Stormwater, Water Quality, Water Quantity and Lessons Learned from Compensatory Mitigation

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Michael Clark

Resource Environmental Solutions

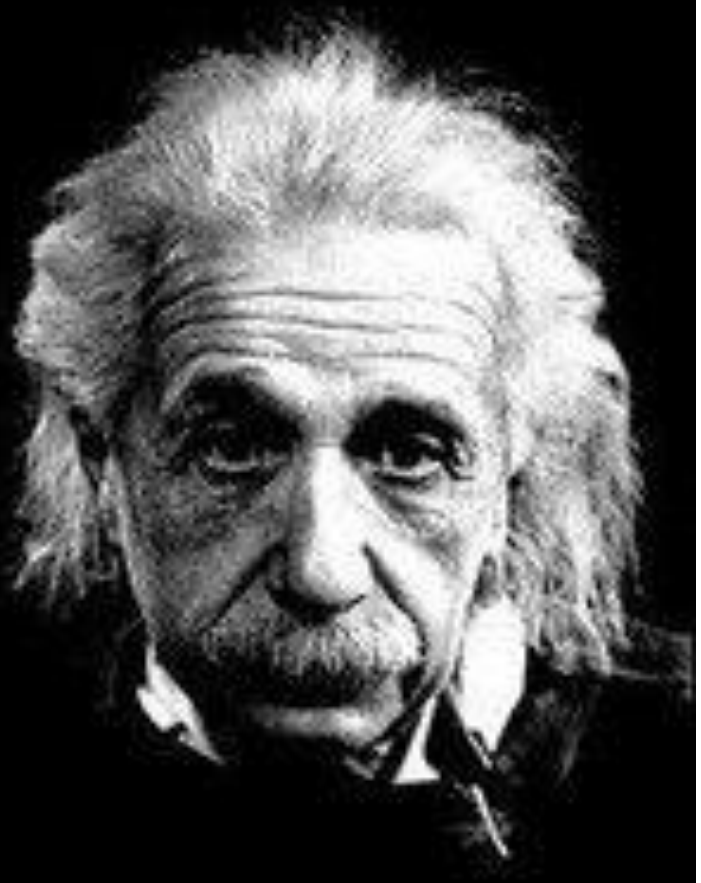
Presentation Overview

Objective: Discuss CWA 402 versus 404, Quality versus quantity, and stormwater requirements.

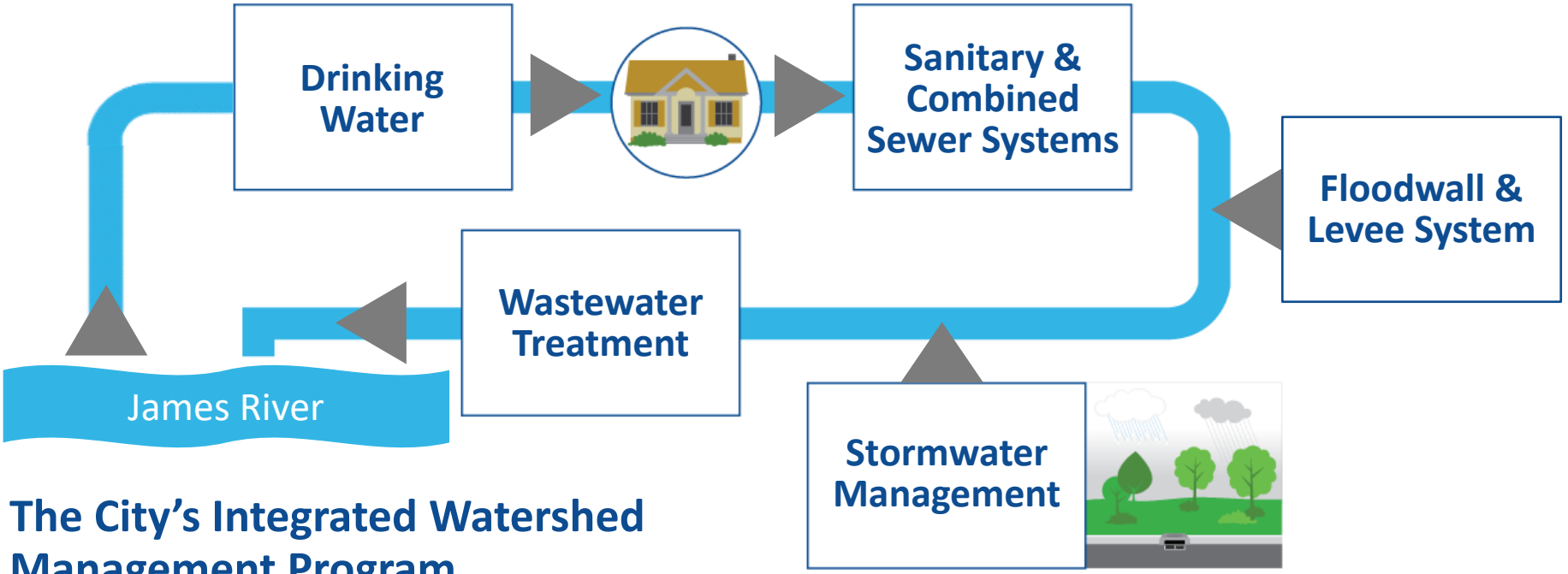
Overview

- Clean Water Act
- NPDES
- Compensatory Mitigation
- Stormwater Management

"WE CANNOT SOLVE OUR PROBLEMS WITH THE SAME THINKING WE USED WHEN WE CREATED THEM"

