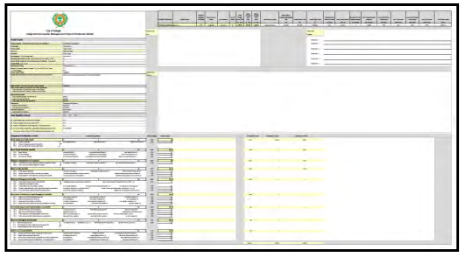
Integrated Stormwater Project Prioritization Model & Implementation Plan

Stormwater Management Advisory Commission

September 3, 2015





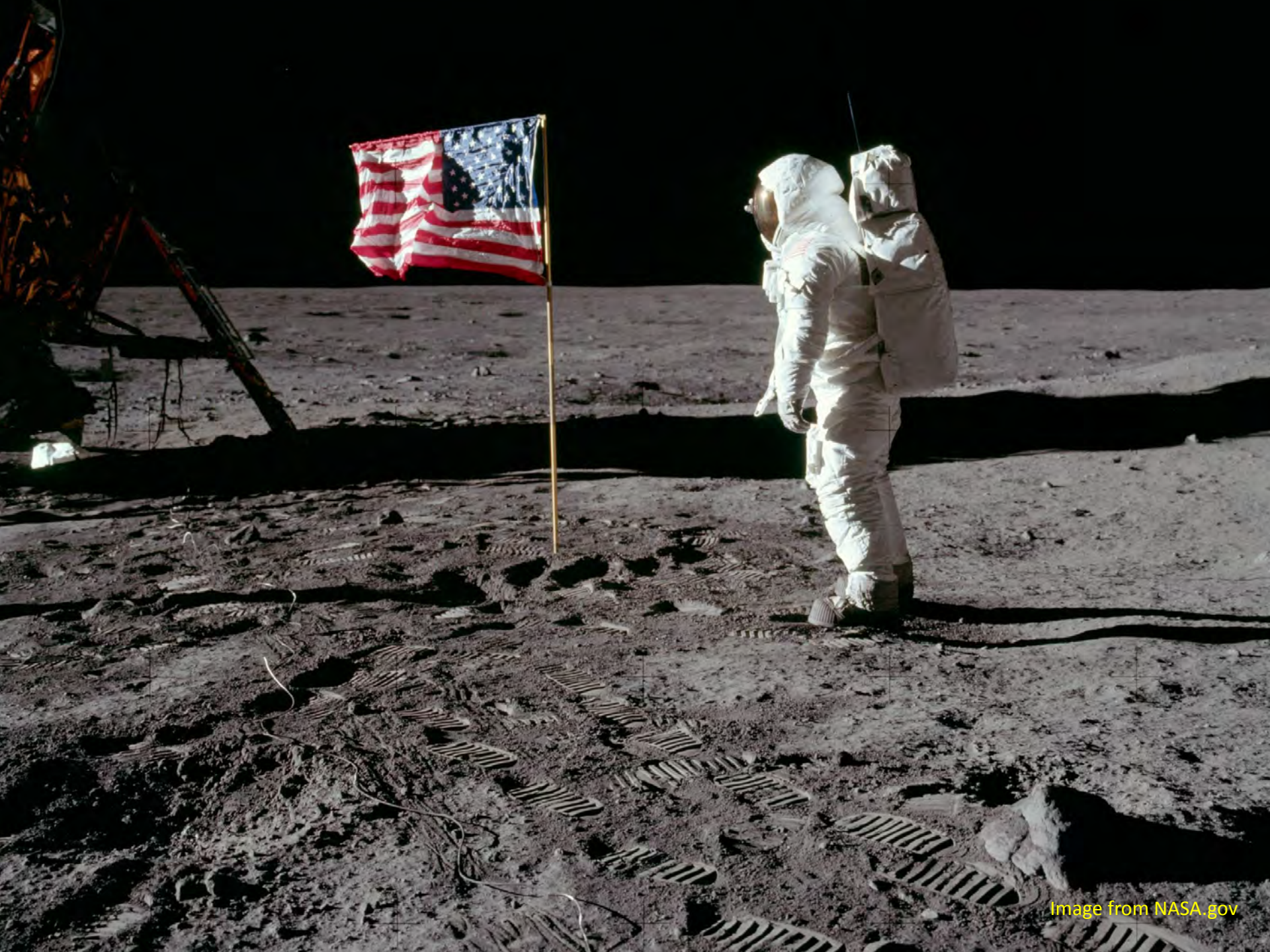


Image from NASA.gov

Thanks

Mayor McFarlane + City Council

Stormwater Management Advisory Commission (SMAC)

SMAC Sub-Committee for Prioritization Model Development:

Francine Durso, Marc Horstman, Vanessa Fleischmann

City Manager's Office:

Ruffin Hall – City Manager
Tansy Hayward – Assistant City Manager

City Budget Office:

Ben Canada – CIP Programs Manager
Marianne Sweden – Strategic Planning & Performance Manager

Public Works Department:

Rich Kelly - Interim Public Works Director

Stormwater Management Division Team:

Blair Hinkle - Stormwater Program Manager
Veronica High
Ben Brown
Chris Stanley
Kevin Boyer
Brad Stuart
Wenju Zhang
Carmela Teichman
David Hawksworth
Kelly Daniel
Suzette Mitchell
Sonya Debnam
McKenzie Gentry
Sheila Thomas-Ambat
Robert Best
Gilles Bellot
Rob Normandy
Robert Kirkpatrick
Carrie Mitchell
Susan Locklear
Veronica Barrett
Dominick Smalls
Mark Senior

Public:

Ken Carper - Stantec
Sujit Ekka - AECOM
Mike Wayts – Freese & Nichols
Dean Goodison - Atkins
Amit Sachan – Alpha & Omega
Ken Trefzger – HDR

NC Municipalities:

Jennifer Smith – City of Charlotte
Matt Gustis – City of Charlotte
Stewart Edwards – City of Charlotte
Daryl Hammock – City of Charlotte
David Phlegar – City of Greensboro
