



RESILIENT NJ RESILIENT RARITAN RIVER AND BAY COMMUNITIES

APPENDIX K: WATERSHED SCALE PLANNING AND GOVERNANCE (TASK 6.5)

August 12, 2022

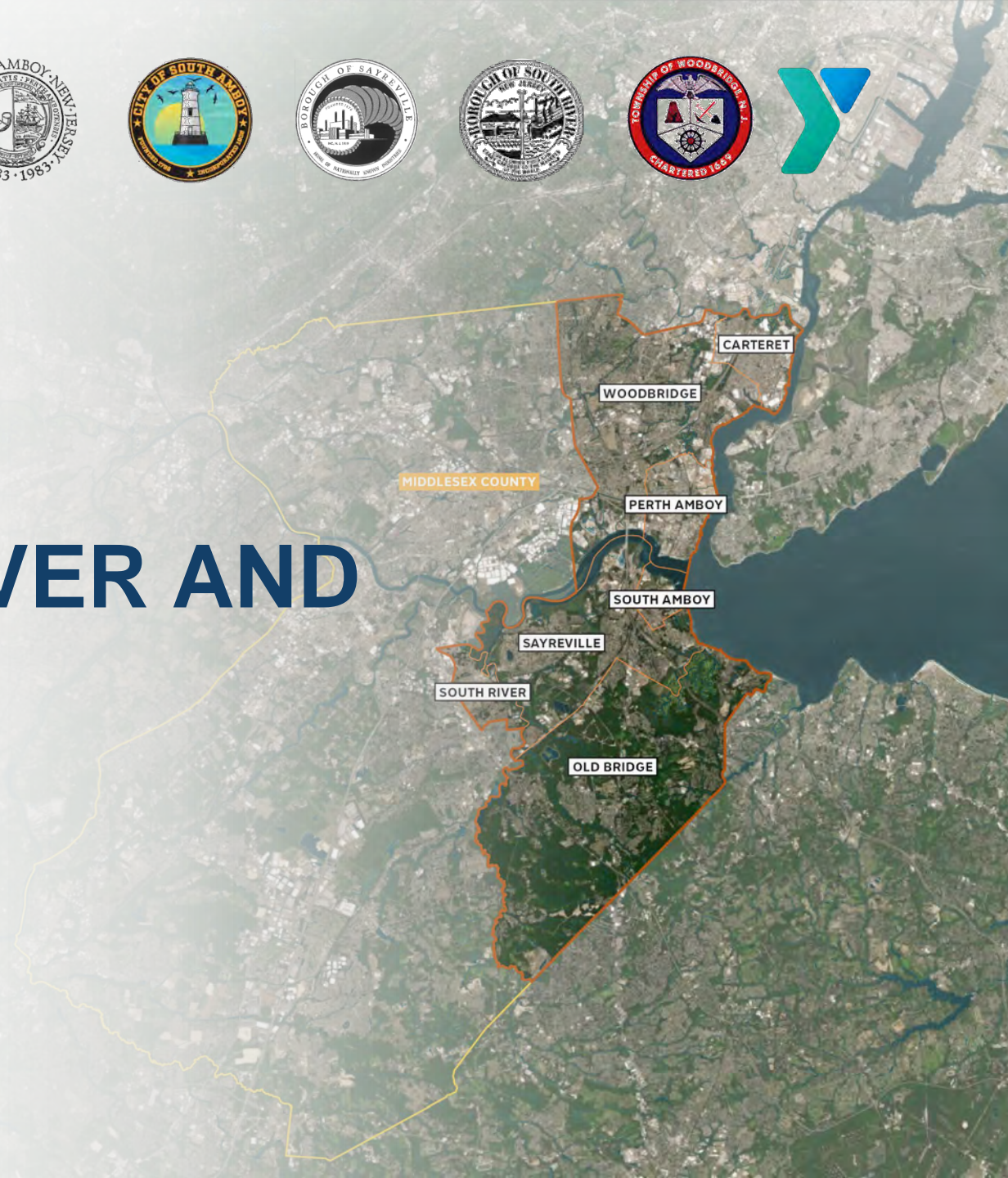


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Key Points

This appendix summarizes the project team's research on the applicability of a watershed or regional scale planning and governance approach in the Raritan River and Bay Communities (RRBC) region.

Next steps include:

- Continued meeting and coordination of the RRBC Steering Committee
- Identification of a priority collective action to demonstrate proof of concept and the benefits of coordination
- Exploration of opportunities for inter-municipal agreements

Key insights from this analysis include:

- Watershed or regional scale interventions may be leveraged to proactively reduce flood risk and build resilience/coordination across the region, including providing a framework for collaboration around other regional needs like coastal resilience and stormwater management
- In order to fully realize the potential benefits of regional or watershed scale planning and governance, there are several considerations including political will, enforcement, compliance, and authority which should be evaluated in order to determine the most appropriate approach, participants and scale.
- Regardless of whether a formal watershed or regional scale governance approach is adopted, there is a benefit to continued coordination of the RRBC Steering Committee. Watershed or regional scale interventions may have numerous co-benefits including enhanced open space networks, efficiencies of scale, and improved water quality

Broad Benefits of Coordination

Although the RRBC planning process did not lead to consensus around which watershed or regional scale governance approach should be pursued, there are benefits to be realized through continuing coordination, regardless of the governance approach pursued.

Coordinated Activity	Possible Benefits
Development of policies and programs	<ul style="list-style-type: none">• Consistent application and benefit of floodplain management and resilience policies and practices• Planning and zoning for equitable upstream and downstream distribution of flood risk• Cumulative assessment of flood impact of proposed development or rezoning• Floodplain ordinance higher standards coordinated across jurisdictions
Flood Protection Planning and Design	<ul style="list-style-type: none">• Coordinated/participatory planning of federal and state flood management projects and programs• Negotiation of cost sharing agreements• Equitable sharing of benefits of floodplain management policies and programs
Maintenance of flood protection and regionally significant infrastructure	<ul style="list-style-type: none">• Equitable and efficient distribution of costs across benefitting parties• Joint financing of maintenance and improvement projects
Watershed/river basin flood analysis and mapping	<ul style="list-style-type: none">• Consistent assumptions across and within watersheds for future-condition analysis and mapping• Greater certainty related to the effects and benefits of actions in the watershed• Greater prediction capability• Ability to leverage information to improve flood risk reduction

INTRODUCTION

WATERSHED PLANNING: PROBLEM STATEMENT

Why are we doing this?

Currently, the management of floodplains in the region **is largely at the local level** – but floodplains are regional in nature.

Policies, programs, and projects led by individual municipalities do not necessarily address water management needs across jurisdictions. Further, municipalities may not have the capacity in terms of expertise, staffing, funding, information or resources to address floodplain management and resilience.

The management of floodplains could be improved if the **interdependence of actions across municipalities were better addressed**.

However, **the region lacks an organized governance framework for advancing policies, programs, and projects that effectively manage flood risk at the watershed scale**.

For example:

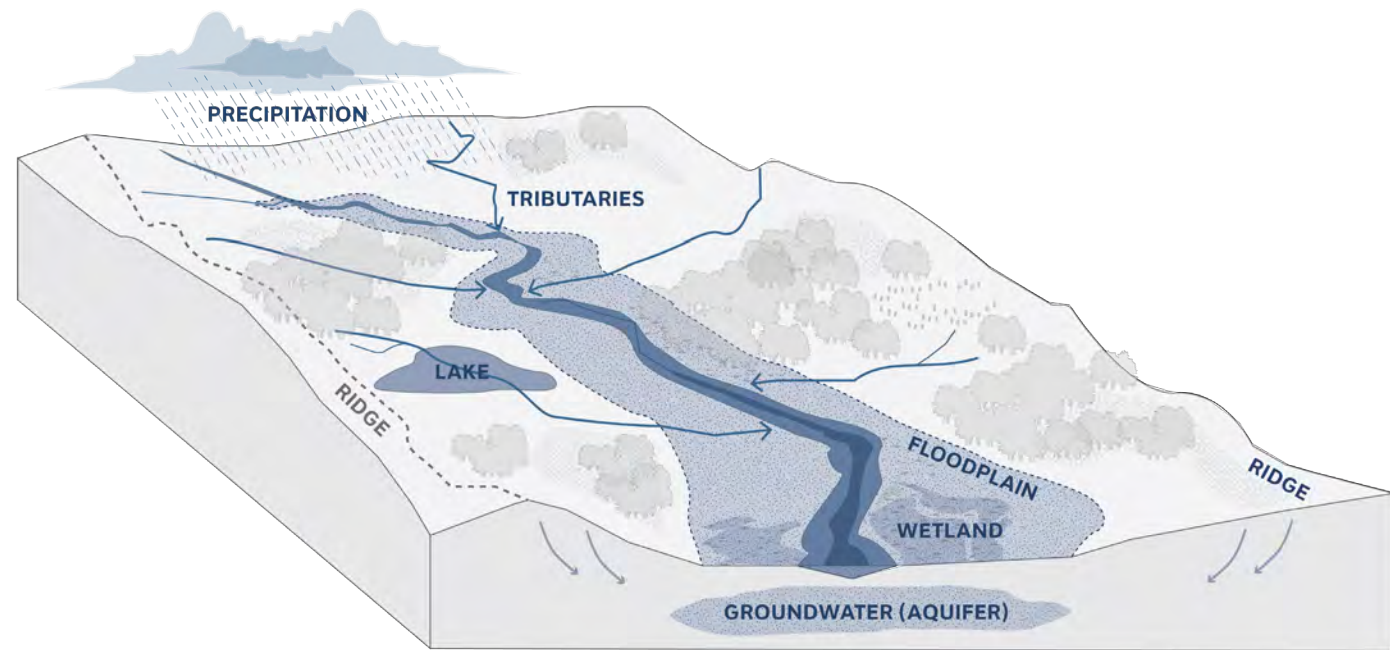
- Zoning and other land-use controls are regulated at the local level in New Jersey and differing requirements related to stormwater management, wetland setbacks, and flood resilience standards across jurisdictions do not necessarily account for upstream and downstream impacts
- The planning and design of capital projects, such as storm drains and culverts, does not necessarily address the potential for benefits extending to areas of the watershed beyond municipal boundaries
- Stormwater management planning led at the municipal level may not be coordinated with efforts in adjacent municipalities, leading to missed opportunities for broader improvements to maximize the beneficial function of floodplains

WHAT IS A WATERSHED?

A watershed can most easily be thought of as an area within which, wherever water falls, it will all eventually flow to the same place.

Watersheds can cross municipal and state boundaries, which can present a challenge when planning for flooding and risk reduction.

The RRBC region lies at the intersection of three major watersheds: the Arthur Kill; the Monmouth; and the Lower Raritan, South River, and Lawrence.



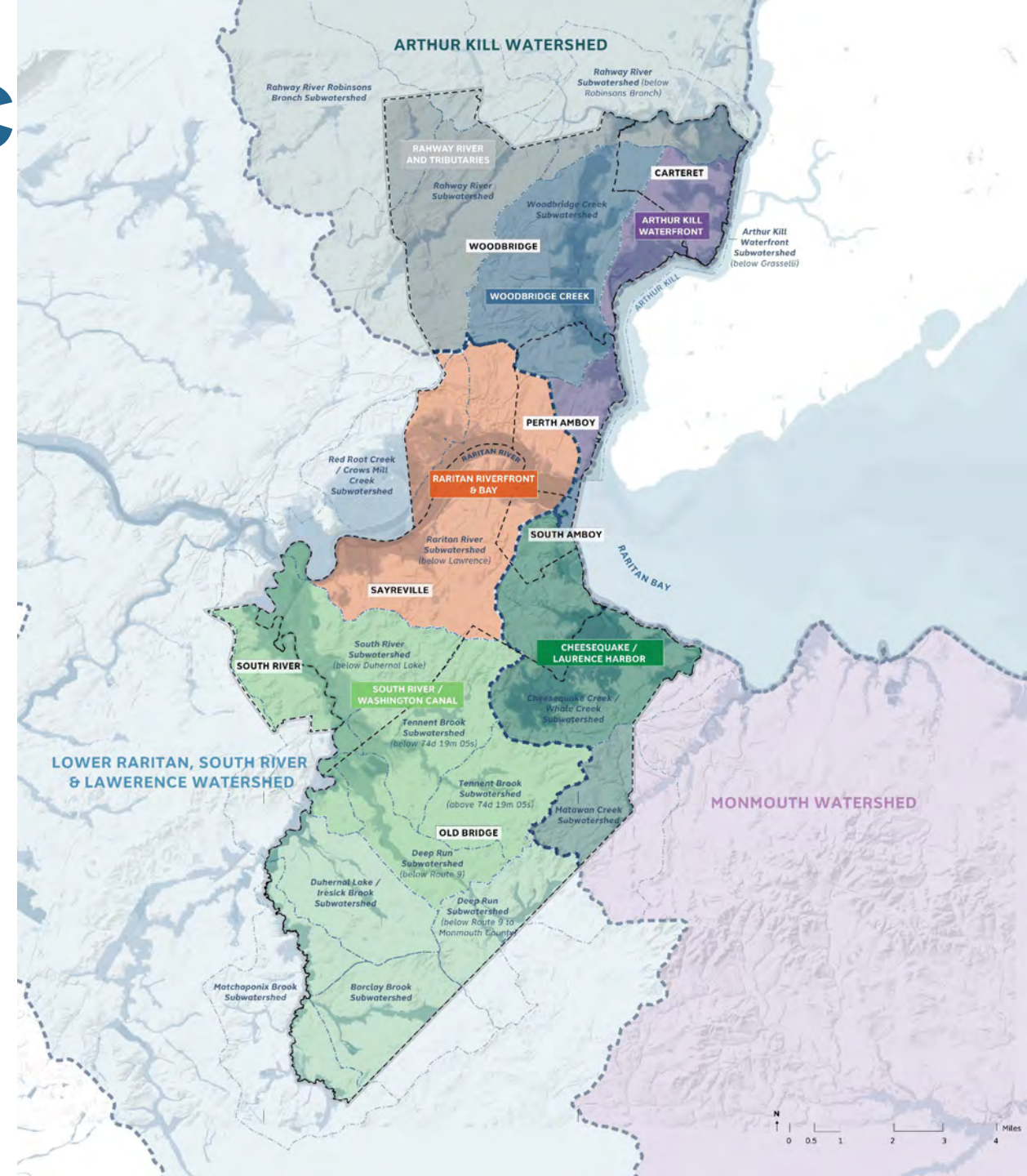
WATERSHEDS IN RRBC

The RRBC region includes multiple watersheds at different scales, all intersecting across the seven individual municipalities.

To facilitate a watershed-based approach, the RRBC project team created sub-geographies based on hydrologic unit code 14 (HUC14) watershed boundaries and the shared flood risks and land use patterns within each.

These are referred to as sub-watersheds in the Action Plan. The RRBC sub-watersheds are:

- Arthur Kill Waterfront
- Woodbridge Creek
- Raritan Riverfront and Bay
- South River / Washington Canal
- Cheesequake / Laurence Harbor
- Rahway River and Tributaries



WHAT IS GOVERNANCE?

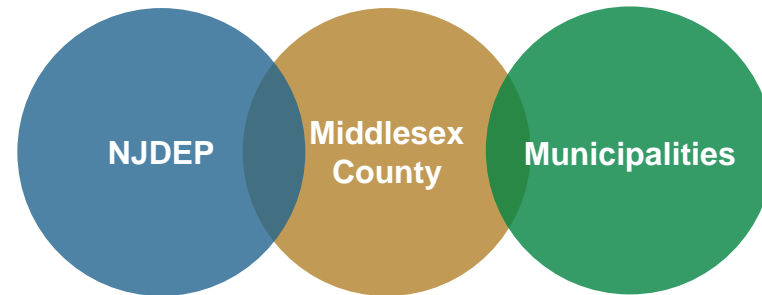
Governance is the system by which entities are directed and controlled.

Achieving resilience in RRBC will require action by multiple entities at multiple scales. This assessment considers how a watershed or regional scale governance approach in RRBC can best support the implementation of the action plan. The goal is to optimize governance structures and processes to build flood resilience. There are several ways different levels of government can work together within a shared governance structure; some of these are illustrated below.

