

Welcome to the Discussion!

We're excited for you to join in this very important conversation. Please put questions or comments in the chat box as we go.

We'll have a Q&A at the end of the meeting today.



Who's here today













INSTITUTE for ENGAGEMENT & NEGOTIATION Shaping Our World Together













































Supporting the park since 1997





Today's Presenters

Grace LeRose, DPU

Matt Pugh, Brown and Caldwell

Nissa Dean, Alliance for the Chesapeake Bay

Chris Soldan, Arcadis



What's on Tap

- Who's here today
- What's happening now?
 - Amendment to the Special Order on Consent
 - Update on RT-DSS
 - Interim Plan

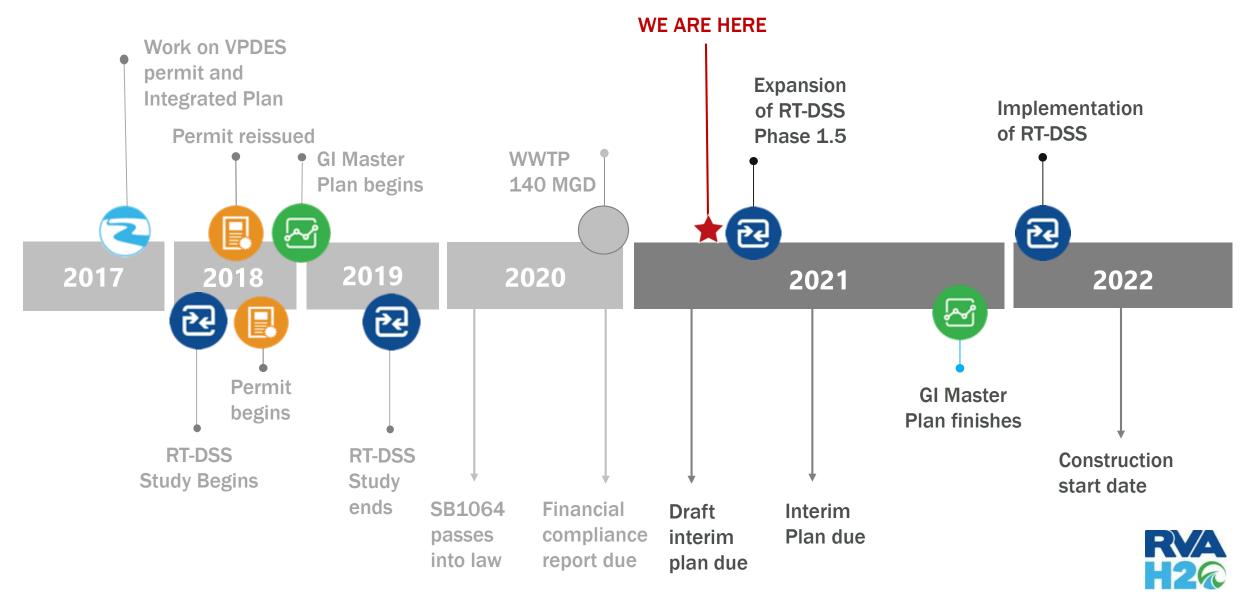
FIVE-MINUTE BREAK

- Partner Projects
- Update on RVA Clean Water Plan Strategies
- Q&A

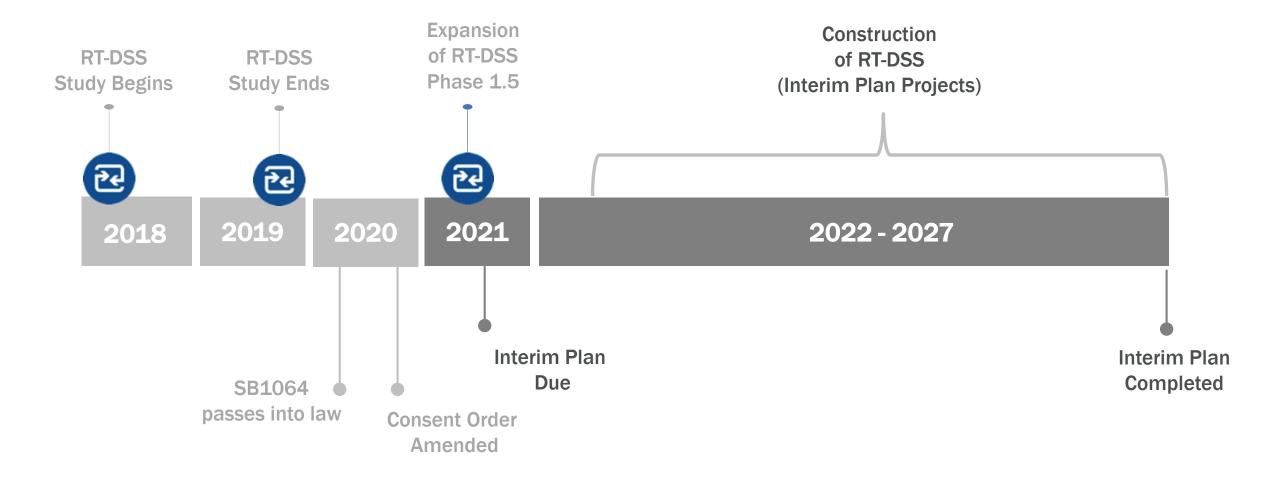


What's happening now?