Paul Wiebke – City of Durham
Keith Huff – City of Winston-Salem
Derrick Boone – City of High Point
Doug Miller – City of Concord
Robert Patterson – Town of Morrisville

Town of Cary
Town of Chapel Hill
City of Hickory

Municipalities beyond NC:

Matt Hollon – City of Austin, TX
Mike Kelly – City of Austin, TX
Jean Drew – City of Austin, TX
Jacob Chandler – City of Bristol, TN

Other/general reference information/research:

Barbara Doll – NC State University

NCDOT

US EPA

Chesapeake Bay TMDL

Chesapeake Stormwater Network

Center for Watershed Protection

Fairfax County, VA
Montgomery County, MD
City of Memphis, TN (via Dave Mason, CDM Smith)
City of San Diego, CA
City of Bend, OR

City of Salem, OR
City of Eugene, OR
City of Rock Hill, SC
City of Decatur, Illinois
City of Colorado Springs, CO
City of Lakewood, CO
City of Scottsdale, AZ
City of Waukesha, WI
City of Indianapolis, IN
City of Lincoln, NE
City of Columbus, OH

Kentucky Integrated Project Priority Ranking System / Kentucky Clean Water State Revolving Fund / State of Kentucky

Institute for Sustainable Infrastructure

International Risk Governance Council (IRGC), Richard G. Little, The Price School of Public Policy, University of Southern California, Nov. 2012

IPWEA, Institute of Public Works Engineering Australasia (via Sujit Ekka – AECOM)

National Institute of Standards and Technology (NIST) / 2015-2016 Baldrige Performance Excellence Framework