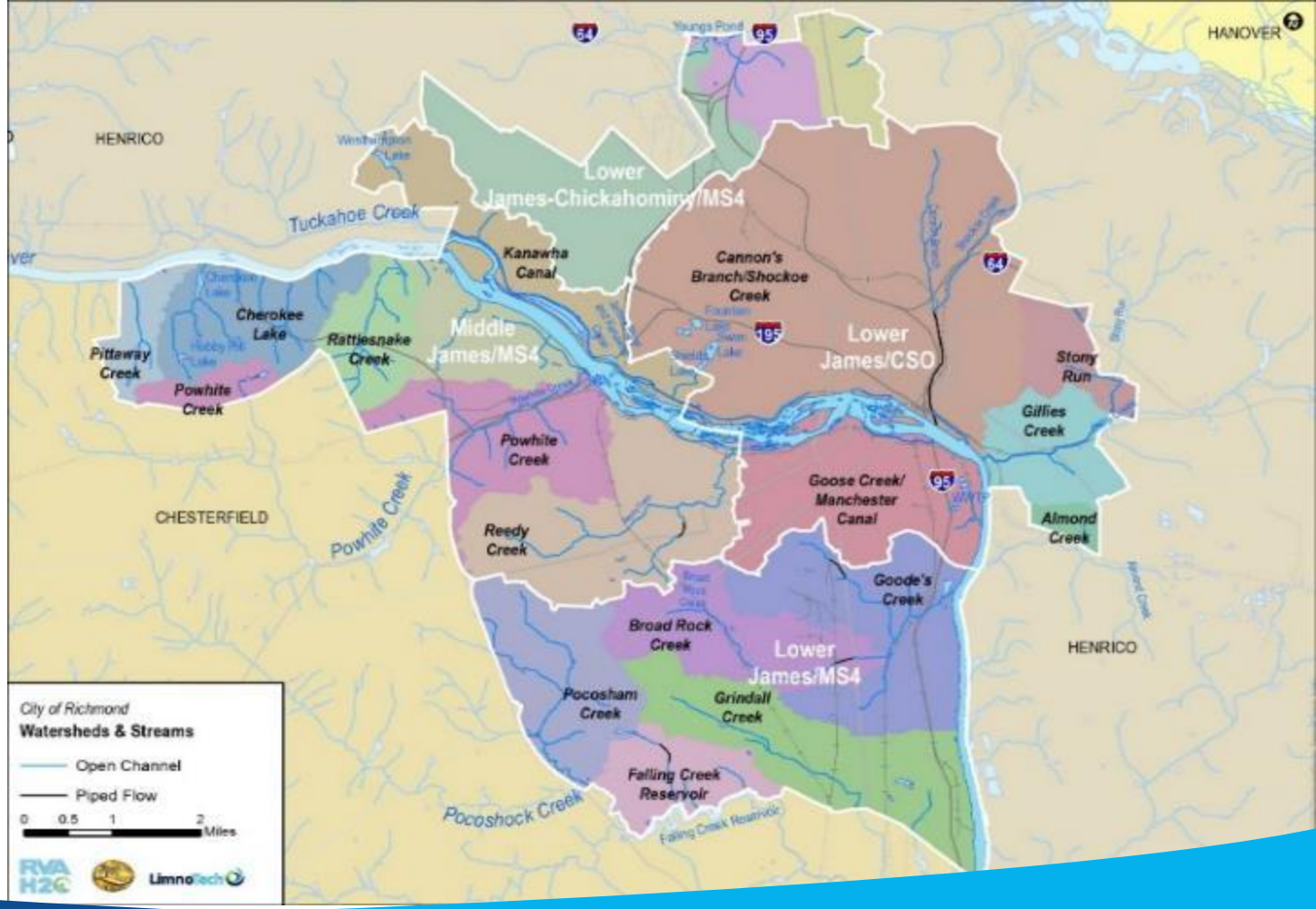


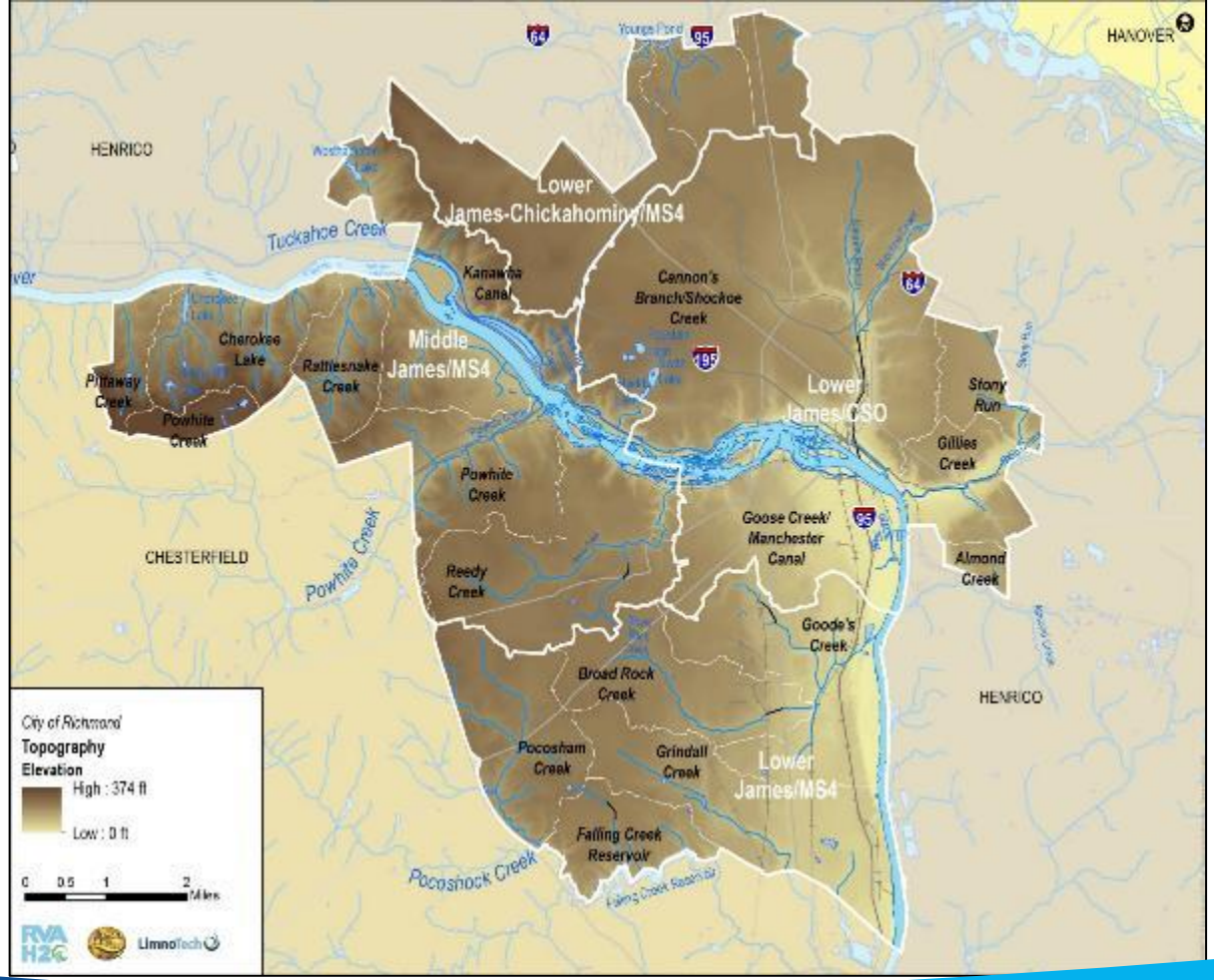
Richmond's Department of Public Utilities is responsible for all aspects of water services for the City



The City's Integrated Watershed Management Program

Watersheds


HANOVER
HENRICO
CHESTERFIELD
Tuckahoe Creek
Powhite Creek
Lower James-Chickahominy/MS4
Middle James/MS4
Lower James/CSO
Lower James/MS4
Kanawha Canal
Cannon's Branch/Shockoe Creek
Cherokee Lake
Pittaway Creek
Powhite Creek
Rattlesnake Creek
Powhite Creek
Reedy Creek
Goose Creek/ Manchester Canal
Stony Run
Gillies Creek
Almond Creek
Goode's Creek
Broad Rock Creek
Pocosham Creek
Grindall Creek
Falling Creek Reservoir
Pocoshock Creek
City of Richmond
Watersheds & Streams
Open Channel
Piped Flow
0 0.5 1 2 Miles
RVA H2O
LimnoTech


