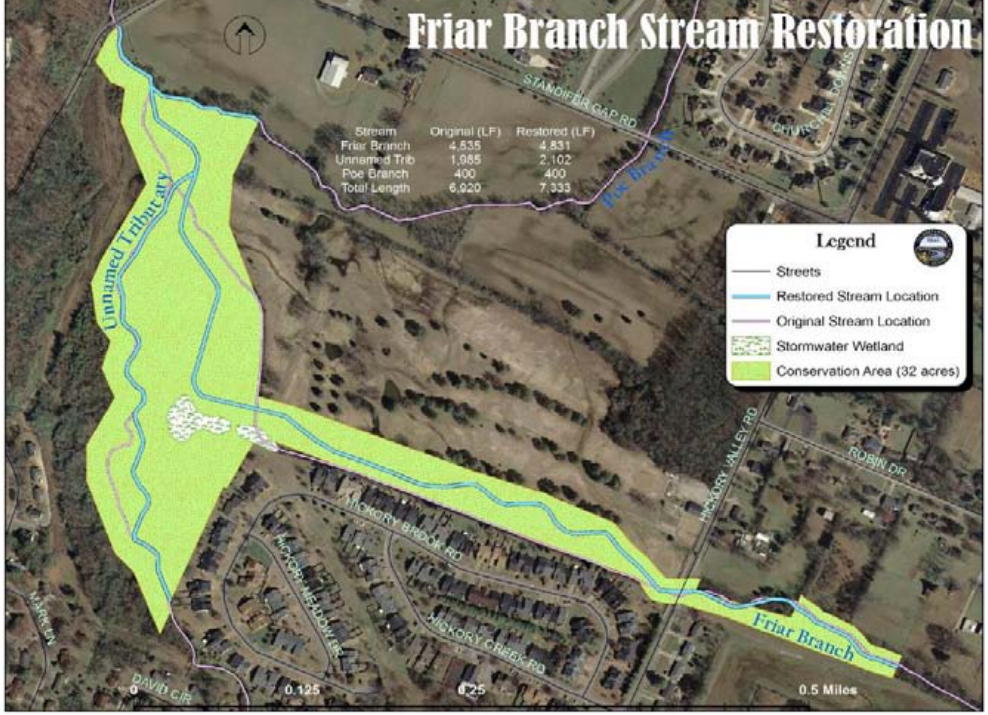
- 1500 LF of Stream Stabilization to address Sediment Erosion into South Chick Creek
- Contract Value: $900,000
- Designer: HDR
- Construction Completed: 2017
- Reestablish:
  - Pools, riffles, velocity dissipation, stabilization and groundwater reconnect

Agawela Dr. Stream Restoration

Capital Projects

Hickory Valley Stream Restoration

- 7,333’ of restored stream in the Friar Branch watershed.
- Increased channel sinuosity created over 400 feet of additional stream habitat
- Stormwater wetland was installed to treat polluted runoff. Contract Value: $1,500,000
- Construction Completed: July-Dec. 2010 with plantings in Feb. 2011