Outline

- **From Vision to Reality**

- **Model Highlights**

  - Collaboration of SMAC + Staff Team
  - CIP and Stormwater Program Benefits

- **Implementation Plan**

- **SMAC Feedback & Discussion**

From Vision to Reality

City Council	**Jan – Mar 2015**	**Stormwater Program/Budget Workshops with City Council**
Staff Team	Mar – April	Staff Initial Planning Work/Internal Kickoff
SMAC	**May 7**	**SMAC – Model Kickoff**
SMAC + Staff	May 26, 3 – 5 PM	SMAC Sub-Committee Workshop #1
SMAC + Staff	June 3, 3 – 5 PM	SMAC Sub-Committee Workshop #2
SMAC + Staff	June 18, 3 – 5 PM	SMAC Sub-Committee Workshop #3
SMAC	**July 9**	**SMAC – Update & Review Preliminary Model**
SMAC + Staff	July 30, 3 – 5 PM	SMAC Sub-Committee Workshop #4
SMAC	**Sept 3**	**Final Initial Model & Implementation Plan to SMAC**
City Council	**Nov 2015**	**Update to Council**
Staff Apply Model with SMAC		**Ready for initial use for FY 2017 Budget Season**

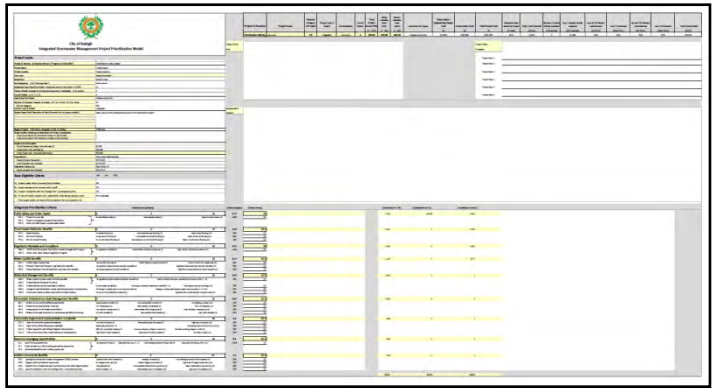
Direct Outcomes Achieved

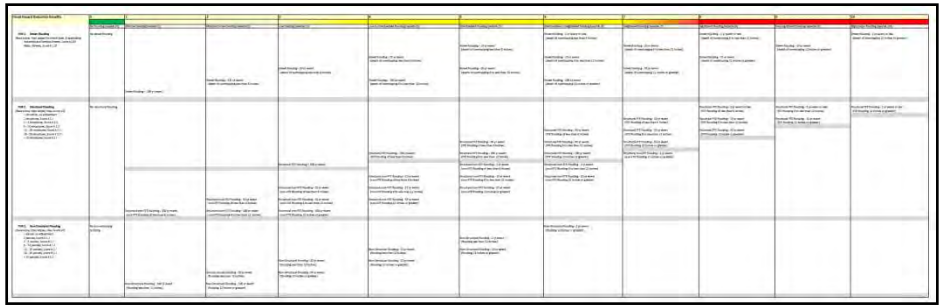
- The **Integrated Stormwater Project Prioritization Model**

- **Scoring Guidance/Metrics** for **Weighted Criteria** within Model

- **Process for implementing, applying, and adaptively updating** the Model

- **Key Decision Support Tool** for the Stormwater CIP Team and Program





Integrated Stormwater Management Project Prioritization Model
Divisional Implementation Plan

[Updated August 28, 2015]

Overview of Divisional CIP Program Integration:

- The Integrated Stormwater Project Prioritization Model (the Model) is distributed to the Program Managers (Sectional Heads) and Sectional Teams across the Stormwater Management Division.
- Each team uses the Model to help identify, rate, and store potential projects on an ongoing basis throughout the year as deci determined by each Program Manager. The Project ID format is set up to recognize the group that is evaluating/managing a given project. A field to indicate the status of the project will also be included within the Model, i.e., preliminary, budgeted, active, and complete. Further, the Model will indicate the original date of project evaluation as well as the most recent update, if/as applicable.
- Program Managers retain responsibility for assigning, reviewing, checking, and approving all projects identified and evaluated within their sectional program area. Program Managers are responsible for assigning and empowering staff within their sectional teams to help identify potential projects that are then applied with and through the model. Scoring metrics and guidance are summarized within the model under each of the nine main scoring criteria tabs. Drop-down menus also help provide a basis for consistent scoring. Training/orientation sessions for model utilization are also provided for staff.
- Each group within the Division develops and stores their projects in a sectional master file(s) of projects.
- On a regular quarterly basis throughout the year, projects evaluated, reviewed, and checked at the sectional level are copied into an integrated divisional master file of potential CIP projects to be considered and prioritized for budgeting and subsequent implementation upon official approval and authorization.

Larger Stormwater Program Benefits

- **Heightened Teamwork and Collaboration**

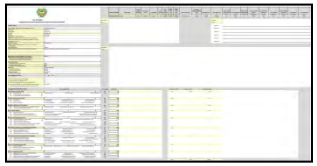
- **Heightened Stormwater Program Integration**
  - encourages an efficient, effective, innovative, and strategic approach to stormwater management
  - preferred projects help achieve both stormwater quality and quantity goals
  - provides framework and priorities for enhanced watershed management and master planning

- **Aligned with recently adopted City Strategic Plan**
  - leading practice example consistent with organizational excellence
  - contributing to overall community quality of life and helping advance the City of Raleigh





Model Highlights



- **Foundational elements** of Prioritization Model
  - **Basic eligibility criteria**
    - Yes or No

B1. Project located within corporate limits of Raleigh
B2. Project receives and/or conveys public runoff*
B3. Project is compatible with City Strategic Plan + Comprehensive Plan
B4. For DA and SWQCS projects ONLY, petitioner(s) utility fee payment(s) current
[*Stormwater Quality Cost Share (SWQCS) projects are the only exception to B2]

Model Highlights

- **Foundational elements** of Prioritization Model

  - **Integrated Prioritization Criteria**
    - Defined and Weighted
    - Scoring Metrics

Public Safety & Public Health (17%)

Flood Hazard Reduction Benefits (14%)

Regulatory Mandates & Compliance (13%)

Water Quality Benefits (11.5%)

Watershed Management Benefits (10%)

Stormwater Infrastructure Asset Management Benefits (10%)

Community Support & Implementation Complexity (9%)

Resource Leveraging Opportunities (8.5%)

Indirect Community Benefits (7%)

Model Highlights

- **Foundational elements** of Prioritization Model
  - **Scoring Metrics (Example - Flood Hazard Reduction)**