HENRICO
Lower James-Chickahominy/MS4
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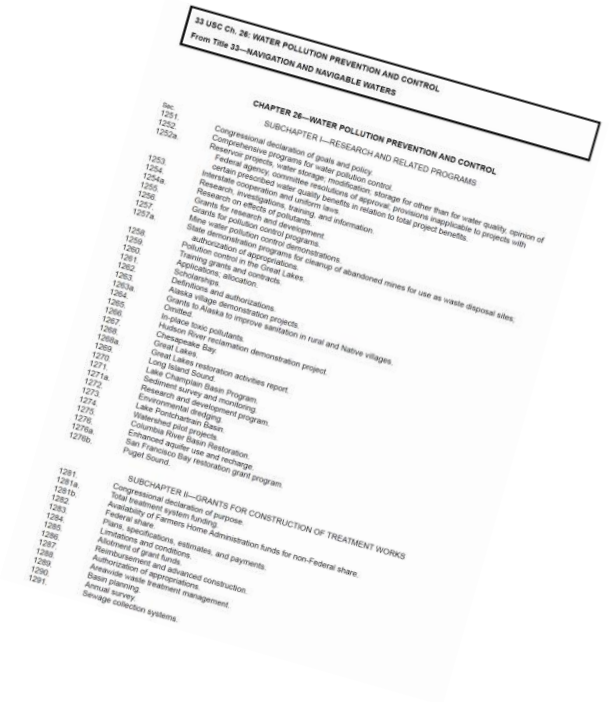
Gillies Creek
Powhite Creek
Goose Creek/ Manchester Canal
CHESTERFIELD
Powhite Creek
Reedy Creek
Almond Creek
Goode's Creek
Broad Rock Creek
HENRICO
Pocosham Creek
Grindall Creek
Lower James/MS4
Falling Creek Reservoir
Pocoshock Creek
HANOVER
City of Richmond
Topography
Elevation
High : 374 ft
Low : 0 ft
0 0.5 1 2
Miles
RVA H2O
LimnoTech

Federal Water Pollution Control Act – a.k.a. Clean Water Act (CWA)

33 U.S. Code Sec. 1251-1387

or

CWA section 101 - 607



33 USC Ch. 26: WATER POLLUTION PREVENTION AND CONTROL
From Title 33—NAVIGATION AND NAVIGABLE WATERS

CHAPTER 26—WATER POLLUTION PREVENTION AND CONTROL

SUBCHAPTER I—RESEARCH AND RELATED PROGRAMS

Sec.
1251. Congressional declaration of goals and policy.
1252. Comprehensive programs for water pollution control.
1252a. Reservoir projects; water storage; modification; storage for other than for water quality; opinion of Federal agency; committee resolutions of approval; provisions inapplicable to projects with certain prescribed water quality benefits in approval; provisions inapplicable in relation to total project benefits.
1253. Interstate cooperation and uniform laws.
1254. Research, investigations, training, and information.
1254a. Research on effects of pollutants.
1255. Grants for research and development.
1256. Mine water pollution control demonstrations.
1257. State water pollution control programs.
1257a. Training grants and contracts.
1258. Application and allocation.
1259. Scholarships.
1260. Definitions and authorizations.
1261. Alaska village demonstration projects.
1262. Grants to Alaska to improve sanitation in rural and Native villages.
1263. Omitted.
1263a. In-place toxic pollutants.
1264. Hudson River reclamation demonstration project.
1265. Chesapeake Bay.
1266. Great Lakes.
1267. Great Lakes restoration activities report.
1268. Long Island Sound.
1269. Lake Champlain Basin Program.
1270. Sediment survey and monitoring.
1271. Environmental dredging.
1271a. Research and development program.
1273. Lake Pontchartrain Basin.
1274. Watershed pilot projects.
1275. Columbia River Basin Restoration.
1276. Enhanced aquifer use and recharge.
1276a. San Francisco Bay restoration grant program.
1276b. Puget Sound.

SUBCHAPTER II—GRANTS FOR CONSTRUCTION OF TREATMENT WORKS

1281. Congressional declaration of purpose.
1281a. Total treatment system funding.
1281b. Availability of Farmers Home Administration funds for non-Federal share.
1282. Federal share.
1283. Plans, specifications, estimates, and payments.
1284. Limitations and conditions.
1285. Reimbursement and advanced construction.
1286. Allotment of grant funds.
1287. Reimbursement of grant funds.
1288. Authorization of appropriations.
1289. Areawide waste treatment management.
1290. Basin planning.
1291. Annual survey.
Sewage collection systems.

Areas of Impact

- Sections
  - 101 – Congressional declaration of goal
  - 301 – Effluent Limitations
  - 303 – Water Quality Standards
  - 308 – Records and reports: Inspections
  - 309 - Enforcement
  - 401 - Certification
  - 402 – National pollutant discharge elimination system
  - 404 – Permits for dredge or fill material
  - 502 - Definitions

301 – Effluent Limitations

- (a) ILLEGALITY OF POLLUTANT DISCHARGES EXCEPT IN COMPLIANCE WITH LAW—Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.

402 - National Pollutant Discharge Elimination System (NPDES)

- (a) PERMITS FOR DISCHARGE OF POLLUTANTS
- (1) Except as provided in sections 1328 and 1344 of this title, the Administrator may, after opportunity for public hearing, issue a permit for the discharge of any pollutant, or combination of pollutants, notwithstanding section 1311(a) of this title, upon condition that such discharge will meet either (A) all applicable requirements under sections 1311, 1312, 1316, 1317, 1318, and 1343 of this title, or (B) prior to the taking of necessary implementing actions relating to all such requirements, such conditions as the Administrator determines are necessary to carry out the provisions of this chapter.

404 - PERMITS FOR DREDGED OR FILL MATERIAL

- (a) DISCHARGE INTO NAVIGABLE WATERS AT SPECIFIED DISPOSAL SITES—The Secretary may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites. Not later than the fifteenth day after the date an applicant submits all the information required to complete an application for a permit under this subsection, the Secretary shall publish the notice required by this subsection.

Stormwater

- Rain (snow) that doesn’t soak into the ground
- Picks up pollutants
- Causes erosion
- Causes flooding

Clean Water Act (Sec 402) and Stormwater

(p) MUNICIPAL AND INDUSTRIAL STORMWATER DISCHARGES

(3) PERMIT REQUIREMENTS

(A) INDUSTRIAL DISCHARGES—Permits for discharges associated with industrial activity shall meet all applicable provisions of this section and section 1311 of this title.