RVA Clean Water Plan Timeline



Interim Plan





An Overview: 2005 Consent Special Order and Senate Bill 1064

Amended Consent Order - Deadlines

| | Interim Plan | Final Plan | TMDL Projects |
|------------------------------------|---|---|---|
| Objective | Identify projects we could execute efficiently and effectively in a short time frame. | Re-evaluates the remaining LTCP Projects and identifies systemwide improvements | Identify projects to meet the requirements of the "James River – Richmond Tributaries Bacteria TMDL." |
| Plan Due Date | July 1, 2021 | July 1, 2024 | July 1, 2030 ¹ |
| Construction Activities Start Date | July 1, 2022 ¹ | July 1, 2025 ¹ | Not Specified |
| Construction Activities End Date | July 1, 2027 ¹ | July 1, 2035 ¹ | Not Specified |

^{1.} Deadlines may be extended

Increasing Effectiveness: Real Time-Decision Support System (RT-DSS)

RT-DSS: Project Objectives

Reduce Reduce system-wide combined sewer overflows. **Optimize** basin during storm events.

Optimize operations at the WWTP and Shockoe storage

Optimize

Optimize utilization of system capacity while mitigating hydraulic restrictions during periods of wet weather.

Quantify

Quantify potential overflow reductions that could be accomplished through active flow management and coordination.





Interim Plan

Interim Plan

| Purpose | Identify the most efficient, cost-effective, quick turnaround projects that can reduce CSO volume | | | | | |
|------------------------|--|--|--|--|--|--|
| Deadlines | Plan Due Date: July 1, 2021 Construction Start: July 1, 2022 Construction End: July 1, 2027 | | | | | |
| Development Process | Project Initial Project Screening Project Screen | | | | | |



The 2018 RT-DSS Study identified opportunities to utilize RT-DSS controls to optimize the performance of the CSS.