Capital Projects

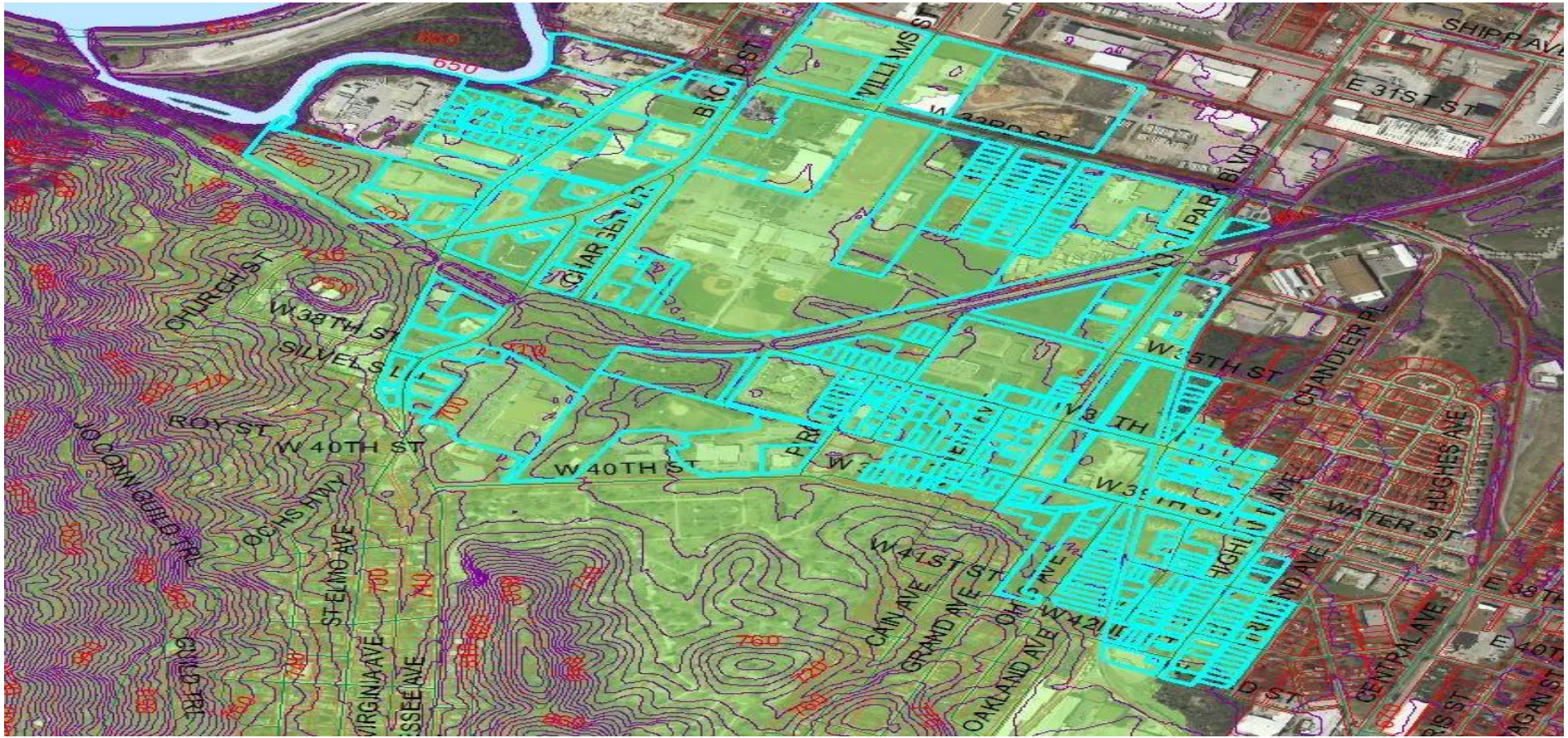
North St. Elmo Ave. Improvements
“Big Dig”

- Collapsed CMP under former Wheland Foundry Landfill up to 75’ deep
- Aware ~2000 (negotiations), 2008 - 8 years of planning, permitting, funding, design
- New 1,400 LF of 10’ x 10’ box culvert, 30’ deep
- 4 connections installed via Tunnel Bore Machine

North St. Elmo Ave. - **“Big Dig”**

- Contract Value: $17M
- Designers: Civic Engineering, S&ME
- Contractor: Wright Brothers
- Construction Completed: 2017

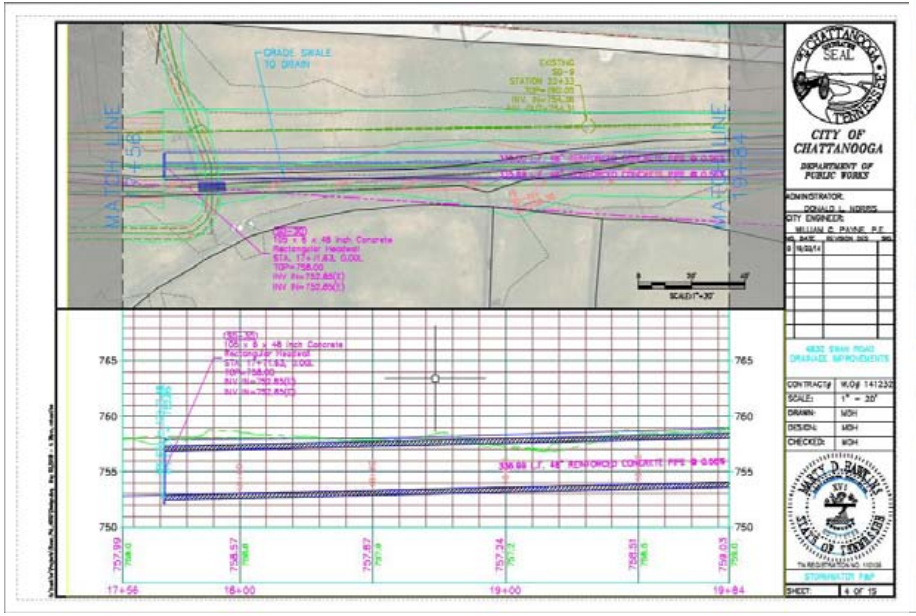
North St. Elmo Ave. “Big Dig”