(B) MUNICIPAL DISCHARGE—Permits for discharges from municipal storm sewers—

(i) may be issued on a system- or jurisdiction-wide basis;

(ii) shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers; and

(iii) shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants.

Stormwater Control – Six minimum measures

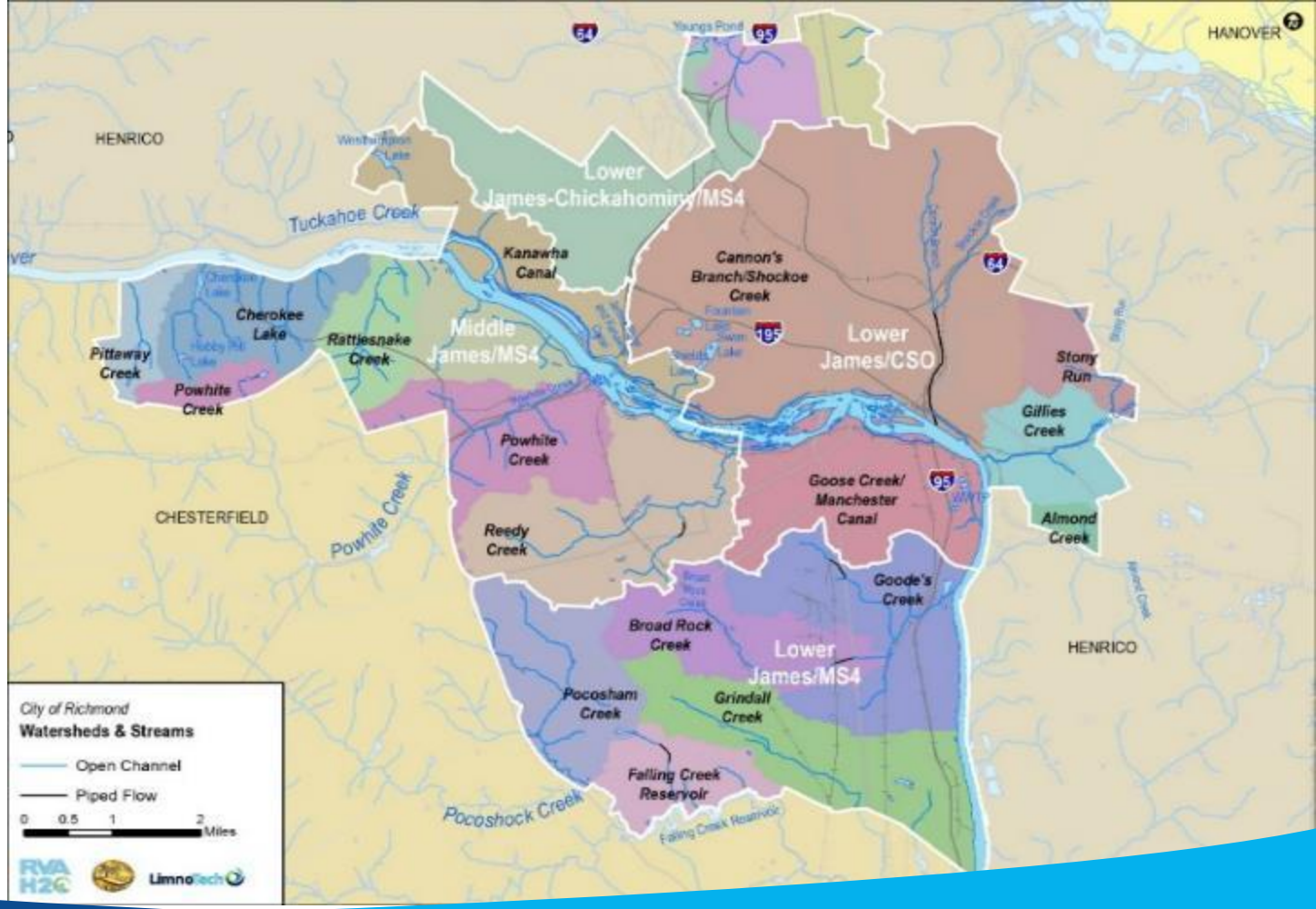
1. Public Education and Outreach
2. Public Participation
3. Illicit Discharge Detection and
4. Management of Construction Site
5. Management of Post Construction Site Runoff (New Development and Redevelopment
6. Good Housekeeping in Municipal Operations

Water Quality versus Water Quantity

- U.S. District Court for the Eastern District of Virginia ruled in *Virginia Dep't of Transp. v. U.S. Envtl. Protection Agency - 2013*
- "stormwater runoff is not a pollutant, so the EPA is not authorized to regulate it via TMDL."