Project Types

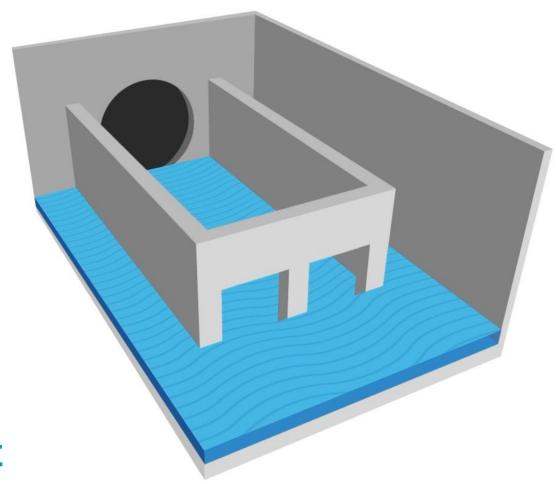








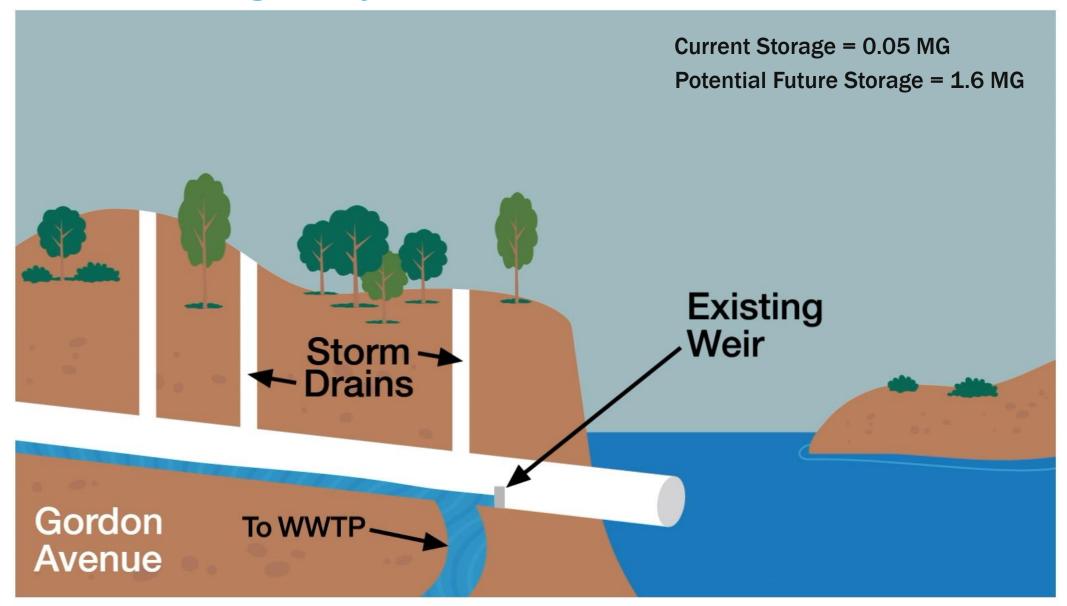




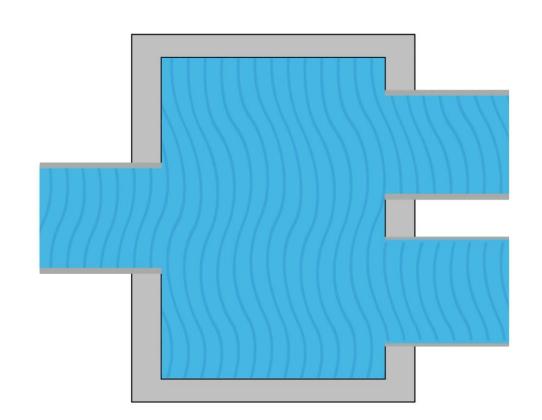




In-Line Storage Project - CSO 21

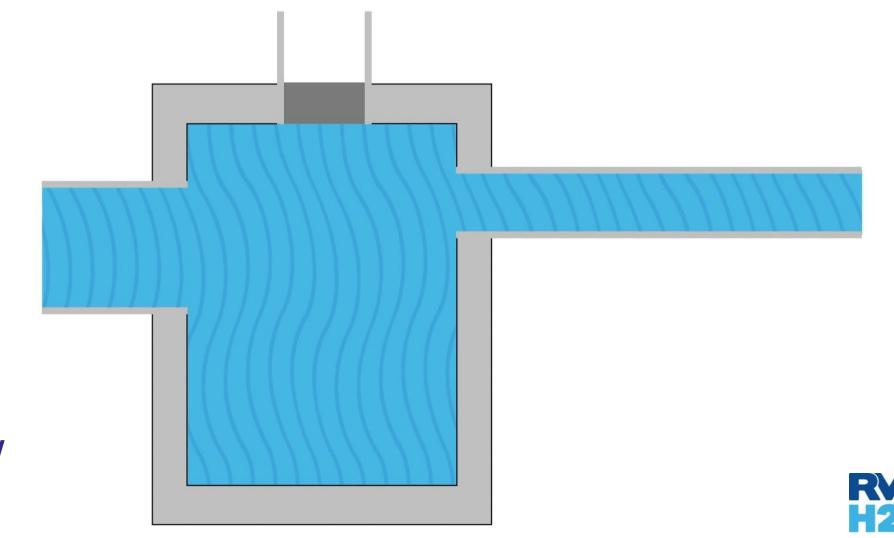












Dynamic

Interim Plan
Identification

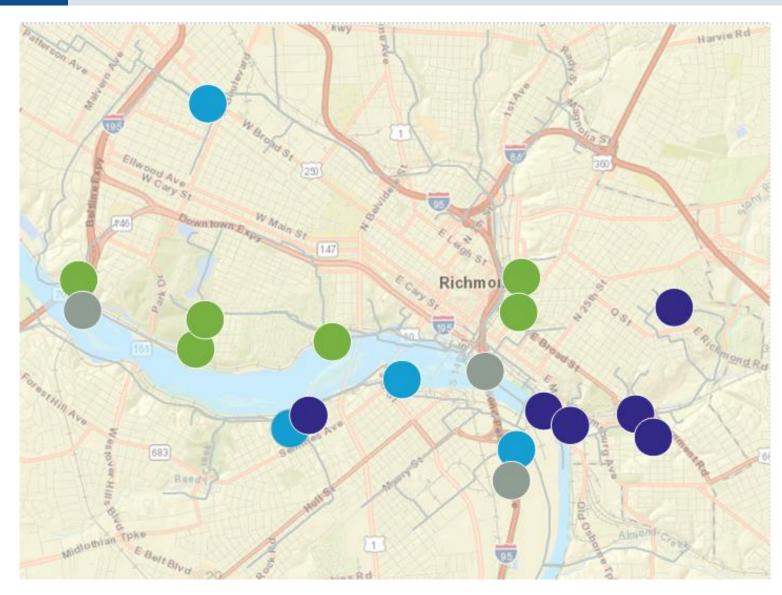
Project Types





Dynamic Underflow Control

Controls Update



Conceptual layouts were developed for each project to inform evaluations.

- Demolition
- Civil
- Structural
- Mechanical
- Electrical
- Instrumentation and Control
- Site





Data was analyzed to evaluate and compare projects.



Performance

- Volume Reduction
- Event Reduction
- Bacteria Reduction
- Water Quality Standards
 Improvement %



Qualitative Evaluation

Qualitative Benefit



Schedule

Project Duration



Cost

- Construction Cost
- Capital Cost
- O&M Cost
- 30-Year Life Cycle Cost



Cost Effectiveness

- \$/Overflow Volume Reduced
- \$/Overflow Event Reduced
- \$/Bacteria Reduced



In order to ensure the most overflow volume was reduced in the least amount of time, selected projects had to meet TWO criteria:



Project Duration

< 4 Years



Volume Reduction

> 2 MG



Interim Plan Selected Projects

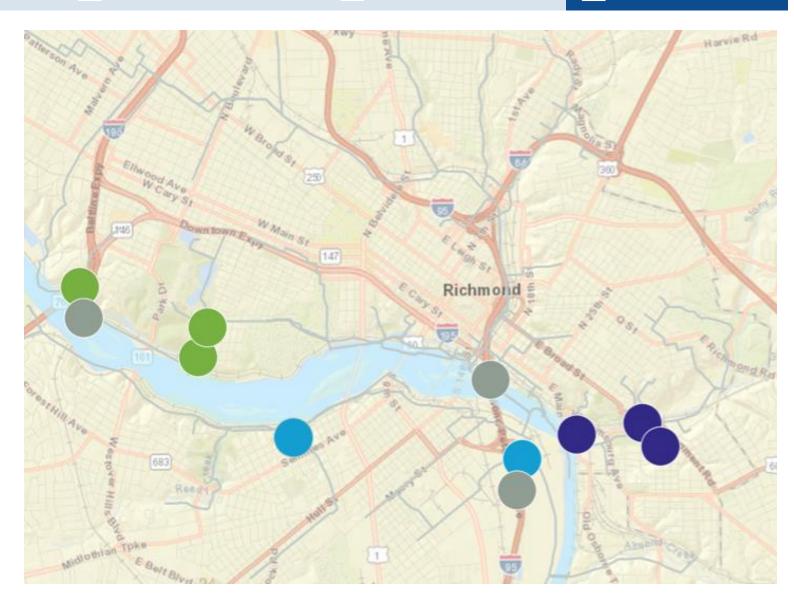
Project Types





Dynamic Underflow Control

Controls Update



Collective Impact



Construction Deadline: Project Duration < 4 years



Efficient: CSO Net Volume Reduction 182 MG



Cost Effective:

\$0.18/gal

Existing LTCP

Projects Range:

\$0.31 - \$3.42/gal





Next Steps

Interim Plan Implementation

- Design: In progress
- Construction: July 2022 July 2027

Final Plan Development

- Purpose: Re-evaluates the remaining LTCP Projects and identifies improvements
- Plan Deadline: July 1, 2024



Formation of a Public Stakeholder Group to Inform the Final Plan



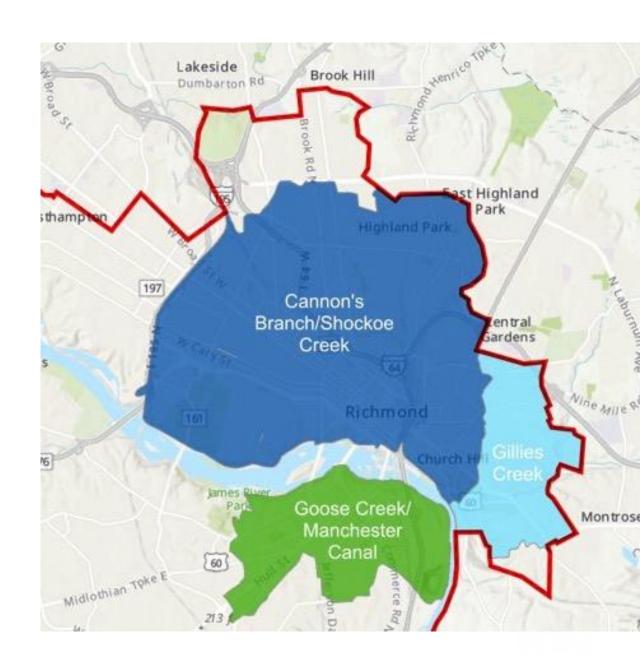
Let's take a five-minute break.





Current RVAH20 Partnership

- \$1M NFWF INSR grant
- 2019-2021 timeframe
- Outcomes:
 - GI Master Plan
 - GI Ranking Tool ARC-GIS and PowerBI Interfaces
- Locations: 3 priority watersheds
 - Gillies Creek
 - Shockoe Creek
 - Manchester Canal/ Goose Creek