Flood Hazard Reduction Benefits	0	1	2	3	4	5
	No flooding hazards (0)	Minimal flooding hazards (1)	Minimal to low flooding hazards (2)	Low flooding hazards (3)	Low to intermediate flooding hazards (4)	Intermediate flooding hazards (5)
FHR 1. Street Flooding (Base score, then adjust for street type, if applicable) Industrial and Service Streets, Score x 0.85 Major Streets, Score X 1.35	No street flooding					
						Street flooding - 10 yr event (depth of overtopping less than 6 inches)
					Street flooding - 25 yr event (depth of overtopping less than 6 inches)	
				Street flooding - 50 yr event (depth of overtopping less than 6 inches)		Street flooding - 50 yr event (depth of overtopping 6 to less than 12 inches)
			Street flooding - 100 yr event (depth of overtopping less than 6 inches)		Street flooding - 100 yr event (depth of overtopping 6 to less than 12 inches)	
		Street flooding > 100 yr event				
FHR 2. Structural Flooding (Base score, then adjust, max. score 10) 1 structure, no adjustment 2 structures, Score X 1.1 3 - 5 structures, Score X 1.2 6 - 10 structures, Score X 1.3 11 - 15 structures, Score X 1.5 16 - 20 structures, Score X 1.7 > 20 structures, Score X 2.0	No structural flooding					
						Structural FFE flooding - 50 yr event (FFE flooding of less than 6 inches)
					Structural FFE flooding - 100 yr event (FFE flooding of less than 6 inches)	Structural FFE flooding - 100 yr event (FFE flooding 6 to less than 12 inches)
				Structural FFE flooding > 100 yr event		
						Structural non-FFE flooding - 2 yr event (non-FFE flooding of less than 6 inches)
					Structural non-FFE flooding - 10 yr event (non-FFE flooding of less than 6 inches)	Structural non-FFE flooding - 10 yr event (non-FFE flooding 6 to less than 12 inches)
				Structural non-FFE flooding - 25 yr event (non-FFE flooding of less than 6 inches)	Structural non-FFE flooding - 25 yr event (non-FFE flooding 6 to less than 12 inches)	Structural non-FFE flooding - 25 yr event (non-FFE flooding 12 inches or greater)
			Structural non-FFE flooding - 50 yr event (non-FFE flooding of less than 6 inches)	Structural non-FFE flooding - 50 yr event (non-FFE flooding 6 to less than 12 inches)	Structural non-FFE flooding - 50 yr event (non-FFE flooding 12 inches or greater)	
		Structural non-FFE flooding - 100 yr event (non-FFE flooding of less than 6 inches)	Structural non-FFE flooding - 100 yr event (non-FFE flooding 6 to less than 12 inches)	Structural non-FFE flooding - 100 yr event (non-FFE flooding 12 inches or greater)		
FHR 3. Non-Structural Flooding (Base score, then adjust, max. score 10) 1 parcel, no adjustment 2 parcels, Score X 1.1 3 - 5 parcels, Score X 1.2 6 - 10 parcels, Score X 1.3 11 - 15 parcels, Score X 1.5 16 - 20 parcels, Score X 1.7 > 20 parcels, Score X 2.0	No non-structural flooding					
						Non-Structural flooding - 2 yr event (flooding less than 12 inches)
					Non-Structural flooding - 10 yr event (flooding less than 12 inches)	Non-Structural flooding - 10 yr event (flooding 12 inches or greater)
				Non-Structural flooding - 25 yr event (flooding less than 12 inches)	Non-Structural flooding - 25 yr event (flooding 12 inches or greater)	
			Non-Structural flooding - 50 yr event (flooding less than 12 inches)	Non-Structural flooding - 50 yr event (flooding 12 inches or greater)		
		Non-Structural flooding - 100 yr event (flooding less than 12 inches)	Non-Structural flooding - 100 yr event (flooding 12 inches or greater)			

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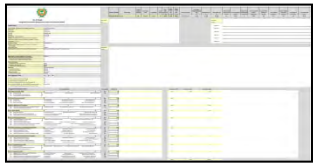
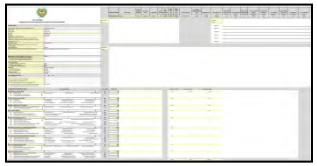


- **Foundational elements** of Prioritization Model
  - **Scores** and other output information to support decision making

Project ID Number	Project Name	General Category of Project	Primary Type of Project	Sub-Watershed	Council District	Total Project Score (TPS)	Safety Criticality Score (SCS)	Mission Criticality Score (MCS)	Lead Group for Project	Study and/or Engineering Design Cost	Construction Cost	Total Project Cost	Watershed Area Served by Project	Cost / Area Served	Number of Parcels Directly Impacted	Cost / Parcel(s) Directly Impacted	Annual TN Pollutant Load Reduced	Cost / TN Reduced	Annual TSS Pollutant Load Reduced	Cost / TSS Reduced	Cost-Score Index
						(0 - 100)	(0 - 100)	(0 - 100)		($)	($)	($)	(in Acres)	($/Acre)	(# of parcels)	($/# of parcels)	(lbs TN/yr)	($/lbs TN/yr)	(lbs TSS/yr)	($/lbs TSS/yr)	($/TPS)
Prioritization Model_	Project Name	CIP	Integrated	Rocky Branch	A	100.00	100.00	100.00	Infrastructure (210)	$5,000	$50,000	$55,000	10.0	5,500	5	11,000	N/A	N/A	N/A	N/A	550.00