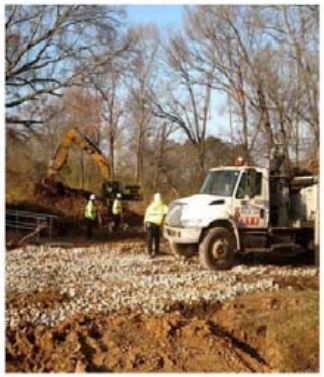


North St. Elmo “Big Dig”

Engineering Design

- 8 Design and Engineering staff members
- ~16,000 hours annually
- 265+ hours on typical drainage project: Swan Rd. modeling & design





Construction, Management & Inspection

North St. Elmo (Big Dig) Drainage Improvements Project

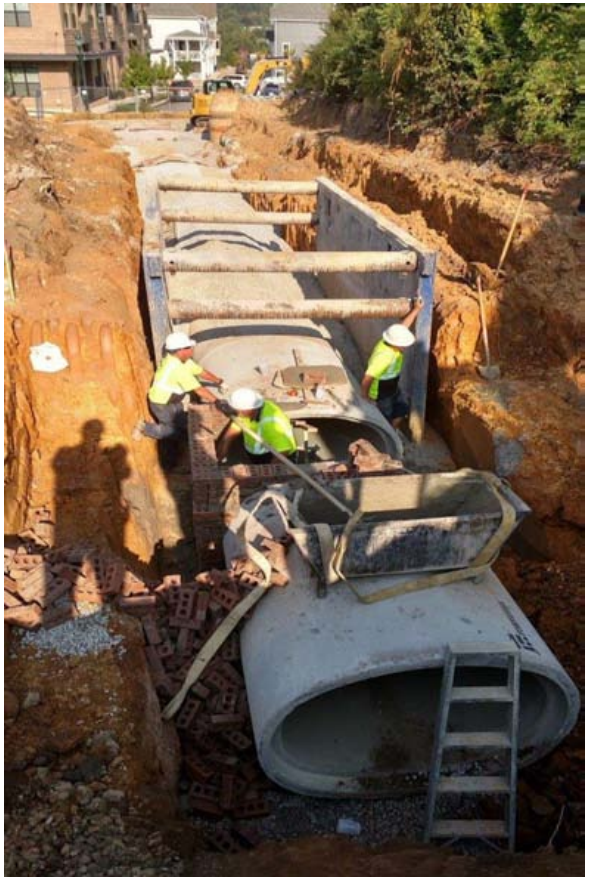
- To Optimize & Avoid
- 1 Inspector;
- 1 Engineering Coordinator
- Staff hours to manage = 3,000+ hrs

Operations & Maintenance Crews

- CCTV Rodding / Camera Crews
- Rodding and Vacuum Crews
- Floodplain Preservation Program Crew
- Beaver Control Crew
- Street Superintendent
- Street Foreman
- General Stormwater Maintenance Crews
- Flood Events Crews

Construction Crews

- Culvert Crews
  - 2 Operator's with backhoe
  - 2 Drivers / Laborers with various trucks
- Pipe Crews
  - 2 Operator's with backhoe
  - 2 Drivers / Laborers with various trucks
- Masonry Crews
  - 1 Operator
  - 1 Tech
  - 1 Driver
  - 1 Laborer