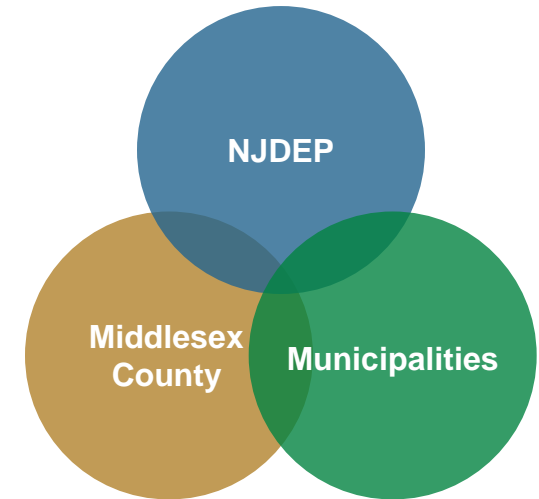
Hierarchical



Distributed



Collaborative



CASE STUDIES

LESSONS IN WATERSHED SCALE GOVERNANCE

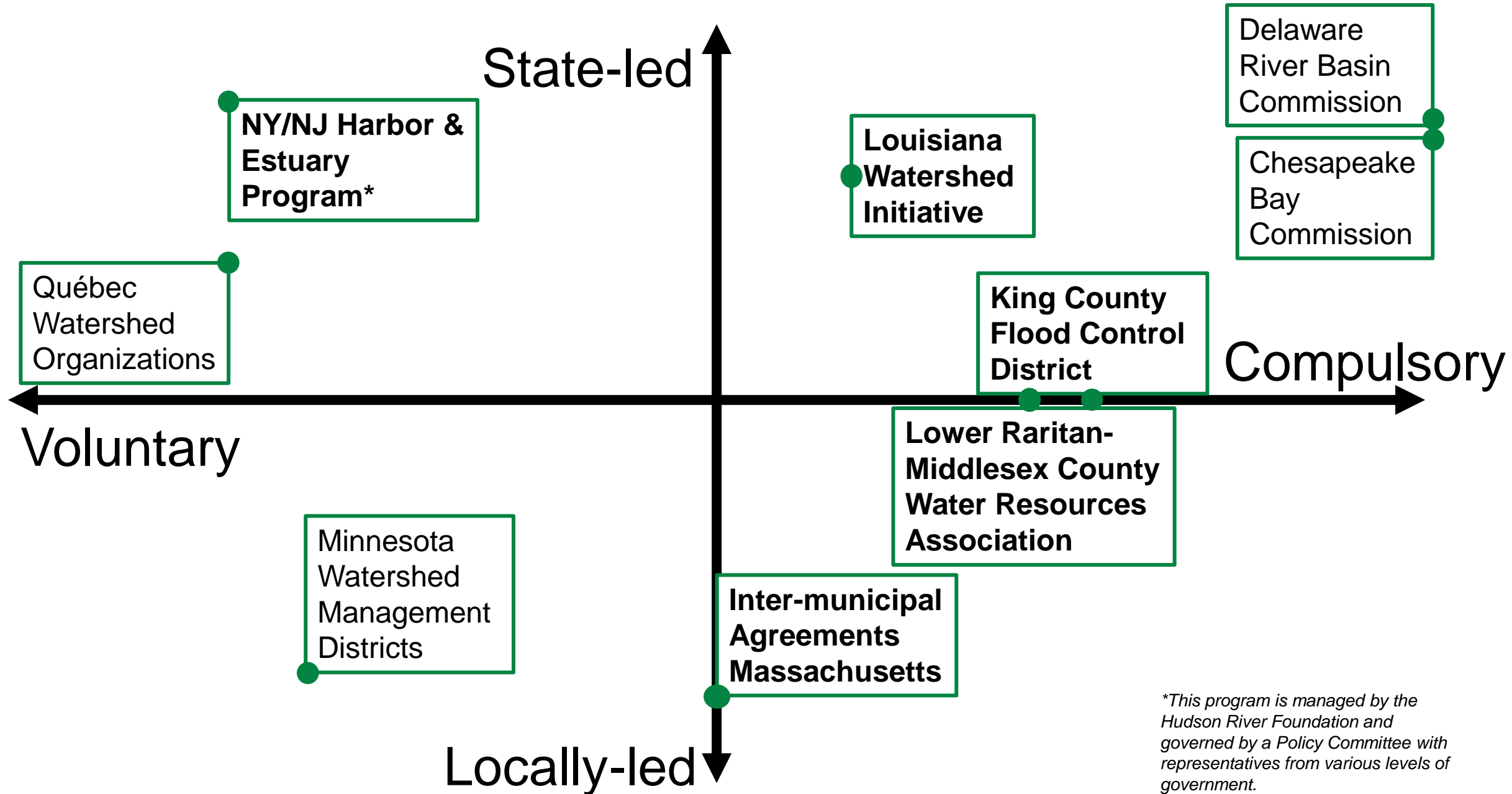
A Spectrum of Case Studies

- Watershed or regional scale governance can take many different forms.
- Historically, watershed scale governance approaches have been applied to address *water quality* issues.
- More recently, watershed scale governance approaches have been applied to address floodplain management and *water quantity* issues.
- Watershed scale approaches can be:
 - Led by different levels of government
 - Compulsory or voluntary

The case studies presented in this section illustrate the variety of forms that watershed scale governance approaches can take.



SPECTRUM OF WATERSHED SCALE INTERVENTIONS



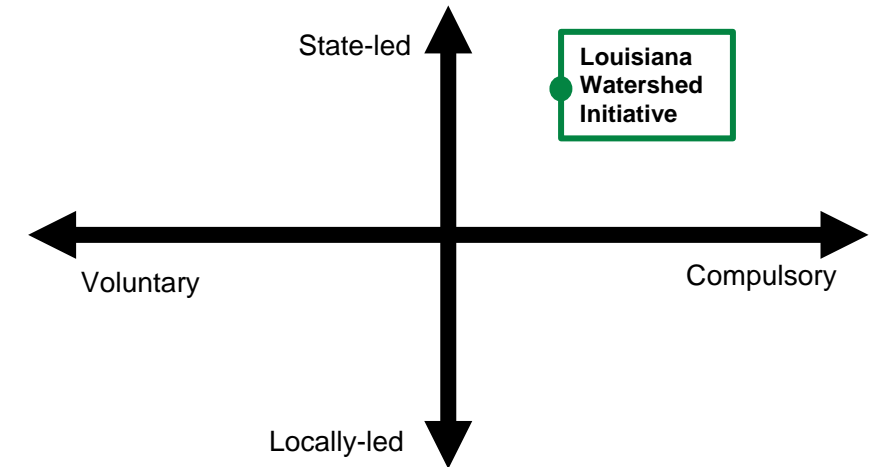
SPECTRUM OF WATERSHED SCALE INTERVENTIONS



LOUISIANA
WATERSHED
INITIATIVE

KEY INFORMATION

- Triggered by failures at state and local level by during 2016 floods
- Comprehensive approach to surface water management
 - Watershed management and floodplain management together
 - New approach to statewide flood mitigation
 - Established eight watershed regions to coordinate efforts and distribute project funds
- Funded by Community Development Block Grant Mitigation Funds (CDBG-MIT)
- Proposed in the CDBG-MIT Action Plan following 2016 floods
- Recommended structure through a Phase 1 report provided the basis for distribution of future HUD funding



POTENTIAL RELEVANCE TO RRBC

- Sharing of lessons-learned from formation of regions
- State-wide initiative with coordination of individual regions based on shared needs and issues (watersheds)
- Potential legislative considerations / hurdles
- Funded through Federal disaster recovery / mitigation funding

RESOURCES

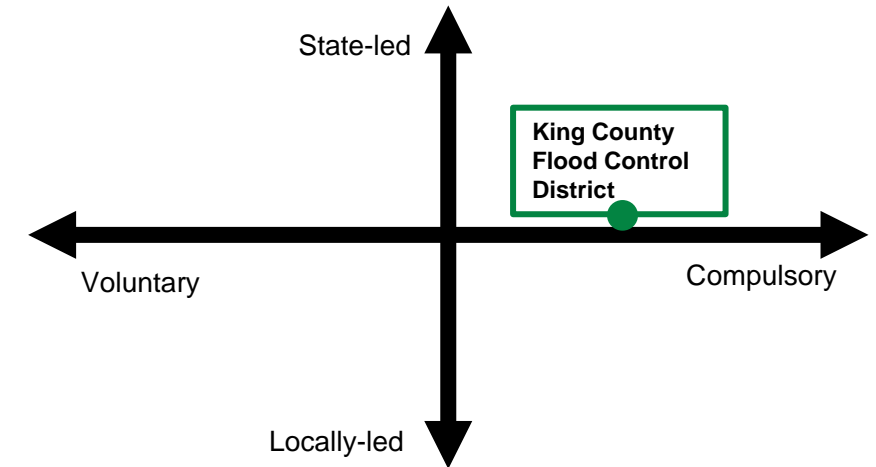
- [LWI Homepage](#)
- [CDBG-MIT Action Plan](#)
- [Phase 1 Report](#)