Green Infrastructure (GI) Master Plan Project Team











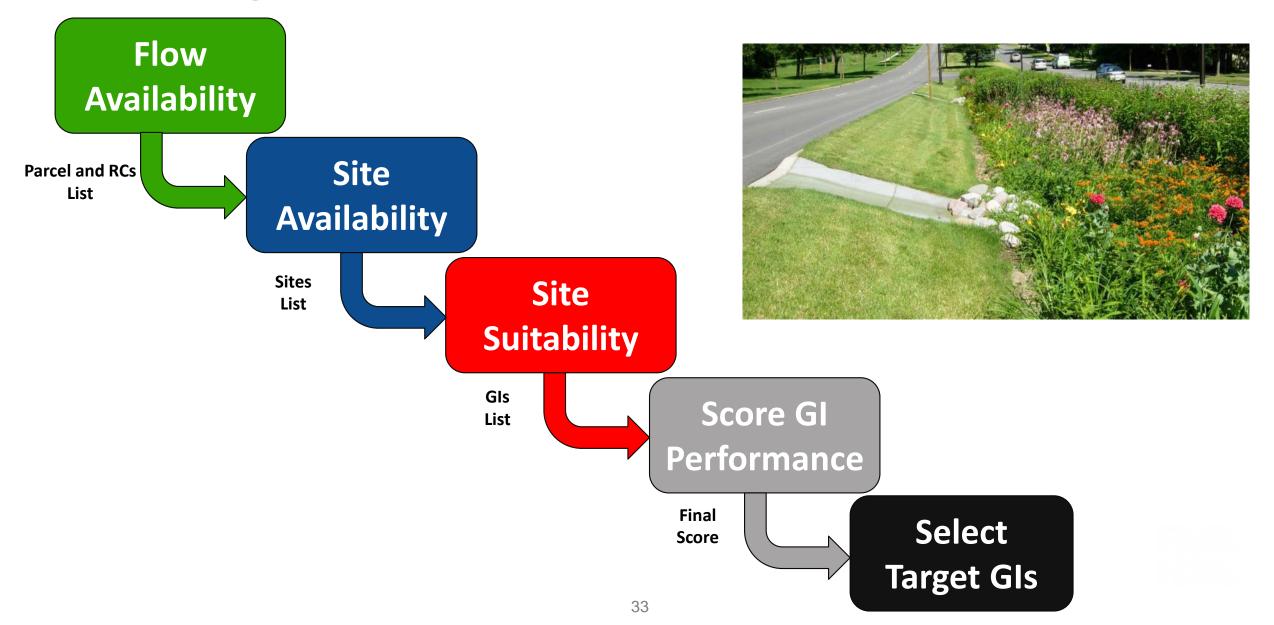


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GI Ranking Tool



GI Ranking Tool Procedure Workflow

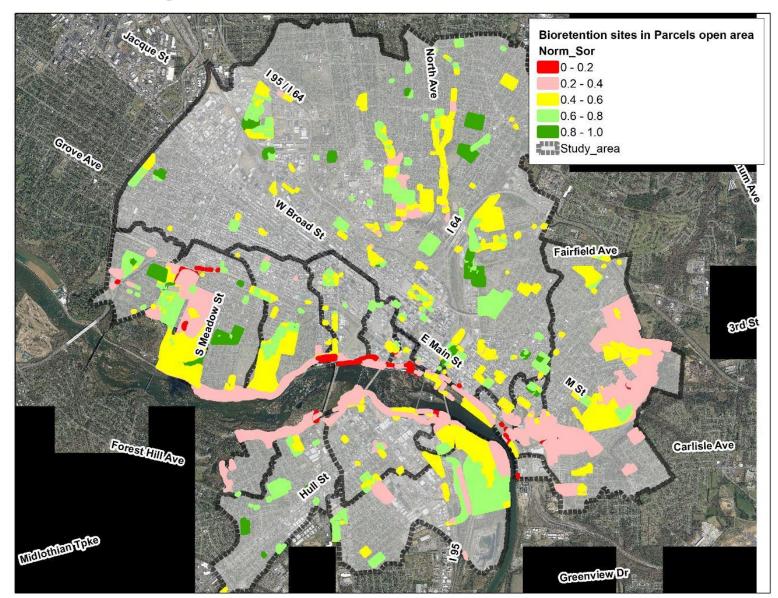


GI Ranking Tool Performance Criteria Scoring

| Metric | | Tier | Max Score | Min Score | Weight % | Scoring |
|----------------------------|---|------|--------------|--------------|-------------|---|
| Runoff/Flow Reduction | Flow reduction | 1 | 10 | 1 | 100% | Proportional to runoff volume |
| | CSO activation reduction | 1 | 10 | 1 | 100% | CSO threshold for overflow |
| Impervious Area Reduction | Permeable Pavement or Bioretention (in Parking lots) | 1 | 10 | 1 | 100% | Function in area removed |
| Low Maintenance | - | 1 | 10 | 5 | 100% | BMP type |
| Socioeconomic Benefit | Near open space | 1 | 10 | 0 | 100% | 10 mins walking distance (10 or 0) |
| | Social Equity | 1 | 10 | 1 | 100% | City Vulnerability Analysis |
| Minimize Existing Flooding | - | 2 | 10 | 0 | 50% | Historical Flooding Records |
| Improve Urban Tree Canopy | - | 2 | 10 | 0 | 50% | BMP type & Available Area |
| Improve Water Quality | - | 3 | 10 | 0 | 33% | Proportional to area to be used |
| Slope Suitability | In open areas (<5%,5% to 10%, 10% to 15%, 15% to 20%, >20%) | 4 | 10 | -10 | 25% | 10,7.5,2.5,0,-10 |
| Soil infiltration | | 4 | 10 or 5 | 0 | 25% | Soil A or B (10 or 5), Soil C(5 or2.5), Soil D or urban(0) |

GI Ranking Tool Parcel Scoring Results

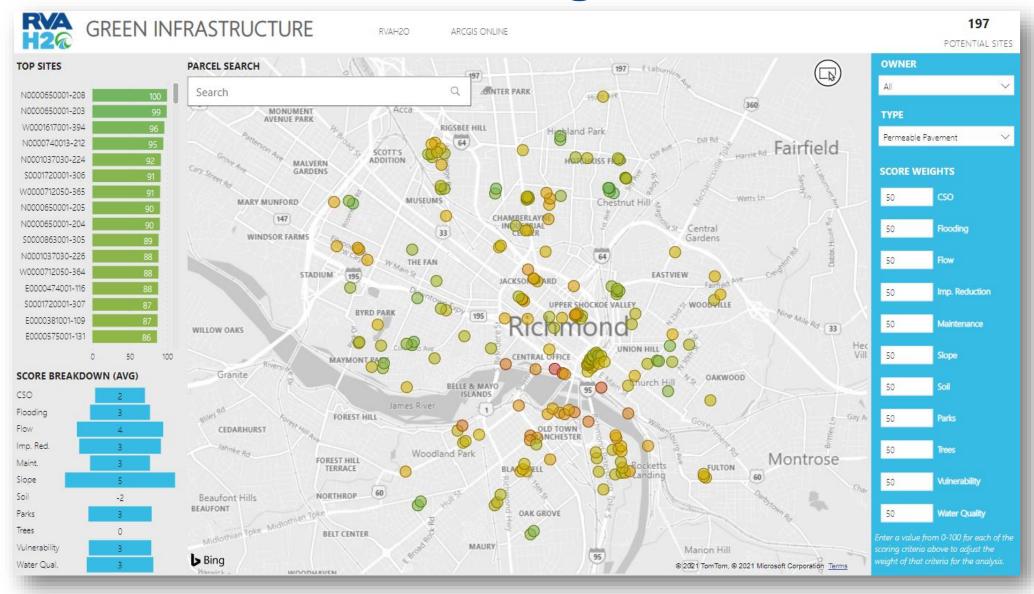
- Permeable Pavement Parking Lots
 - Qualified sites: 113
 - Top 40%: 58
- Bioretention in Parking Lots
 - Qualified sites: 81
 - Top 40%: 41
- Bioretention in Open Areas
 - Qualified sites: 2,751
 - Top 40%: 1172
- Bioretention in Sidewalks
 - Qualified sites: 2,224
 - Top 40%: 355
- Permeable Parking Lanes
 - Qualified sites: 959
 - Top 40%: 474
- Permeable Pavement in Local Roads
 - Qualified sites: 313
 - Top 40%: 91
- Green Alleys
 - Qualified sites: 18
 - Top 40%: 11