Flow and Quantity are still an issue

Watersheds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Watersheds & Streams
Open Channel
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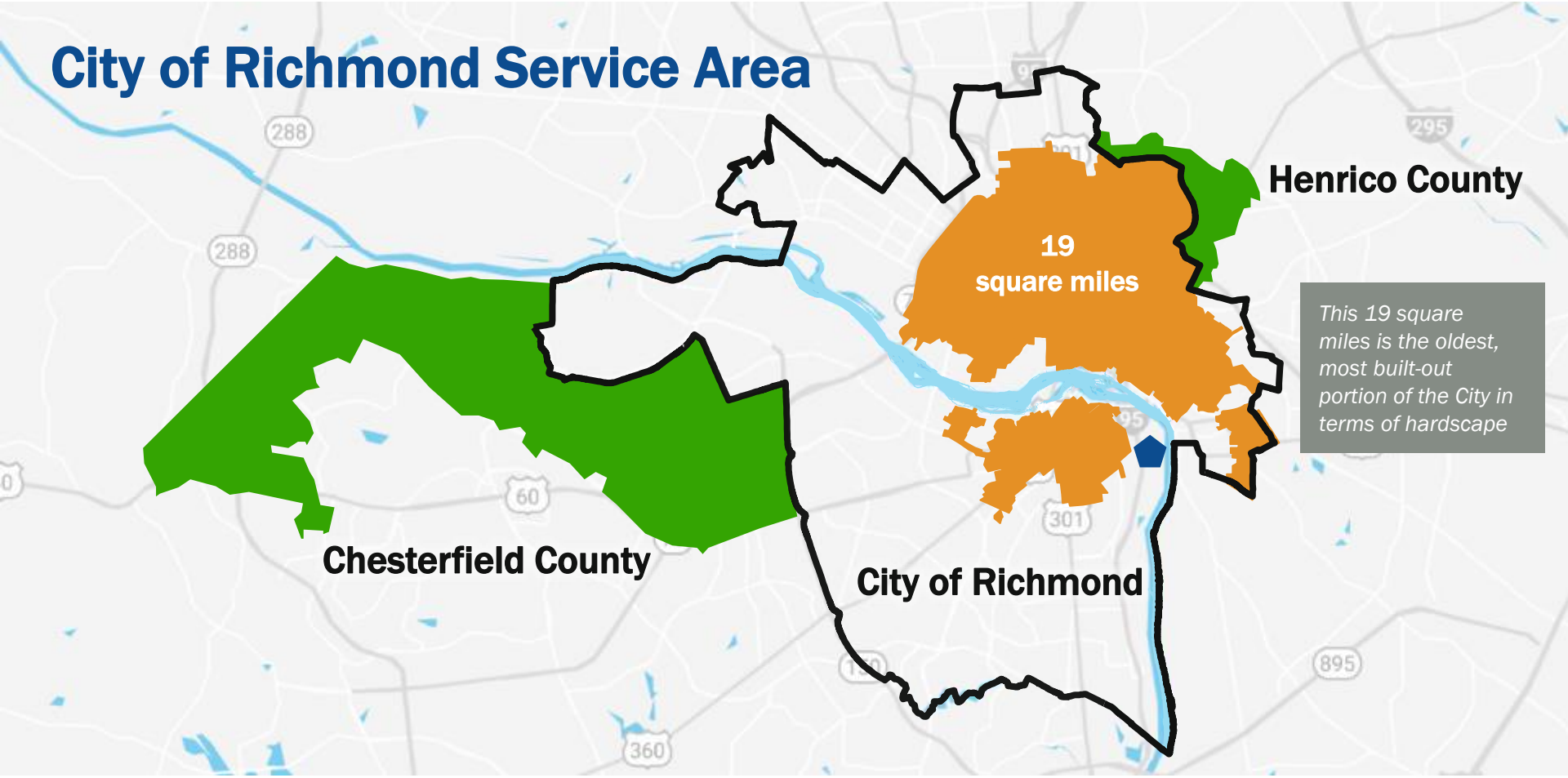
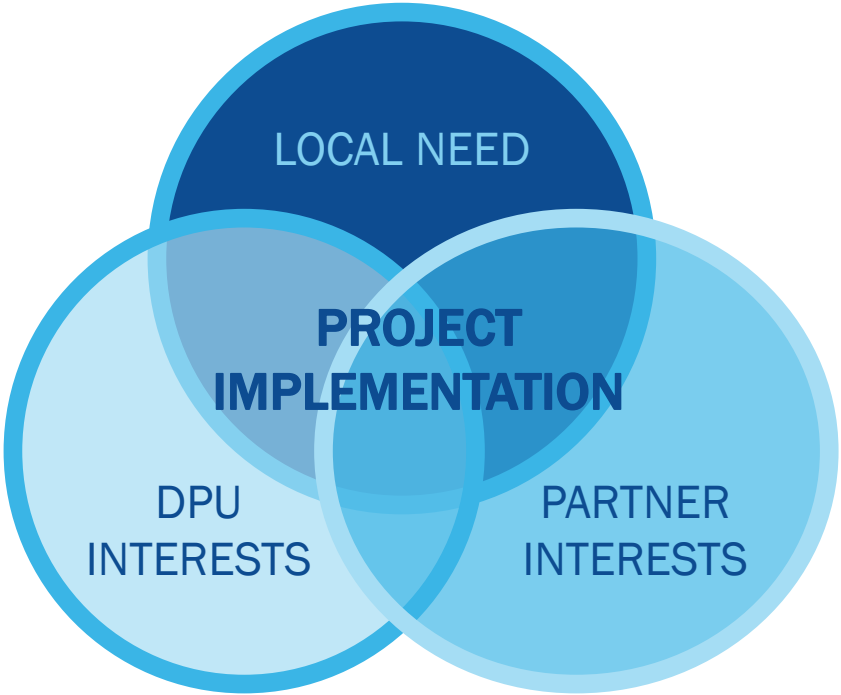
0 0.5 1 2 Miles
RVA H2O
LimnoTech

City of Richmond Service Area



Clean Water Plan Goal: Find Ways to Work Together



Formation of RVAH2O

EPA Frameworks

- Integrated Watershed Management
- Involve Stakeholders
- Characterize Watershed
- Finalize Goals & ID Solutions
- Design Implementation Program
- Implement Program
- Measure & Adapt

- Integrated Planning
- Identify Issues to Address
- Characterize Current System
- Involve Stakeholders
- Identify, Evaluate & Select Alternatives
- Measure
- Adapt

Richmond Framework

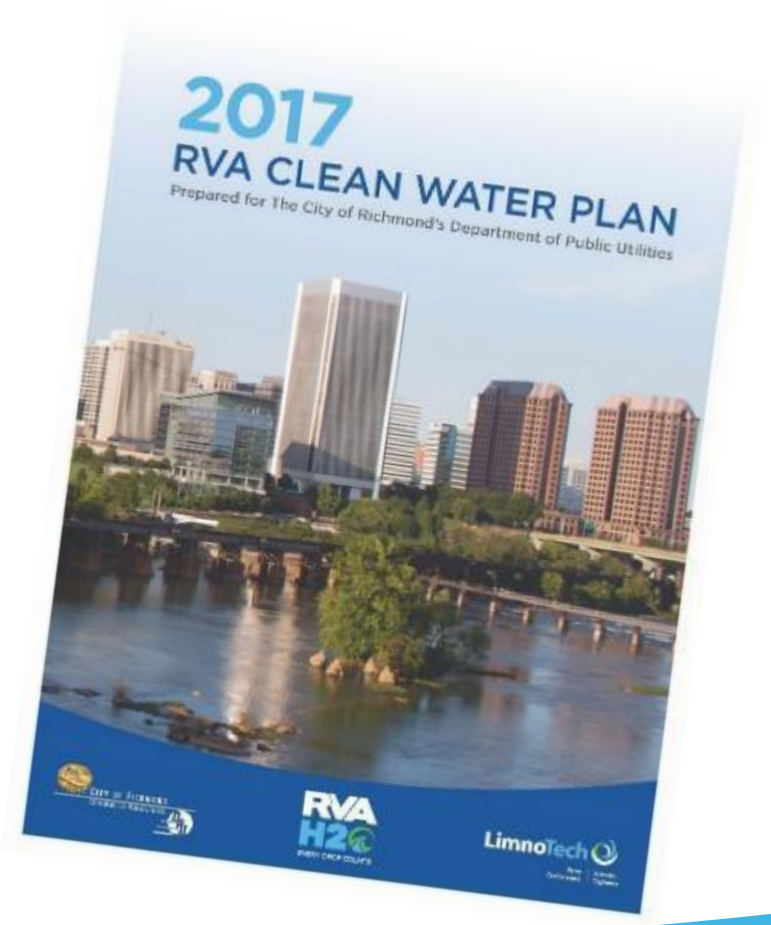
- Integrated Water Resources Management Planning
- Watershed Characterization
- Strategy Identification & Selection
- Program Implementation
- Progress Measurement
- Adaptive Management