SPECTRUM OF WATERSHED SCALE INTERVENTIONS



KEY INFORMATION

- Integrated floodplain management and funding at county scale
 - Maintain flood control structures (e.g., dams, culverts)
 - Manage FEMA-funded elevations/buyouts
 - Awards grants for flood reduction and cooperation at sub-county level
- Authorized by County Ordinance
- Develops a Flood Hazard Management Plan
- Funded by River Improvement Fund tax levy



POTENTIAL RELEVANCE TO RRBC

- Formation required dissolution of existing entities
- County-wide initiative
- Management of FEMA funding
- County-wide special purpose district
- Funded through property tax assessment

RESOURCES

- [King County Website](#)
- [Flood Control District Website](#)
- [Flood Control District Ordinance](#)
- [FAQ](#)

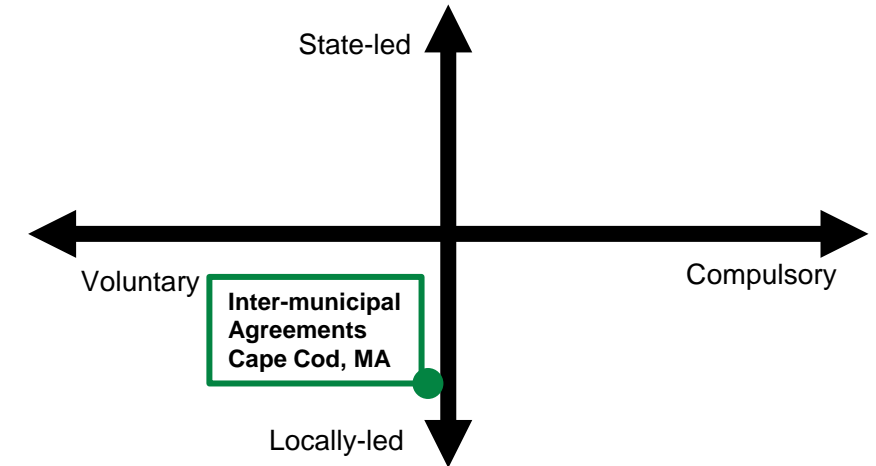
SPECTRUM OF WATERSHED SCALE INTERVENTIONS



Pleasant Bay
Alliance

KEY INFORMATION

- Pleasant Bay Watershed Permit
 - Permitting structure across municipal boundaries (4 towns)
 - Focuses on market-based system for nitrogen management across watershed
- Allows municipalities to implement non-traditional technologies, gain nitrogen reduction credits
- Pleasant Bay Alliance coordinates management activities
- Pleasant Bay Targeted Watershed Management Plan



POTENTIAL RELEVANCE TO RRBC

- Formation requires lower level of effort and similar to existing shared service agreements in NJ
- Flexibility in scope of inter-municipal agreements → four different towns in MA are creating agreement for shoreline management
- Regional coordinating entity already responsible for Area of Critical Environmental Concern

RESOURCES

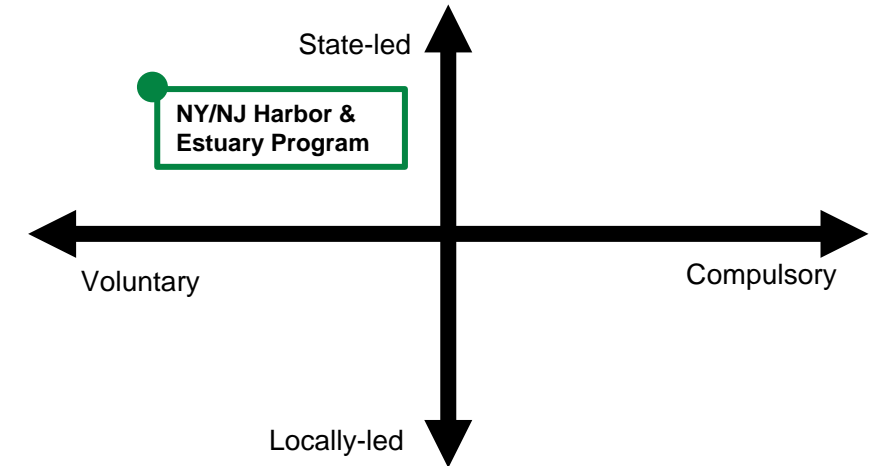
- [Homepage](#)
- [Pleasant Bay Watershed Permit](#)
- [Management Plan and Updates](#)

SPECTRUM OF WATERSHED SCALE INTERVENTIONS

NY/NJ HARBOR & ESTUARY PROGRAM

KEY INFORMATION

- One of 28 non-regulatory and locally driven National Estuary Programs
- Managed by the Hudson River Foundation and governed by a policy committee consisting of Federal, State and local representatives
- Strive to bring benefits of the Clean Water Act to the NY/NJ Harbor area, implement core water programs
- Guided by revised Comprehensive Conservation and Management Plan required under Clean Water Act Section 320



POTENTIAL RELEVANCE TO RRBC

- Voluntary program guided by regulatory requirements
- Managed by entity independent of local, county, state governments
- [2018 Climate Vulnerability Report](#) and [2017-2022 Action Agenda](#) are recent, relevant local examples focus on resilience through water quality lens

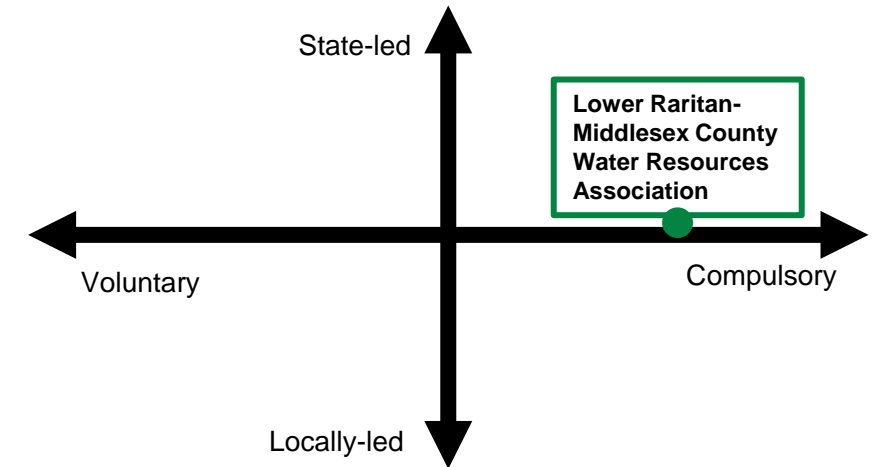
RESOURCES

- [Homepage](#)
- [Core Program Documents](#)
- [Partnership and Action Agenda](#)

SPECTRUM OF WATERSHED SCALE INTERVENTIONS

[Government](#) > [Departments](#) > [Department of Transportation](#) > [Office of Planning](#) > [Sustainablilty & Resillency](#) >

Lower Raritan-Middlesex County Water Resources Association



KEY INFORMATION

- Authorized by Middlesex County Board of Commissioners in 1977
- Designated in 2002 by state as a Watershed Management Group
- Lead agency for wastewater management planning authority for land that encompasses Middlesex County

POTENTIAL RELEVANCE TO RRBC

- Already operating within Region
- Defined authority
- Opportunities to collaborate on issues relating to wastewater management

RESOURCES

- [Homepage](#)

SPECTRUM OF WATERSHED SCALE INTERVENTIONS

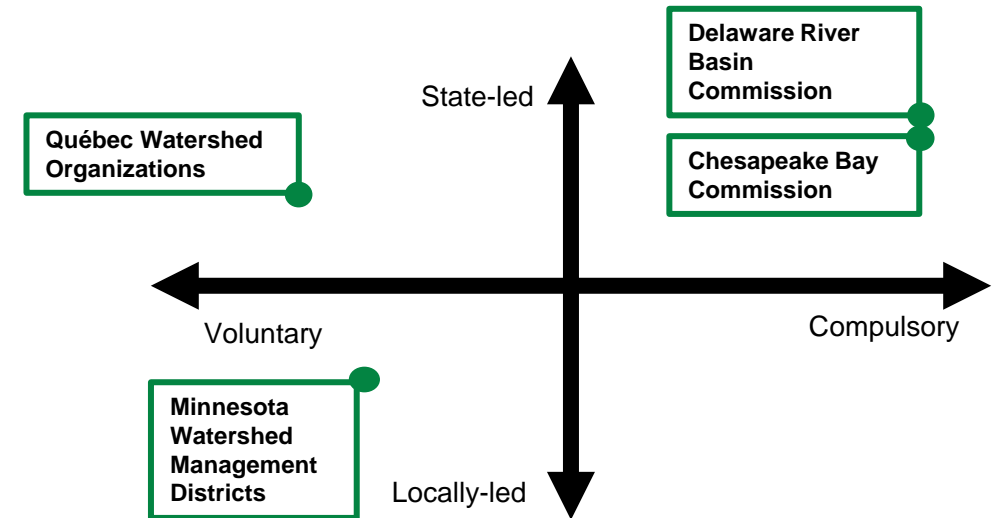
Additional case studies include:

Quebec Watershed Organizations: Watershed Organizations are consultative groups set up by local stakeholders that include representatives of all public and private users, NGO and water managers, from within the watershed. See [here](#) for more information.