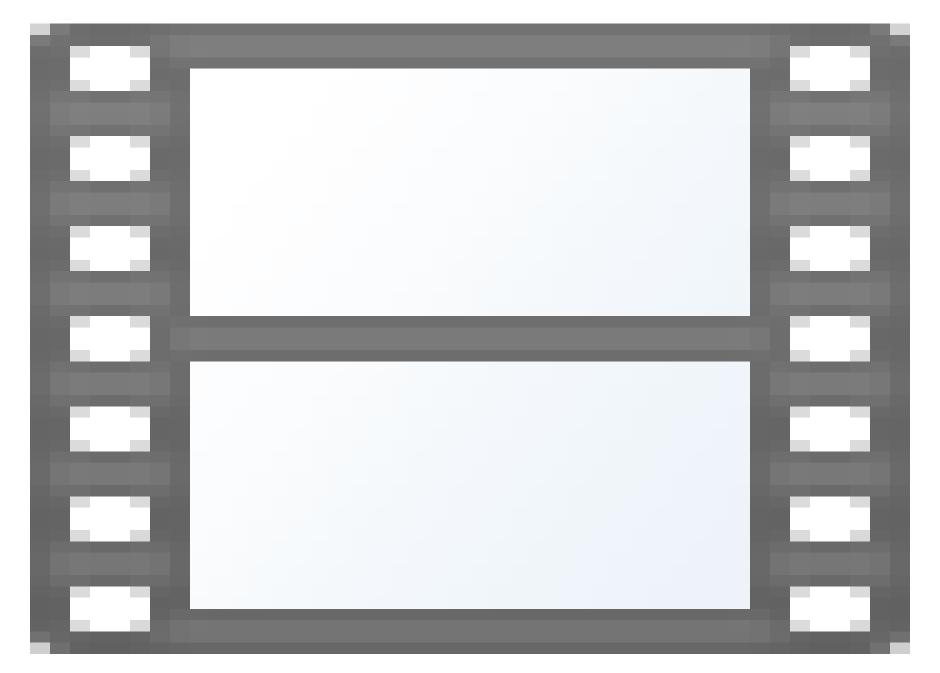


GI Ranking Tool Interface



PowerBI Interface for GI Ranking Tool





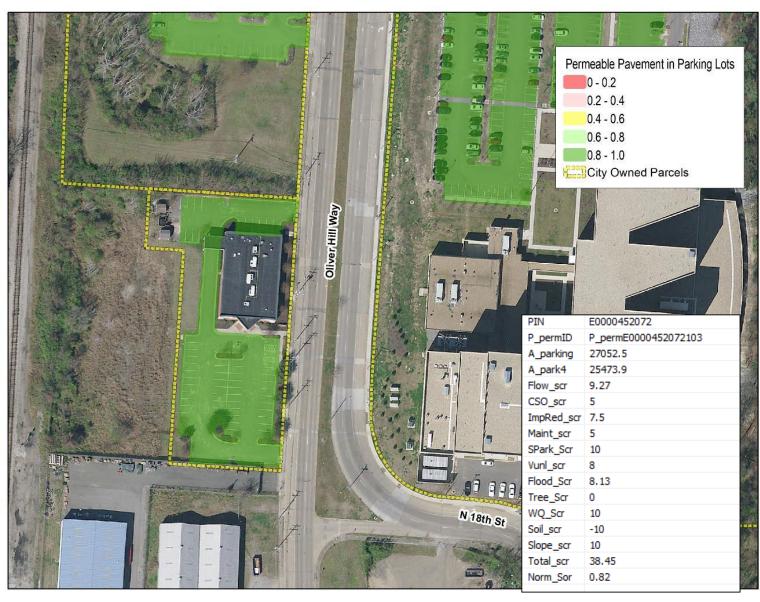
Selected City Properties for GI Conceptual Designs



Andy Giles Community Resource Center

- Permeable pavement
- Site ranking: 49/180
- Top 20%
- Owner: Parks & Rec





Manchester - Permeable parking lanes in ROW (TBD)





Project Timeline



Upcoming Project Schedule

MAR - APR MAY JUN

- Initial conceptual designs of target parcels
- Formal concepts for GI Ranking Tool interface

- RVAH20 meeting featuring detailed Master Plan update
- Final conceptual designs of target parcels
- Final interface for GI Ranking Tool

Draft GI Master Plan Report ready for review

THANK YOU!

OUR NEXT UPDATE MEETING WILL BE IN MAY 2021

For more information on the GI Master Plan please contact:

Nissa Dean: ndean@allianceforthebay.org

Chris Soldan: chris.soldan@arcadis.com



RVA Clean Water Plan Strategy Accomplishments



CSS Infrastructure

- WWTP Nutrient Removal
- CSO Separation
- WWTP Flow Upgrade



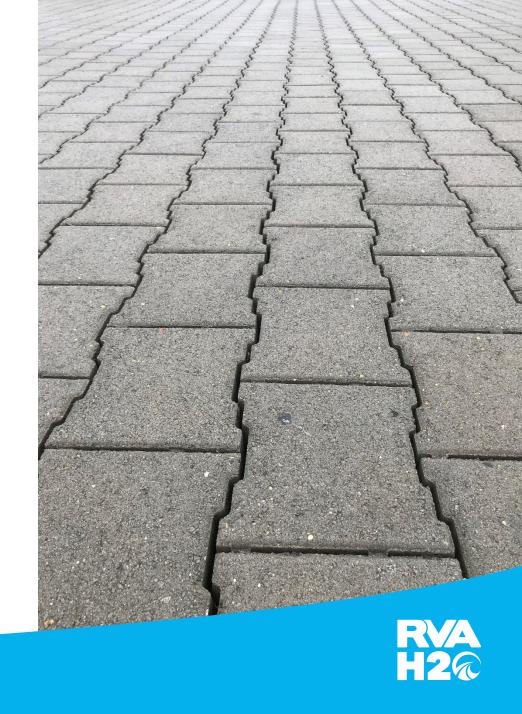
GI in MS4

- Target: 104 acres
- Achieved: 18.2 acres



GI in CSS

- Target: 18 acres
- Achieved: 4.9 acres





Floodplain Reconnection

(Stream Restoration)