Model Highlights



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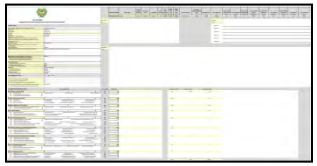
Prioritization Model_	Project Name	**CIP**	Integrated	Rocky Branch	**A**	**100.00**	**100.00**	**100.00**

Project	Type	Total Project Score	Safety Criticality Score	Mission Criticality Score
Pigeon House Restoration	CIP - Multi	79.84	70	78.81
Lower Longview Lake Dam	CIP - Multi	70.31	100	84.52
Northshore Lake Restoration	CIP - Multi	64.94	90	78.72
Citywide LID-GI Study	Planning/Study	49.85	0	42.16
Yorkshire Downs	CIP Infra	42.83	50	41.46
E Martin/Camden Rehab	CIP Infra	42.00	70	36.44
Simmons Branch Ph 2	CIP Infra	40.46	50	38.12
East and Boundary Drainage	CIP Infra	37.69	70	31.38
Temple Dr Drainage	DA	30.29	50	27.92
4125 Windsor Place	DA	29.30	70	28.56
Typical DA Stream Proj	DA	17.83	10	14.38
Lower Longview Lake Dredging	CIP - WQ	8.64	0	7.72

The higher ~ higher priority, in general

Model Highlights



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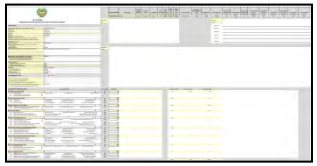

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Implementation Plan

Implementation Plan

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- **Each team uses the Model to help envision, identify, and evaluate potential projects on an ongoing basis** throughout the year as determined by each Program Manager

- Each group within the Stormwater Program develops and stores their projects in a **sectional master file(s) of projects**