Minnesota Watershed Management Districts: The Minnesota Legislature approved the Watershed Act, M.S. Chapter 103D in 1955. The act created watershed management districts, which are units of local government that develop watershed management plans at least every 10 years and may regulate watersheds and construct projects for drainage, flood control, open space preservation in the floodplain, sanitation, etc. See [here](#) for more information.

Delaware River Basin Commission: The commission was created in 1961 by compact legislation and is a Federal-interstate agency funded by its participants. It was formed in response to major water resource challenges requiring regional solutions. See [here](#) for more information.

Chesapeake Bay Commission: The Chesapeake Bay Commission was created in the 1980s to be a catalyst for coordination with the goal of restoring the Chesapeake Bay Watershed. It was established through adoption of similar state laws in Maryland, Pennsylvania. See [here](#) for more information.



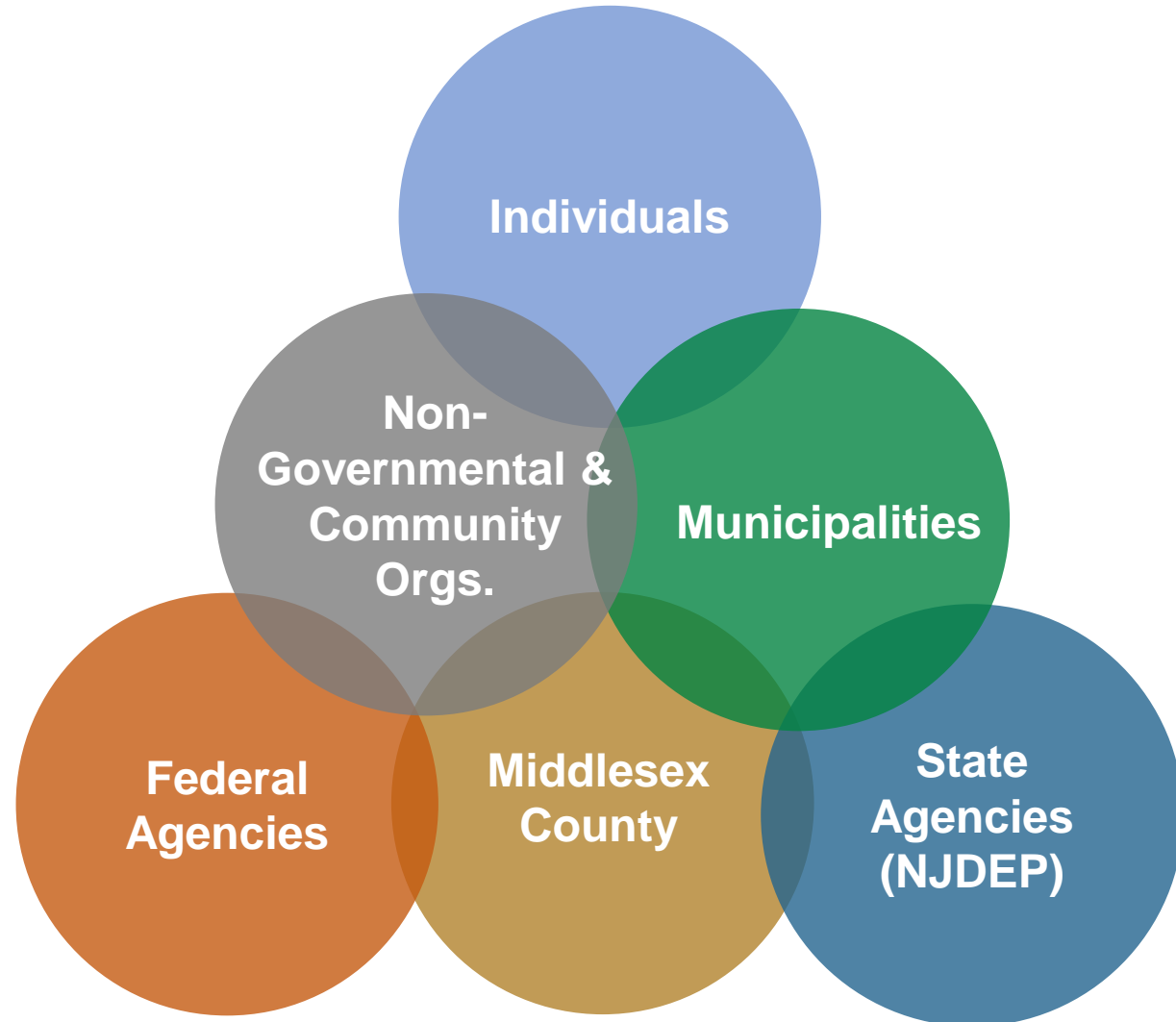
RRBC CONTEXT

WHO WILL IMPLEMENT THE ACTION PLAN?

Implementation requires coordinated action at multiple scales.





Implementation of the Action Plan will require coordinated action at multiple scales.

Evaluating the current roles and responsibilities of the various entities involved in floodplain management and resilience can help us identify any issues that may inhibit effective and efficient implementation of the Action Plan.



CURRENT ROLES & RESPONSIBILITIES

Decisions around floodplain management, land use, and resilience are subject to a hierarchy of rules and regulations at various scales of jurisdiction.

FEDERAL		<ul style="list-style-type: none"> Creates maps of current flood risk and sets national minimum floodplain construction standards Administers the National Flood Insurance Program (NFIP), through which people in participating municipalities can purchase flood insurance. Reduced rates are available through the Community Rating System (CRS) for municipalities that adopt higher construction standards.
STATE	 	<ul style="list-style-type: none"> Develops floodplain construction standards and stormwater management model local ordinances Develops and enforces statewide construction codes Maps watershed management areas In process of updating rules and regulations to address climate change (NJPACT)
COUNTY		<ul style="list-style-type: none"> Site plan and subdivision standards for development that impacts County assets
LOCAL		<ul style="list-style-type: none"> Local zoning and ordinances Master plans Redevelopment plans Required to have Flood Damage Prevention Ordinances and Municipal Separate Storm Sewer System (MS4) "Stormwater Management" plans

TENSIONS IN CURRENT ORGANIZATION

Through discussions in land use working groups, feedback from the Steering Committee, and interviews with local, county, and state stakeholders, the project team has identified a number of tensions in the current RRBC governance framework as it relates to flood risk and resilience.

- Floodplain management and resilience issues require significant capacity to address, which stresses local resources
- Floodplain management enforcement happens at the local, rather than county, regional, or state level
- There are limited existing frameworks for coordination and resource sharing between communities (County planning efforts are beginning to address this need)
- Further collaboration and communication will be needed around potential emerging State initiatives
- There are perceived tensions between the goals of development/economic growth and resilience/floodplain management initiatives
- Many existing watershed scale interventions focus on water quality, but not flood risk reduction