• Target: 2,500 linear feet

• Achieved: 13,980 linear feet



Tree Canopy

• Target: 80 acres; 24,000 trees

Achieved: 70.2 acres; 21,065 trees



Land Conservation

Target: 10 acres of City property

Achieved: 113 acres





Natives & Invasives

Target: 80% of plantings

Achieved: 94.5% of tracked plants

(13,941 native plants)



Water Conservation

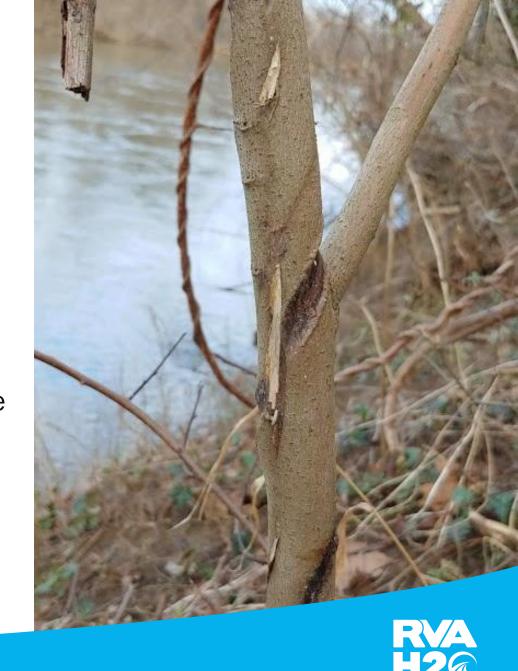
Target: 10% reduction of potable

water consumption



Pollution Identification & Reduction

Will be quantified in 2022





Riparian Area Restoration

Target: 10 acres

• Achieved: 0.07 acres

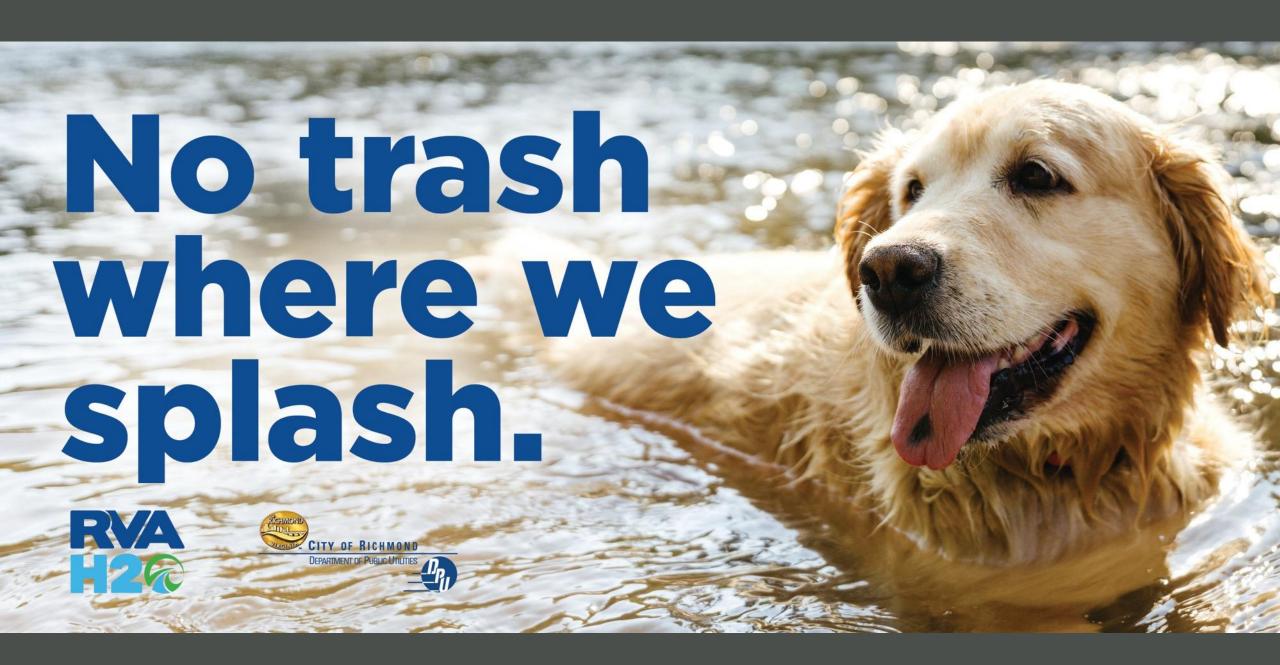
Your projects help us all to reach these clean water goals!