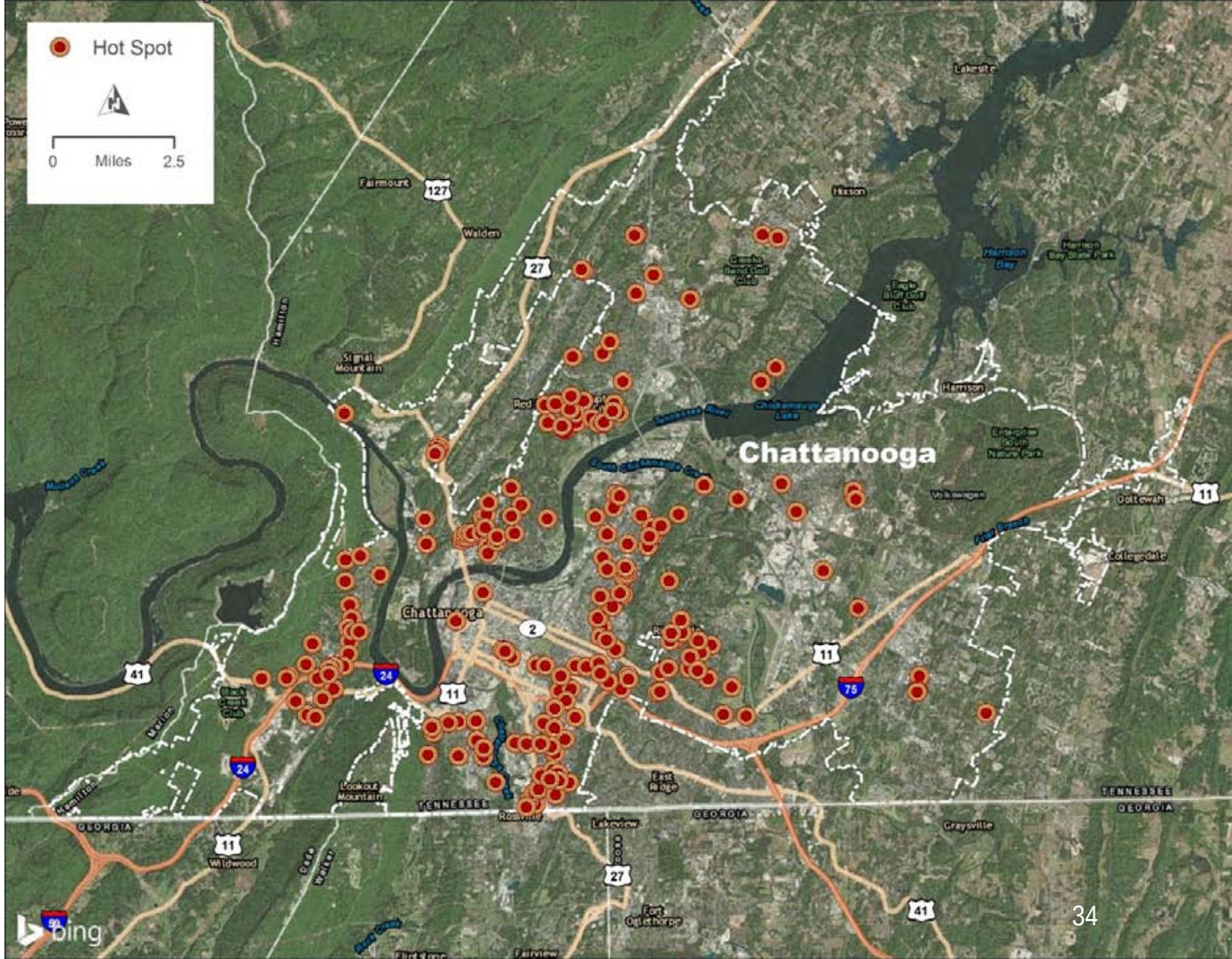


Ditch Maintenance Crews

- Ditch Maintenance Crews
  - 2 Operators
  - 2 Drivers
  - 2 Techs
  - 2 Laborers

Inspection & Vacuum Cleaning Crews

- 230 Hotspots checked before/during/after major rain events
- 630 miles of pipe
- 1,350 miles of ditch



Total Current Revenue

- ERU's x WQ Fee - Adjustments + LDP Revenue = Net Revenue

- 181,923 ERU's x $115.20 - Adjustments + ~$90,000 = $19,900,000 (FY-2018 Projected)

Questions on Existing Programs?