WATERSHED SCALE OPPORTUNITIES

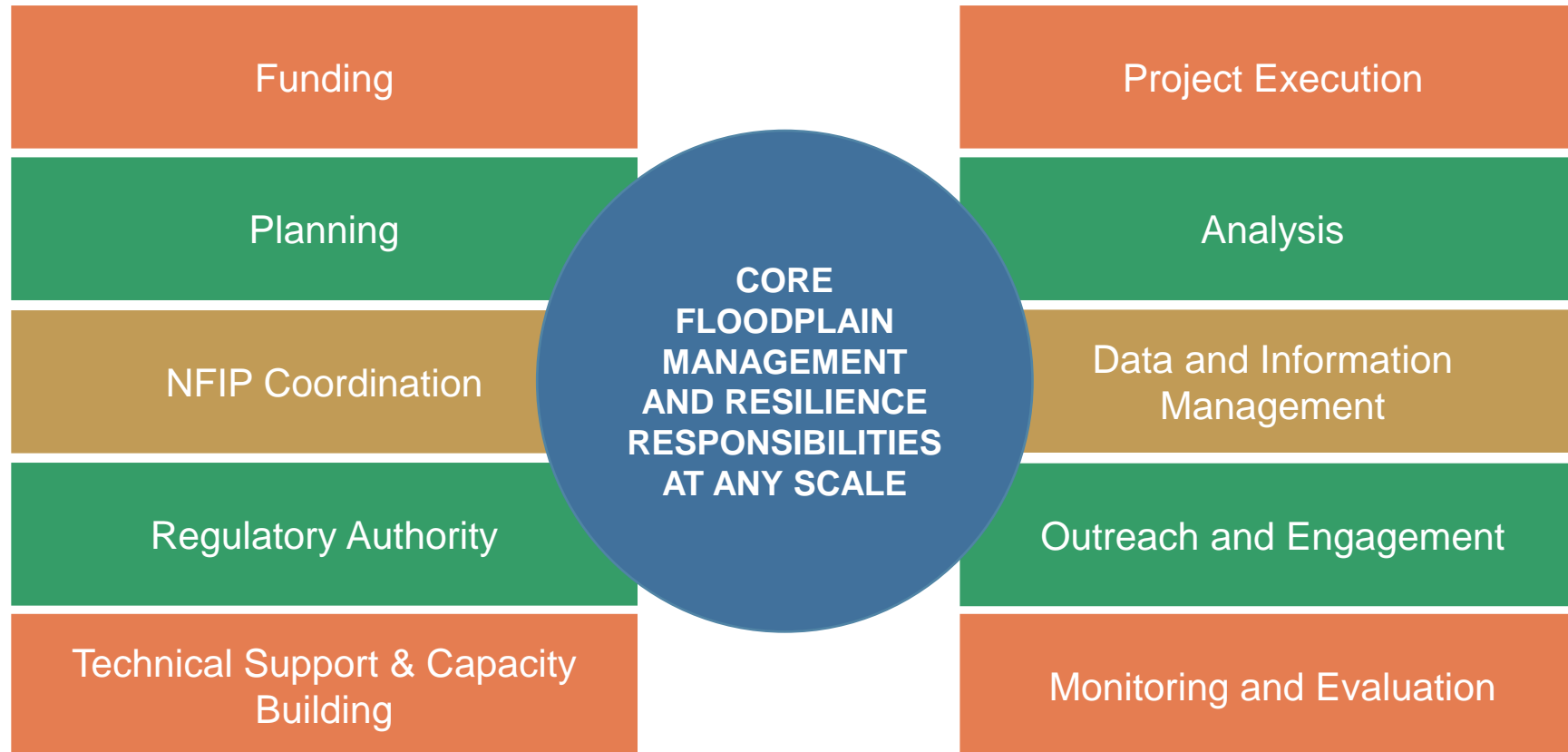
There are a number of opportunities to leverage watershed and regional scale planning and governance to advance flood risk reduction and build resilience in RRBC.

- Watershed scale interventions may be leveraged to reduce flood risk and build resilience/coordination across the region, including providing a framework for collaboration around other regional needs like coastal resilience and stormwater management
- Watershed scale interventions may have numerous co-benefits including enhanced open space networks and improved water quality
- Watershed scale resilience can increase economic vitality across the region by reducing the negative economic impact of unmitigated risk
- Watershed scale interventions can realize economies/efficiencies of scale, including increased fundability of regional projects
- Cooperation at the watershed scale may create additional opportunities for capacity building, information and resource sharing between actors (municipalities, county, state)
- Leadership at the watershed scale could empower municipalities with the tools and resources to act on floodplain management and resilience at the local level

CONSIDERATIONS FOR NEXT STEPS

CORE RESPONSIBILITIES

Regardless of the governance framework pursued, the core responsibilities of any governance approach responsible for floodplain management and resilience must be accounted for.



There are multiple sub-categories associated with each of these items. For example, analysis may include flood modeling, assessing cumulative impacts of development, or evaluating costs and benefits of risk reduction actions.

KEY CONSIDERATIONS

To fully realize the potential benefits of a watershed or regional scale governance approach in RRBC, the following should be considered:

Implementation

- Many existing levels of government in NJ may complicate processes and coordination at the watershed or regional scale
- Clear rationale/impetus for participation
- Clearly defined goals and metrics for success
- Understanding of how existing governance structures are supported, coordinated, or superseded

Enforcement and Compliance

- Watershed scale interventions often require enabling State-level legislation/policy
- Understanding of which entity or entities is/are responsible for enforcement and compliance
- Penalties for non-compliance
- Benefits for compliance

POLITICAL WILL

Accountability and Authority

- Entity responsible for coordination across actors
- Clearly defined responsibilities for each participating entity
- Established hierarchy of authority and decision-making

Resources and Funding

- Established source(s) for funding and other resources
- Established source(s) for staff or staff time
- Transparent approach to how funding and other resources are shared among participating entities

Potential Courses of Action

Governance Frameworks for RRBC

The RRBC project team explored four frameworks for watershed or regional scale governance and refers to these as *potential courses of action*.




The potential courses of action presented here should not be considered final recommendations and are intended to encourage continued discussion and engagement with local, county, and state entities. They should continue to be discussed, vetted, and refined with relevant stakeholders as RRBC explores watershed and regional scale planning and governance approaches to support the Action Plan and resilience objectives more broadly.

Note that the courses of action presented here are not necessarily alternatives. A combination of approaches may be necessary to support efficient and effective implementation of the Action Plan.



GOVERNANCE FRAMEWORKS

There are a number of potential structures for a watershed or regional scale governance approach in RRBC, as summarized below. Each potential structure requires a different level of effort to implement based on complexity and number of actors who may need to participate.

-  *Very Complex*
-  *Complex*
-  *Least Complex*

LEVEL OF EFFORT
TO IMPLEMENT

#0 New Entity

Raritan River and Bay Resilience Commission

- Delaware River Basin Commission – like approach
- Continuation and expansion of RNJ initiative
- Established through legislation, new regulatory authority



#1 State-Led

NJDEP

- Louisiana Watershed Initiative – like approach
- Existing and/or expanded regulatory authority



#2 County-Led

Middlesex County Flood Resilience District

- King County Flood Control District – like approach
- Special purpose district established through county ordinance