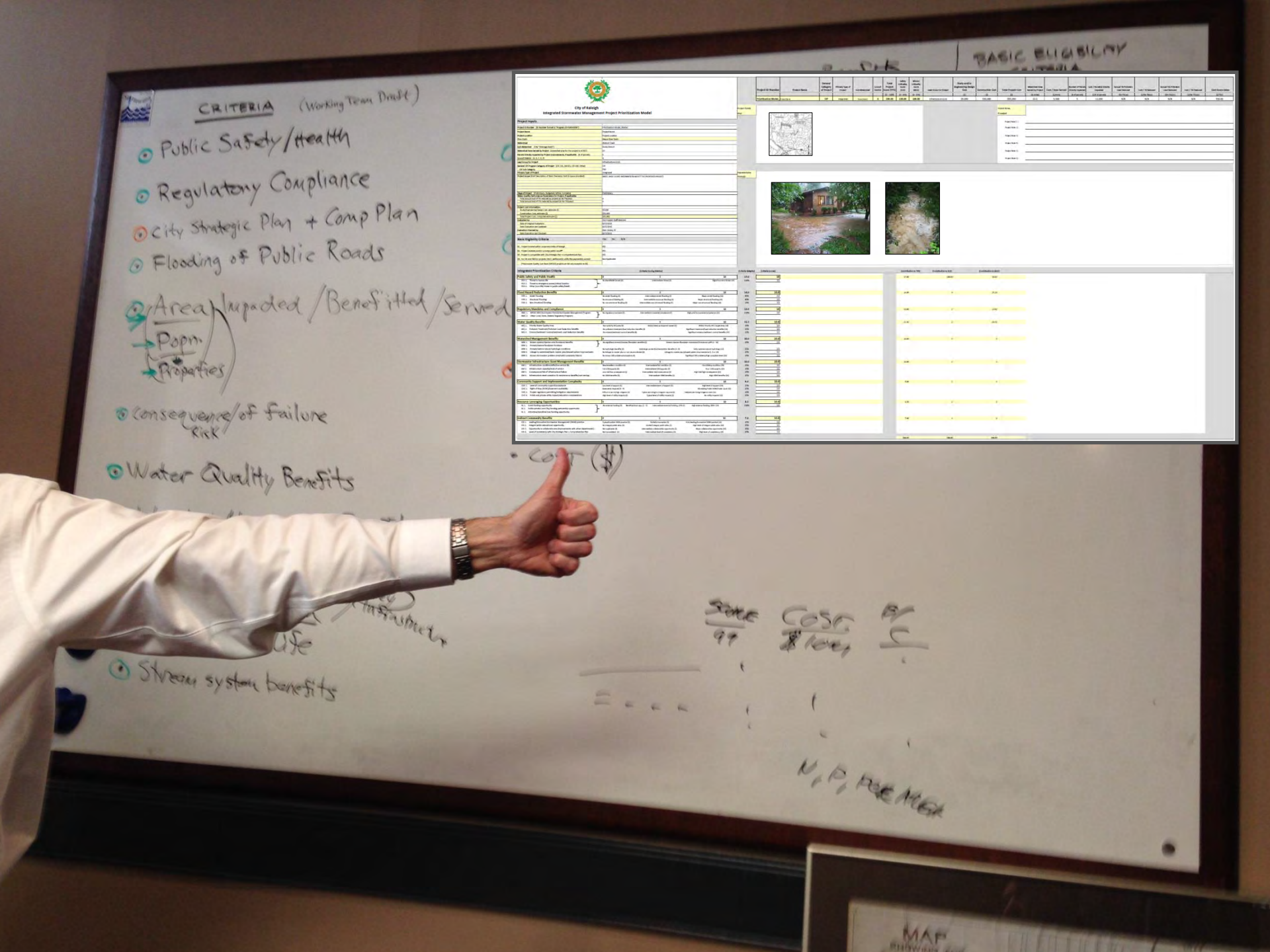
- On a **regular quarterly basis** - projects evaluated, reviewed, and checked at the sectional level are placed into an **integrated divisional master file of potential CIP projects**

- Strategic Planning team in concert with the Budget team, ahead of the **quarterly CIP Leadership Team meetings**, reviews and analyzes the updated developing **Divisional CIP Portfolio**

- The developing Divisional CIP Portfolio is **reviewed and vetted by the CIP Leadership Team**

- **Strategic updates are provided to SMAC following quarterly CIP development meetings**, culminating in the **annual CIP program budget** recommendations for official consideration

- As a best practice, **continual improvement/adaptive management** updates to the Model are regularly noted, discussed, and incorporated ahead of the upcoming fiscal calendar year. Updates are also provided to SMAC and City Council, as appropriate, on any revisions/improvements, etc.


CRITERIA (Working Team Draft)
Public Safety/Health
Regulatory Compliance
City Strategic Plan + Comp Plan
Flooding of Public Roads
Area Impacted/Benefitted/Served
Popn.
Properties
Consequence/of failure
Risk
Water Quality Benefits
Stream system benefits
COST ($)
BASIC ELIGIBILITY
City of Raleigh
Integrated Stormwater Management Project Prioritization Model
Project Inputs
Integrated Prioritization Criteria
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Stormwater Infrastructure Asset Management Benefits
Community Support and Implementation Complexity
Resources Leveraging Opportunities
Indirect Community Benefits
Basic Eligibility Criteria
SCALE 99
COST $100K
B/C
N, P, FOG MGT

Thanks All!

SMAC Feedback & Discussion