Stakeholder Involvement

VPDES Integrated Permit

RVA Clean Water Plan

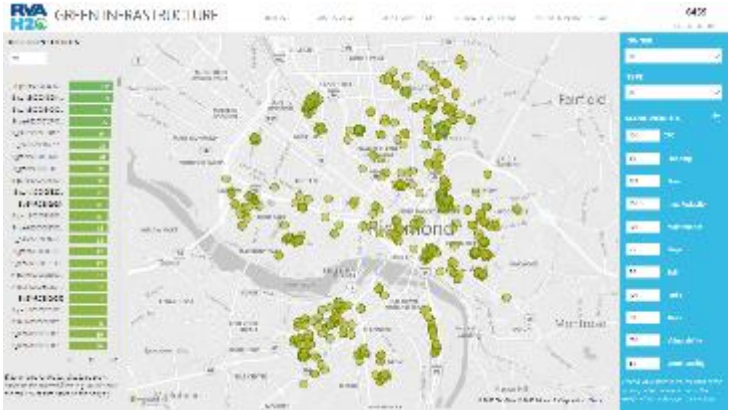
Stakeholder-driven plan that prioritizes reducing pollution (bacteria, nutrients, and sediment) in our waterways



Integrated Permit & RVA Clean Water Plan Outcomes

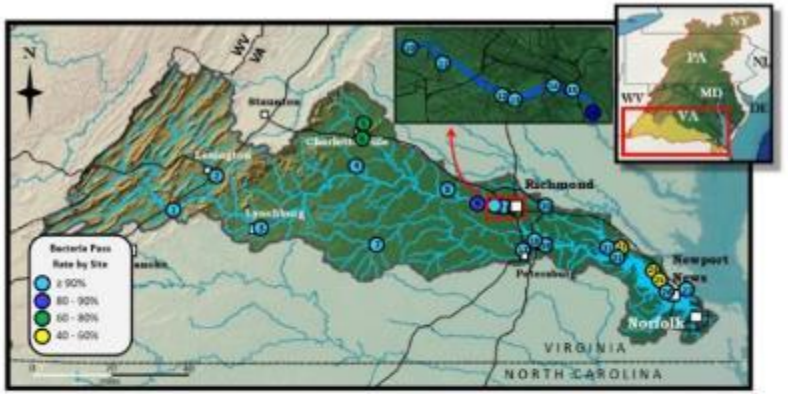
Greening of the Libraries

Green Infrastructure Master Plan



Bellemeade Green Street

James River Water Quality

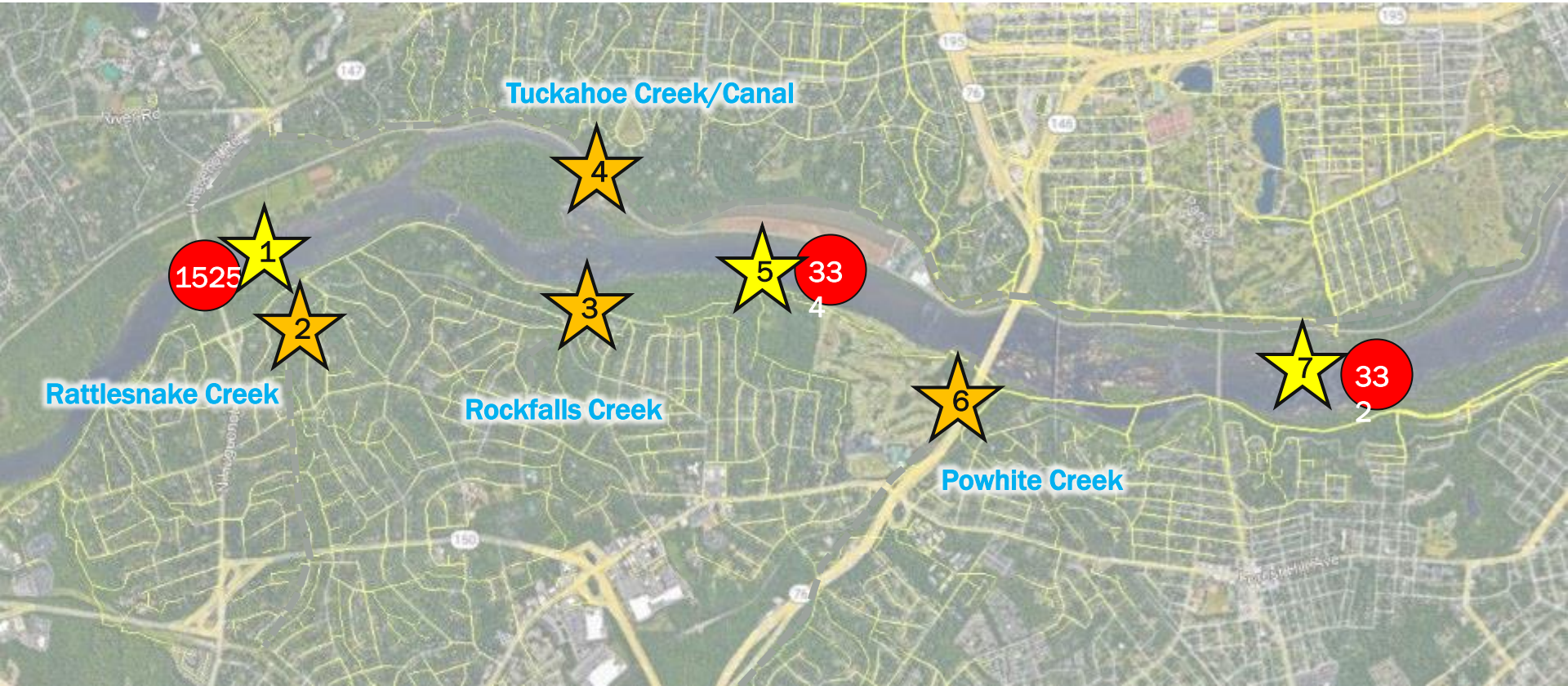


Bacteria Pass Rate

SITE NUMBER	SITE NAME	LOCATION	LENGTH OF RECORD (YRS)	PASS RATE (2013 – '18)	PASS RATE (2019)	DEPARTURE FROM AVG
1	Buchanan Boat Ramp	Buchanan	7	74%	100%	+26%
2	Maury at Ben Salem	Rockbridge	6	87%	100%	+13%
3	Riveredge Park	Lynchburg	7	95%	100%	+5%
4	Scottsville Boat Ramp	Scottsville	7	91%	100%	+9%
5	Rivanna at Riverview	Charlottesville	5	79%	71%	-8%
6	Rivanna at Darden Towe	Charlottesville	4	79%	71%	-8%
7	Main St. Bridge	Farmville	3	93%	92%	-1%
8	Tucker Park/Maidens	Goochland	7	86%	93%	+7%
9	Robious	Chesterfield	4	91%	83%	-8%
10	Huguenot Flatwater	Richmond	5	92%	93%	+1%
11	Pony Pasture	Richmond	5	91%	93%	+2%
12	42nd Street	Richmond	5	80%	93%	+13%
13	Reedy Creek	Richmond	5	86%	93%	+7%
14	Tredegar	Richmond	7	83%	100%	+17%
15	14th Street	Richmond	7	73%	93%	+20%
16	Rockett's Landing	Richmond	6	64%	87%	+23%
17	Harvell Dam	Petersburg	6	80%	100%	+20%
18	Hopewell (Rt. 10)	Hopewell	4	96%	100%	+4%
19	City Point	Hopewell	7	76%	93%	+17%
20	Grapevine Bridge	Henrico	6	86%	91%	+5%
21	Chickahominy Riverfront Park	James City	4	97%	100%	+3%
22	Jamestown Beach	James City	7	97%	100%	+3%
23	Powhatan Creek	James City	5	72%	47%	-25%
24	Denbigh Boat Ramp	Newport News	6	91%	57%	-34%
25	Riverside Beach	Newport News	6	98%	92%	-6%
26	Hampton River	Hampton	5	93%	92%	-1%
27	Deep Creek	Newport News	3	100%	57%	-43%
TOTAL	-----	-----	*7*	*85%*	*90%*	*+5%*