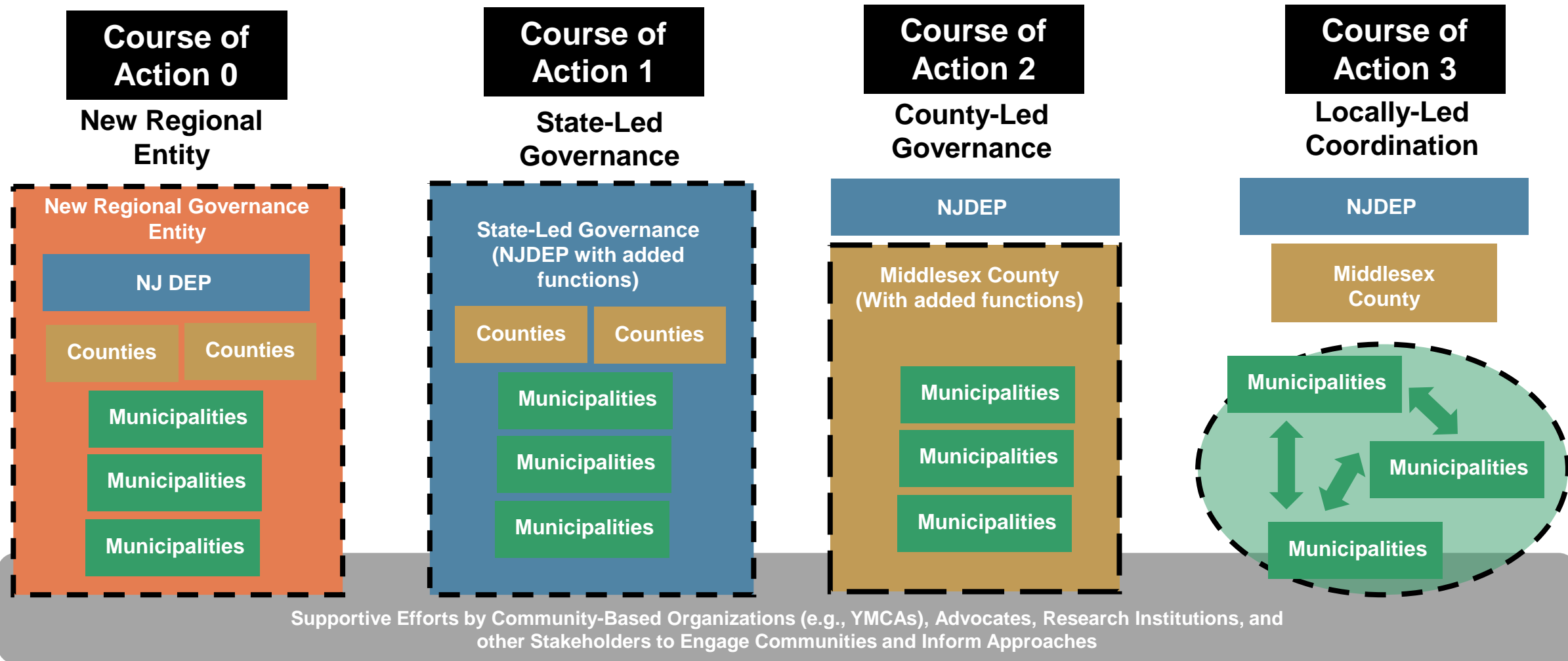
#3 Municipal-Led

Assorted Approaches

- Formal inter-municipal cooperation
- Memorandum of Understanding, Inter-municipal Agreement, Joint Service Agreement, etc.



POTENTIAL COURSES OF ACTION



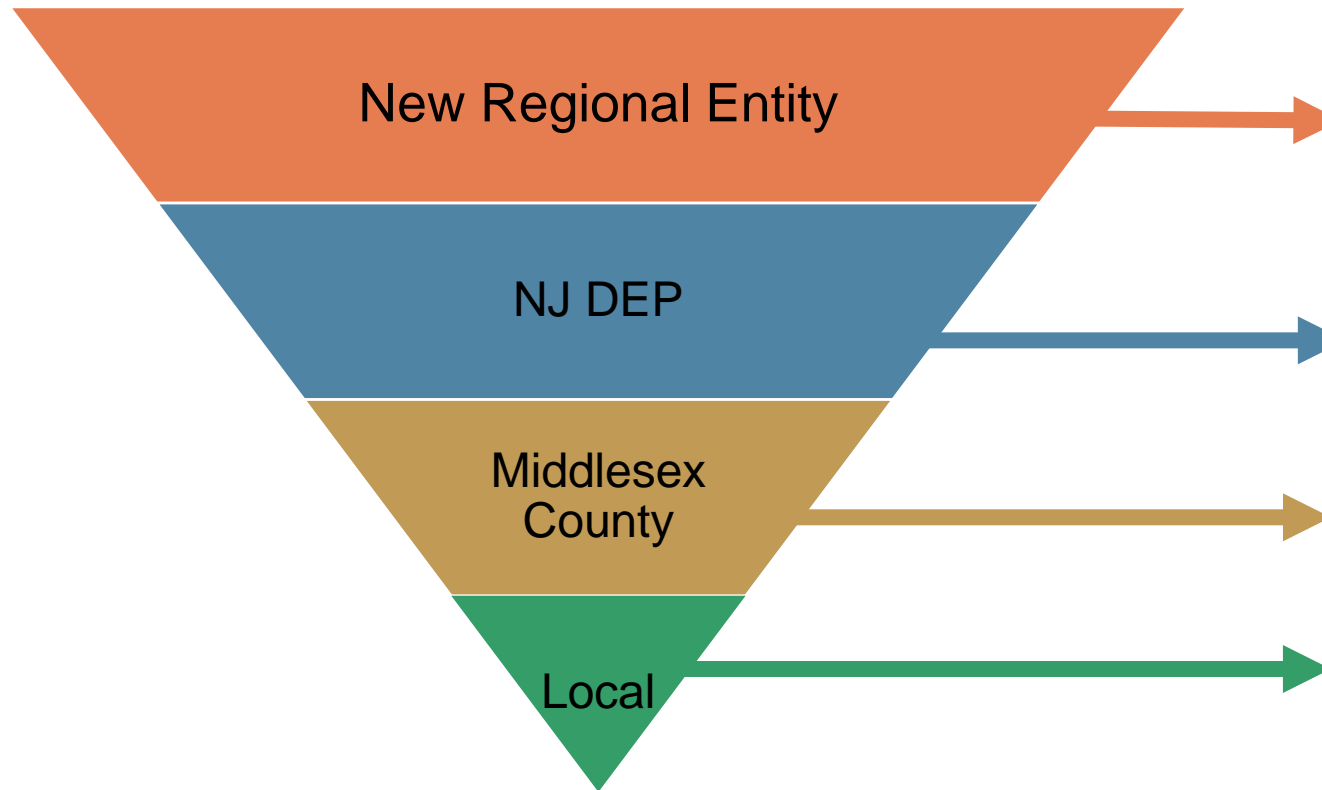
Scale of Watershed-Level Governance

COURSE OF ACTION #0 – New Entity

WHO	Lead Entity = Newly Created Governmental Entity Participating Entities = Other state agencies, counties, municipalities
WHAT	A newly created governmental entity would be created at a watershed scale either within or beyond existing RRBC region.
CONSIDERATIONS	<ul style="list-style-type: none">• Limited demand and lack of demonstrated need for new entity• May complicate existing governance framework if not thoughtfully designed• Understanding relationship of new entity and existing entities requires clarity with respect to NJPACT requirements and state responsibilities• Requires commitment from coordinating and participating entities• Limits to efficacy if participation and compliance are voluntary• Requires established source of funding and other resources
BENEFITS	<ul style="list-style-type: none">• Responsibility of new entity can be tailored to meet the flood management and resilience needs of participating entities• With regulatory power, participation can be required• With regulatory power, new entity can incentivize compliance and penalize non-compliance
LEVEL OF EFFORT	Very Complex. Likely requires state legislative action to establish new entity with regulatory power.

COURSE OF ACTION #0 – New Entity

Allocation of Responsibilities By Level of Governance



Possible Responsibilities Include

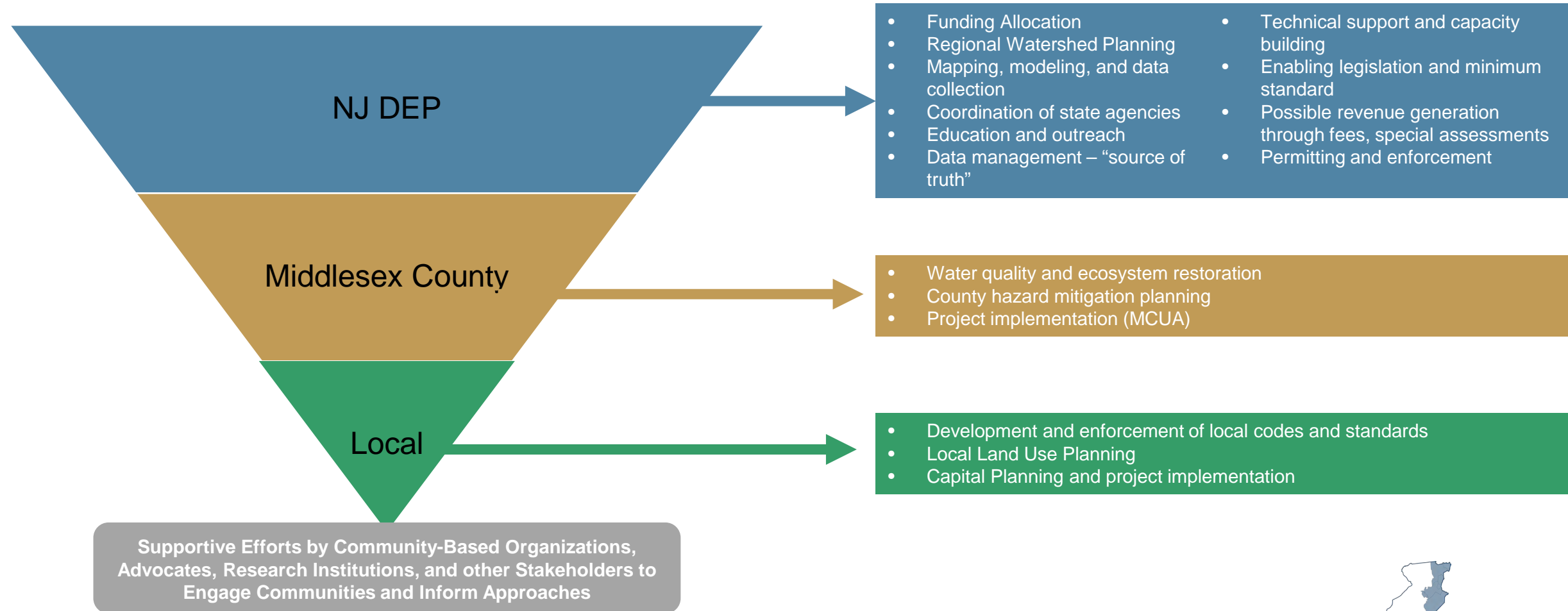
- Funding Allocation
 - Regional Watershed Planning
 - Mapping, modeling, and data collection
 - Coordination of state agencies
 - Education and outreach
 - Data management – “source of truth”
 - Technical support and capacity building
 - Model ordinances and best practices
 - Possible revenue generation through fees, special assessments
- Funding allocation
 - Enabling legislation and minimum standards
 - Environmental permitting
- Water quality and ecosystem restoration
 - County hazard mitigation planning
 - Project implementation (MCUA)
- Development and enforcement of local codes and standards
 - Local Land Use Planning
 - Capital Planning and project implementation