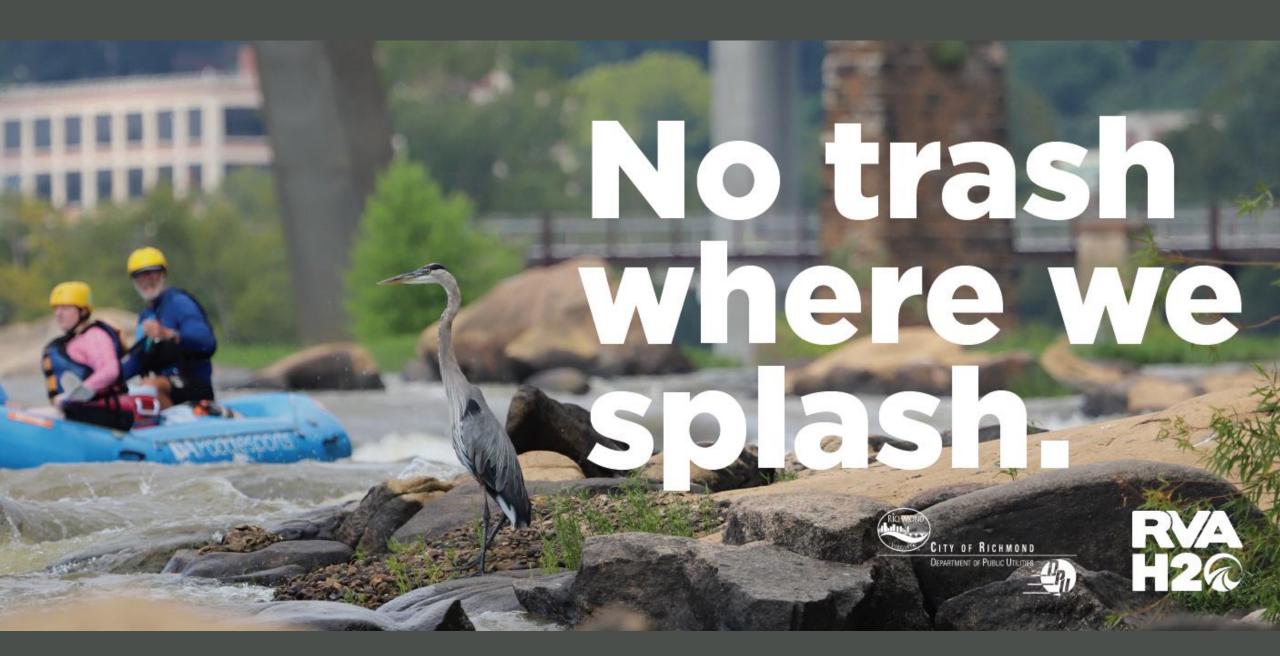


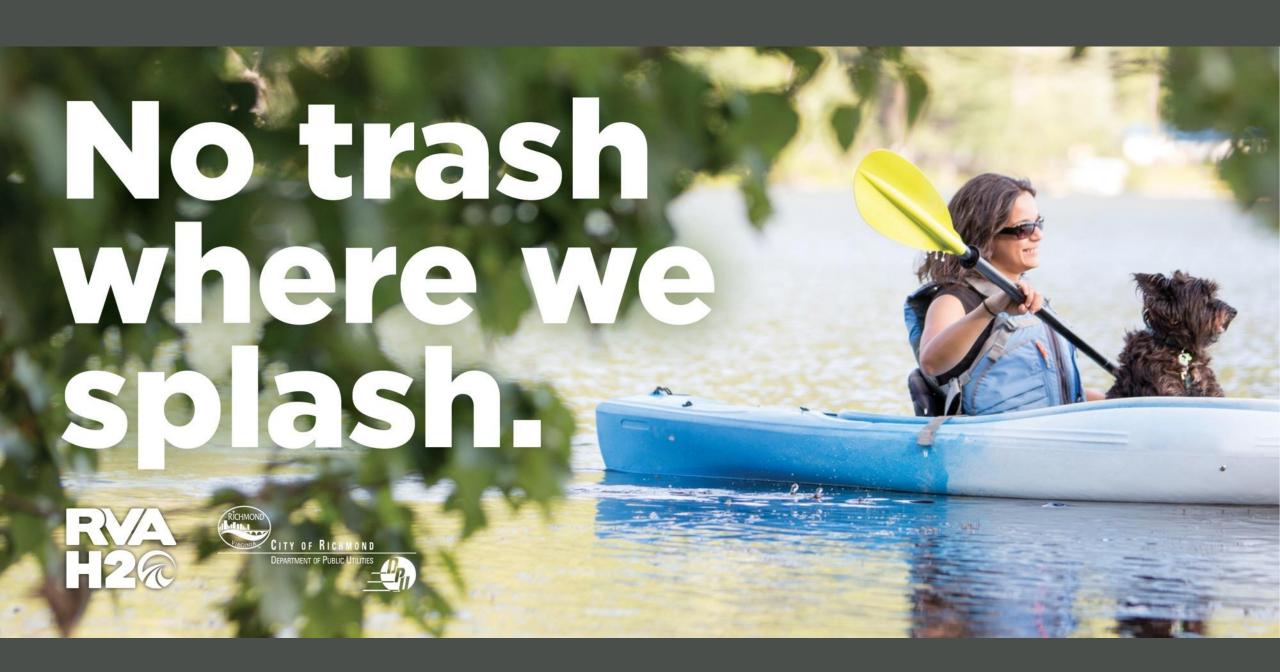
Any questions?

Please comment in the chat box or unmute.









Q&A

Please comment in the chat box or unmute.

Resources

A PDF of this presentation will be distributed.

Also, visit RVAH20.org