From the James River Association's *James River Watch*

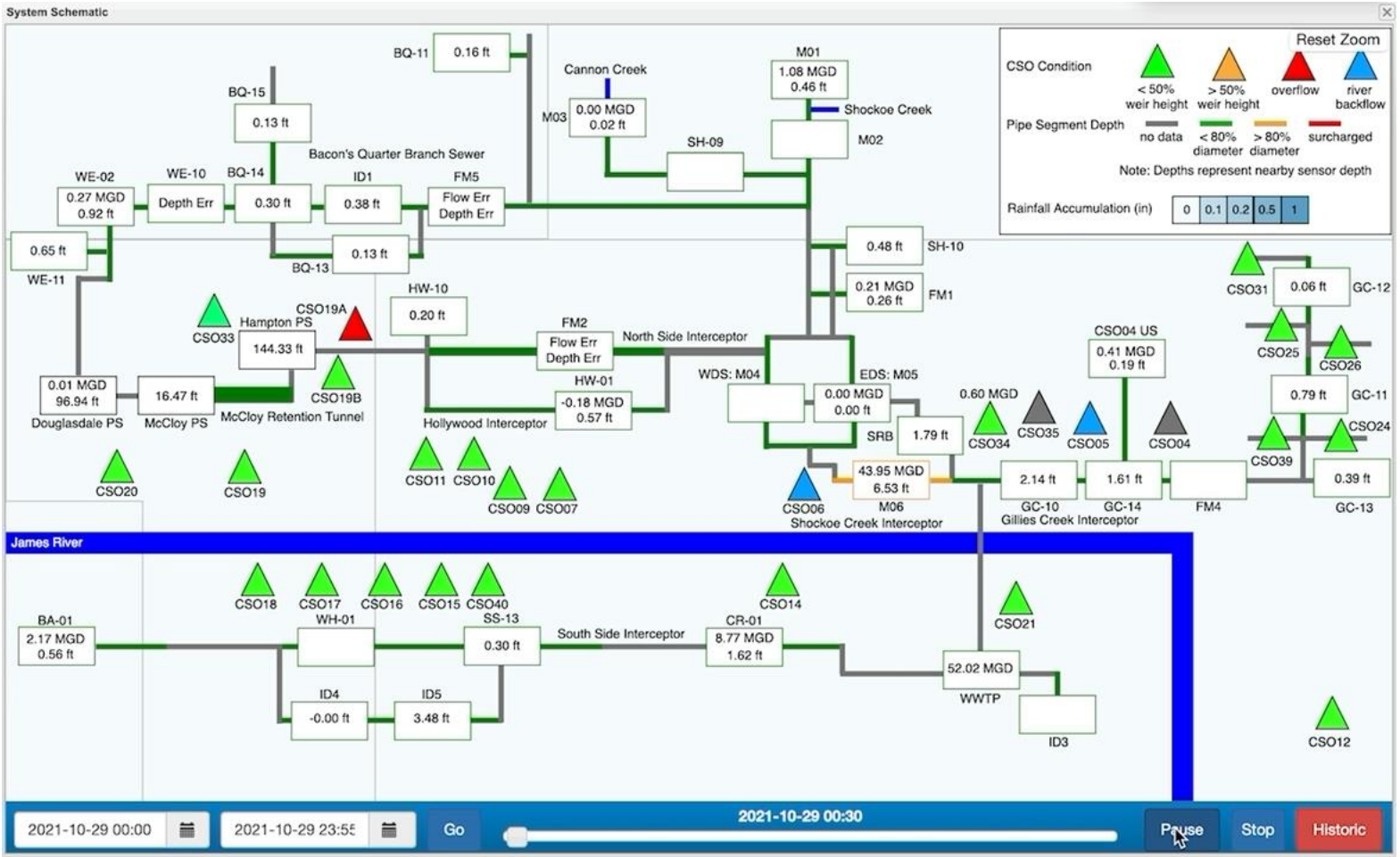
James River Water Quality Monitoring



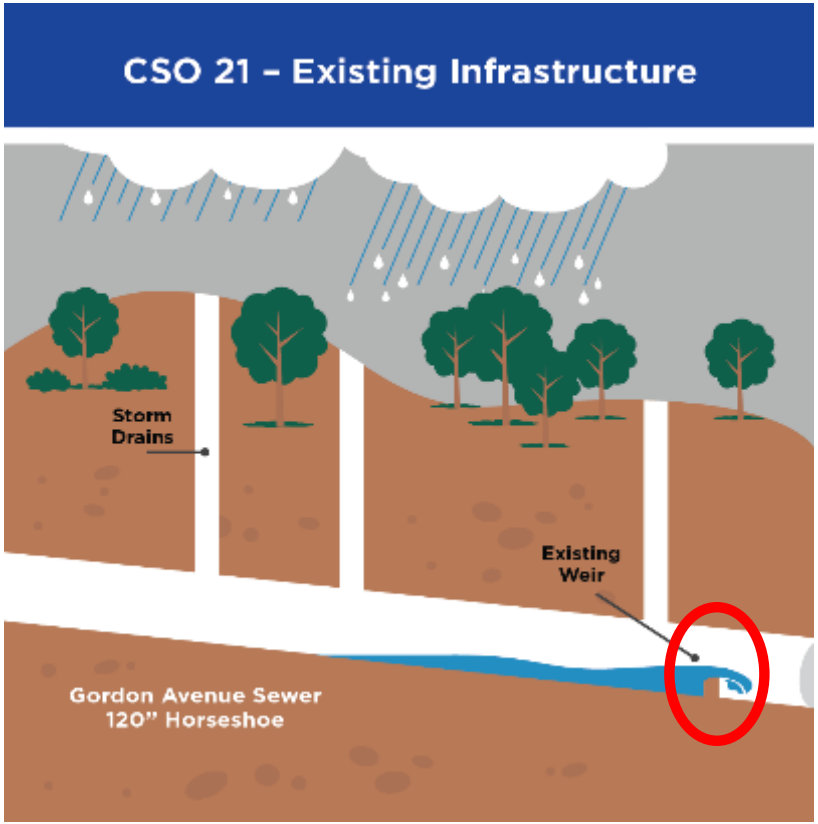
Combined Sewers in Richmond – the Past

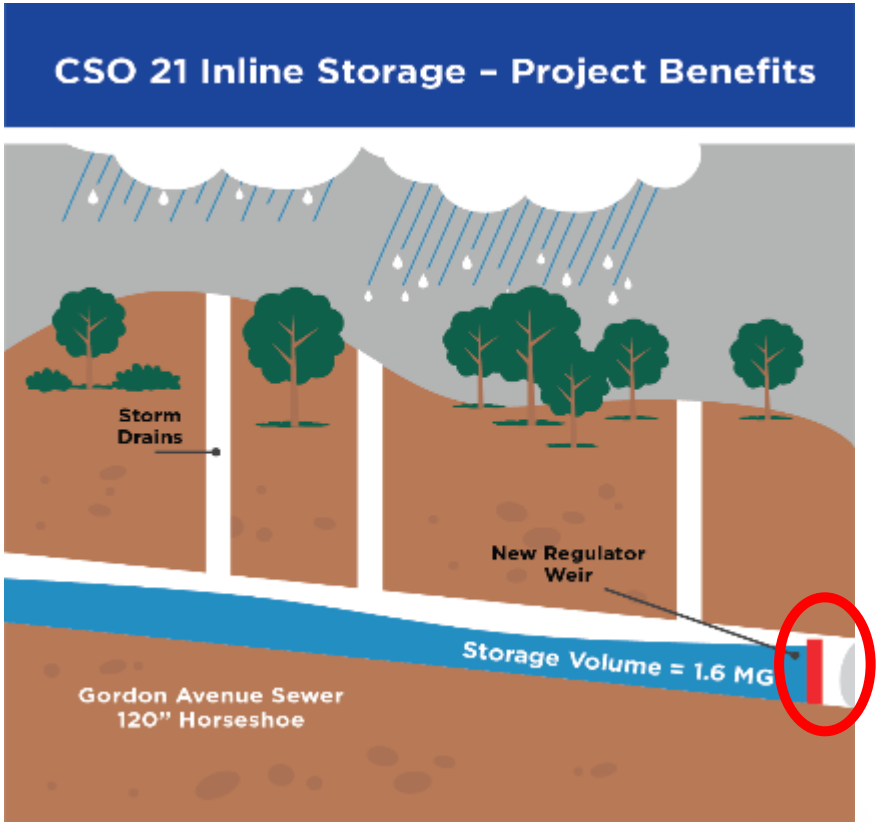
- First used in 1870s