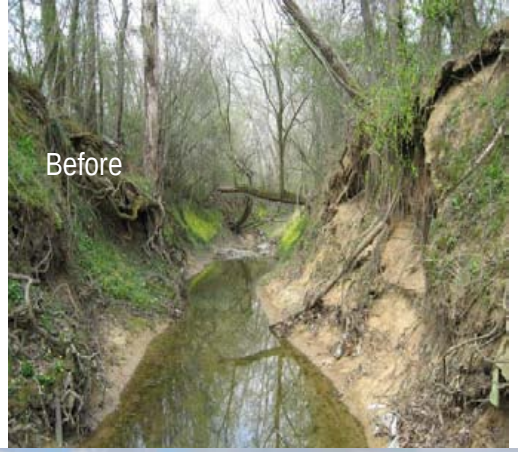
New Proposed Activities

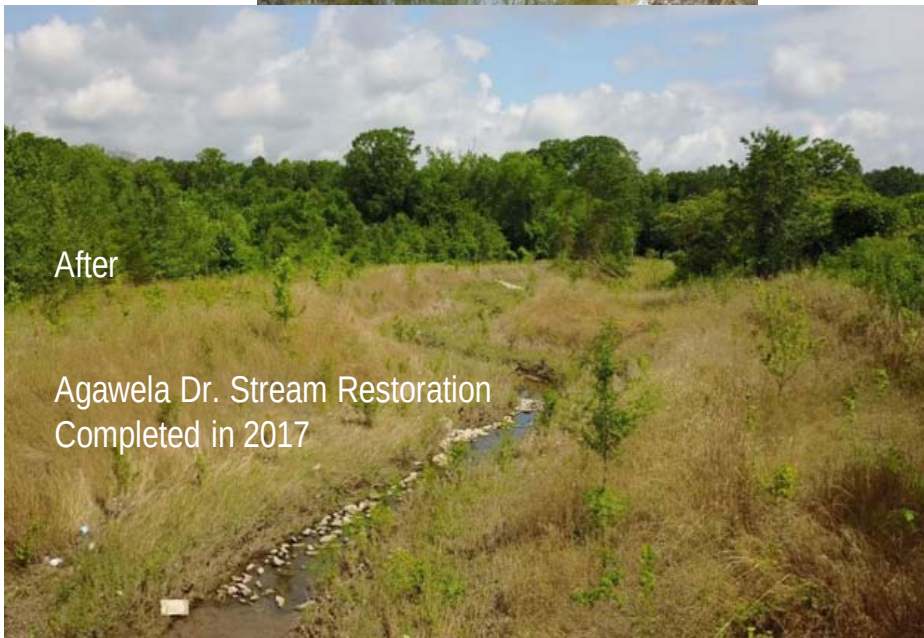
Recommended Level of Service

Additional Capital Projects To Address TMDL's

Stream Bank Stabilization

- Avg. $2M per year for new TMDL CIP
  - ~20% of proposed increase





SFR Detention Pond Maintenance Program

- 30 Ponds annually
- Requires heavy and light equipment, crews, structures, installed and expended materials, erosion controls, seed, hauling of spoils
- Annual Cost: $500,000

Green Infrastructure Installations and Maintenance

- ~21 City Owned properties with BMP's
- More coming each year
- $400,000 per year
- Installation, maintenance, repair, replacement of:
  - plants
  - underdrains
  - stone
  - filter-fabric
  - monitoring stations
  - inlet and outlet structures

Drainage Infrastructure Improvements

Reduce Backlog of Drainage Projects

- $1.0 Million Per Year
- Upland watersheds contributing “more”.
- Work in the ROW
- Addressing the following:
  - citizen requests
  - aging infrastructure
  - backlog of projects

Proposed Revenues

- ERU’s x WQ Fee - Adjustments + LDP Revenue = Net Revenue

- 182,197 ERUs x $126.49 - Adjustments + ~$362,400 = $20,751,000 (FY-2019)

Proposed Revenues and Expenditures (Scenario 5)

	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
Calculated Rate/ERU/Year	**$115.20**	**$126.49**	**$138.78**	**$152.33**	**$167.22**	**$183.54**
Annual Rate Increase	**0.00%**	***9.80%***	***9.71%***	***9.77%***	***9.77%***	***9.76%***
Water Quality Fee Gross Revenue	$20,960,000	$23,040,000	$25,320,000	$27,830,000	$30,590,000	$33,620,000
Land Disturbance Permit Fee, Gross Revenue	$73,255	$362,400	$362,400	$362,400	$362,400	$362,400
Total Gross Revenue	**$21,033,255**	**$23,402,400**	**$25,682,400**	**$28,192,400**	**$30,952,400**	**$33,982,400**
Operating Expenses	$20,020,000	$19,870,000	$22,130,000	$22,360,000	$23,510,000	$23,700,000
Capital Projects Cost	***$1,013,255***	***$3,532,400***	***$3,552,400***	***$5,832,400***	***$7,442,400***	***$10,282,400***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