COURSE OF ACTION #1 – State-led

WHO	Lead Entity = NJDEP Supportive Stakeholders = Other state agencies, counties, municipalities
WHAT	<p>A State-led governance approach would leverage ongoing initiatives and existing powers at the state level to provide greater coordination, resources, funding, and oversight of actions having impacts on watershed scale resilience. Approach might include State-led initiatives for:</p> <ul style="list-style-type: none"> • Enhanced resilience standards statewide • Lead coordination of municipalities for capital and land use planning through expansion of RNJ-style steering committee to involve all municipalities across state • Capacity building, additional resources and funding provided by State • Prioritized or dedicated funding for resilience actions at watershed scale • Prioritization of watershed scale actions in state HMP, other statewide plans • Monitoring and evaluation of flood risk reduction efforts across state • Resilience funding
CONSIDERATIONS	<ul style="list-style-type: none"> • Requires broad support and buy-in from range of stakeholders at State, county, and local level • Requires development of requirements/mandates/incentives for county and local participation • Requires funding (both operational and potentially for delivering funding to local partners) • May require reorganization of existing state functions or change in mission
BENEFITS	<ul style="list-style-type: none"> • Leverages existing regulatory authority and governmental capacities at State level • Funding control and distribution mechanisms already in place • Access to national resources and funding • Ability to build capacity more quickly • Positioned to empower counties and municipalities to take action to reduce flood risk
LEVEL OF EFFORT	Complex, but with potential to build on efforts already underway (e.g., NJPACT/ REAL)

COURSE OF ACTION #1 – State Led

Allocation of Responsibilities By Level of Governance



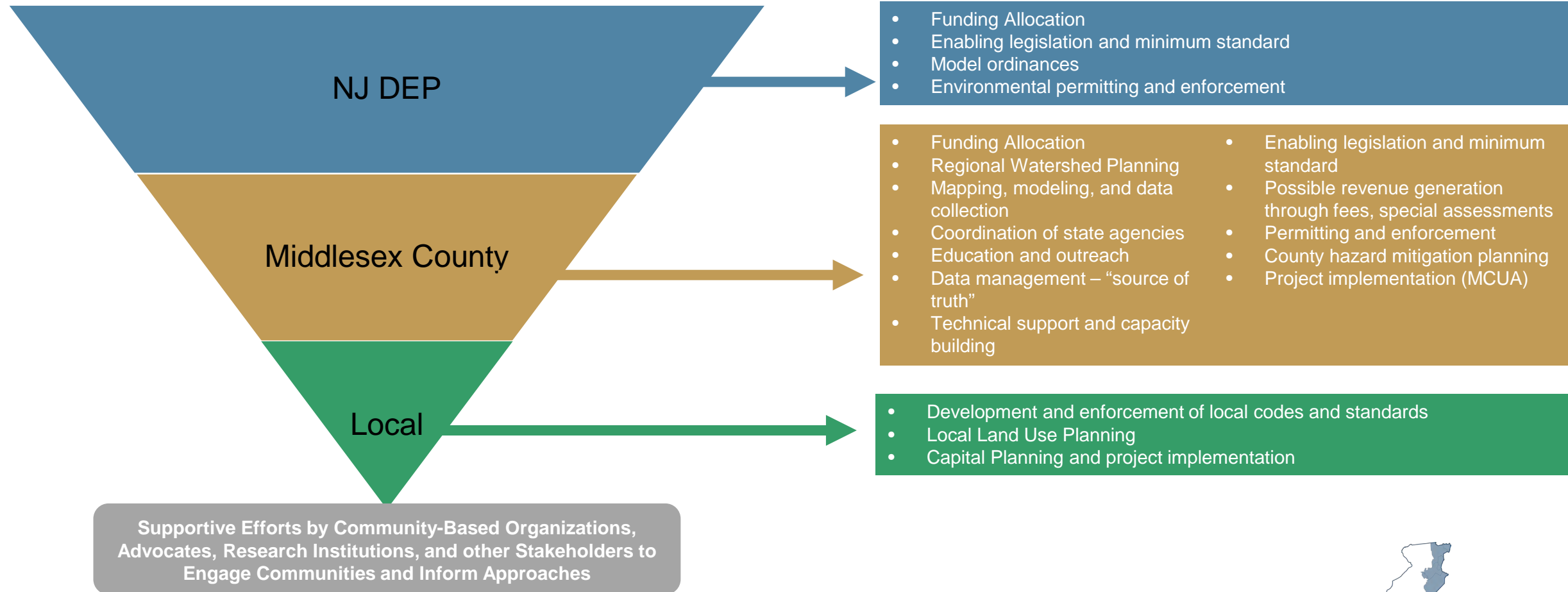
COURSE OF ACTION #2 – County-led

WHO?	Lead Entity = Middlesex County, MCUA Supportive Stakeholders = Other county departments/offices, municipalities, NJDEP
WHAT?	<p>A County-led governance approach which could involve a countywide special purpose district or authority to provide funding and policy oversight for flood risk reduction and resilience projects in Middlesex County. Approach might include County-led initiatives for:</p> <ul style="list-style-type: none"> • Focus on County-owned assets and assets of regional importance in near-term while building capacity within municipalities • Lead coordination of municipalities for capital and land use planning through expansion of RNJ-style steering committee • Monitoring and evaluation of flood risk reduction efforts at County level • Expansion of RNJ Action Plan style planning to encompass entire county → leverage this plan as basis for district's responsibilities • Administration of elevations and buyouts (close coordination with State Blue Acres program)
CONSIDERATIONS	<ul style="list-style-type: none"> • Requires broad support and buy-in from range of stakeholders at county and local level • Requires development of requirements/mandates/incentives for local participation • Requires funding and resources for increased County role • May require reorganization of existing County functions or change in mission • Separate actions necessary to manage watershed scale actions extending beyond County scale
BENEFITS	<ul style="list-style-type: none"> • Leverages existing regulatory authority and governmental capacities at County level • County owns/controls assets and services relied on by municipalities
LEVEL OF EFFORT	Complex, but with potential to build on efforts already underway such RNJ

COURSE OF ACTION #2 – County-Led

Allocation of Responsibilities By Level of Governance

Possible Responsibilities Include



COURSE OF ACTION #3 – Locally-led

WHO?	Lead Entity = Self-selecting group of municipalities Participating Entities = Self-selecting group of municipalities
WHAT?	<p>A voluntary municipal-led governance approach involving formalized cooperative agreements between municipalities to increase coordination for flood risk reduction and resilience projects in RRBC or Middlesex County. Approach might include locally-led initiatives for:</p> <ul style="list-style-type: none">• Joint local land use, stormwater, and capital planning for projects that realize larger, watershed scale benefits• Sharing of resources and capacities across municipal boundaries• Others
CONSIDERATIONS	<ul style="list-style-type: none">• Without clear “teeth,” benefits will rely on voluntary participation and compliance which may reduce overall potential impact• Capabilities and capacities across municipalities vary• Municipalities need to reach consensus on shared goals and acceptable tradeoffs
BENEFITS	<ul style="list-style-type: none">• Most flexible approach• Can be tailored to needs of communities• Can be set-up relatively quickly• Builds on existing inter-municipal relationships and shared service agreements
LEVEL OF EFFORT	Least Complex

COURSE OF ACTION #3 – Locally-Led

Allocation of Responsibilities By Level of Governance

Possible Responsibilities Include