- Big improvement over open ditches!
- Carry both wastewater and stormwater

What did we learn?

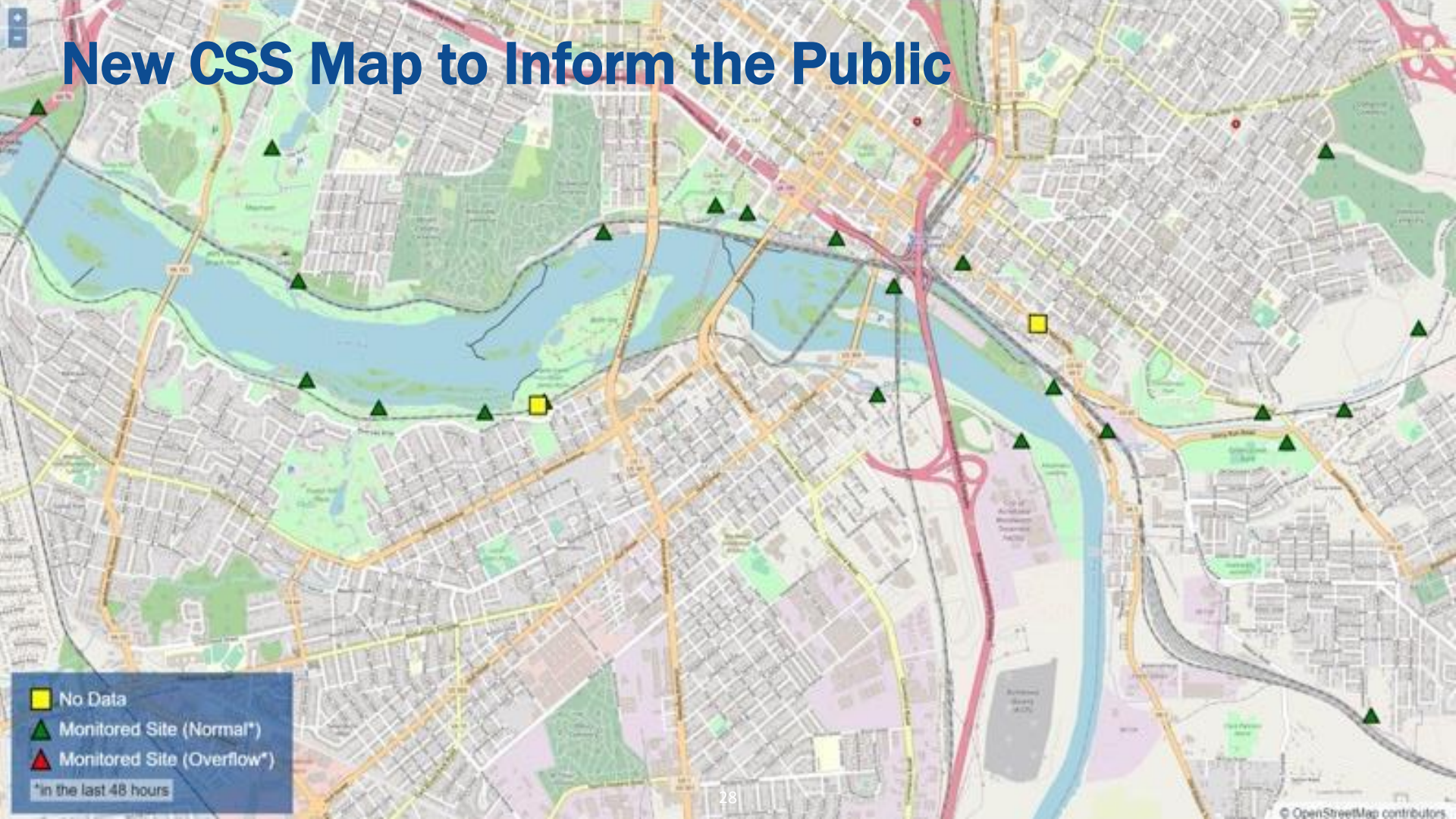


What Did We Learn?





New CSS Map to Inform the Public



Questions?

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703-409-1938