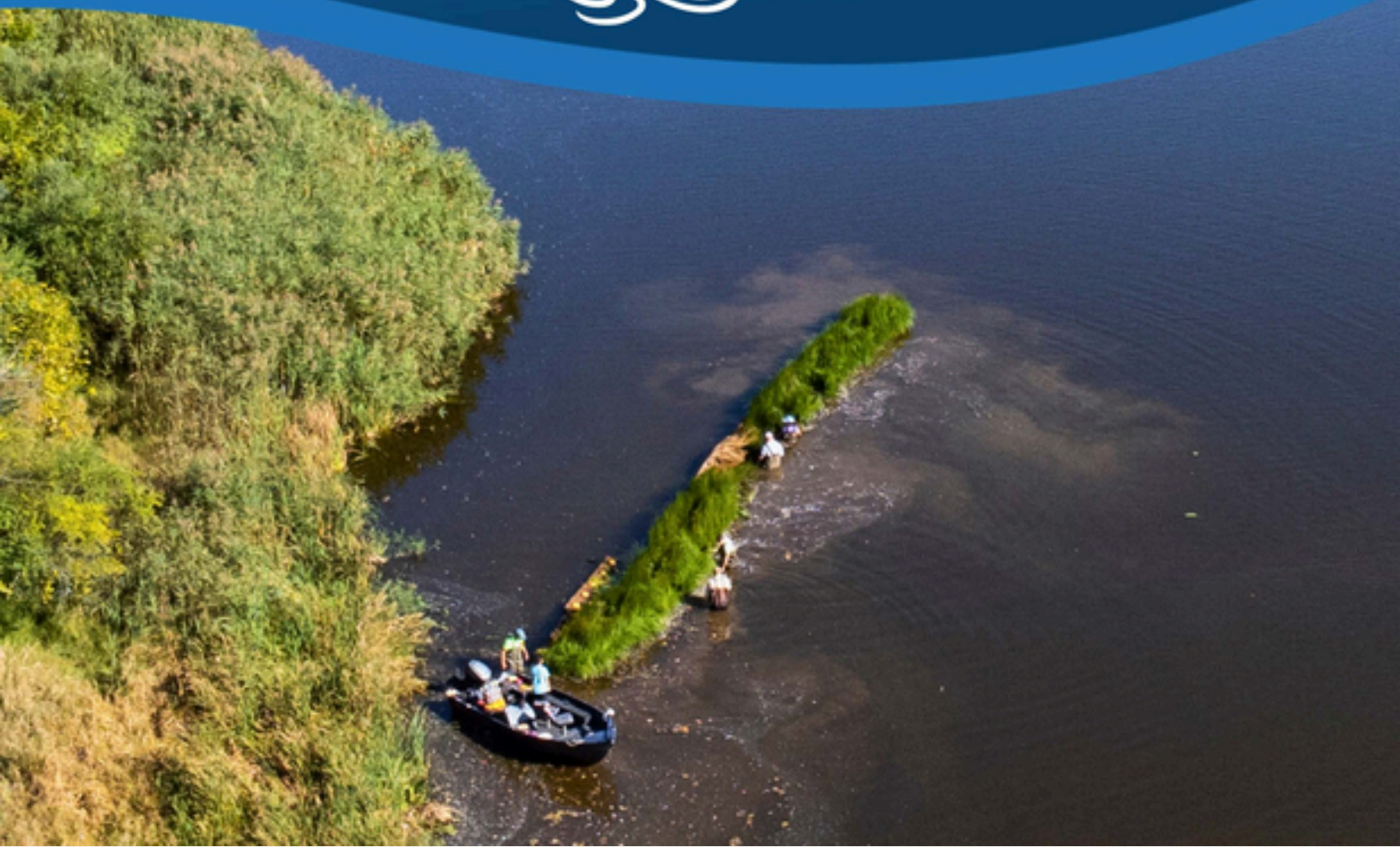
Guide to Regional Watershed Improvement Plans

The Watershed Institute



We would like to thank Jim Cosgrove, Principal for One Water Consulting, LLC., Gabe Mahon, Bureau Chief, NJPDES Stormwater Permitting Program, New Jersey Department of Environmental Protection and Dr. Daniel Van Abs for reviewing drafts of the guide and providing thoughtful feedback on the guide.

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Introduction

New Jersey increasingly is experiencing two issues: water pollution and flooding. Flooding has become more and more of a central issue that municipalities are struggling to address. From hurricanes and nor'easters to heavy short duration rainstorms, flooding is increasing. On top of increased rainfall, we continue to develop the remaining undeveloped lands. This increasing amount of impervious surfaces exacerbate flooding.

Figure 1. *Flooding in Trenton After Hurricane Ida*

Water pollution is also a growing concern. While usually not as visible, water pollution's impacts are being felt. Harmful Agal Blooms (HABs) shut down recreational areas along our lakes. In one case a HAB threatened drinking water supplies.

It is also becoming more apparent that we are all connected. The actions of one municipality can have impacts not only on neighboring communities but on communities' miles downstream. Our issues will continue to increase over the years to come. What we are currently doing is not working. We must do something different.

That something different is the regional Watershed Improvement Plan (WIP). At least one region has decided to do something different. The municipalities of Hopewell Township, Pennington, Lawrence and Princeton entered into an agreement in March 2024 to prepare a watershed plan to help them comply with the WIP requirements. See the press release.

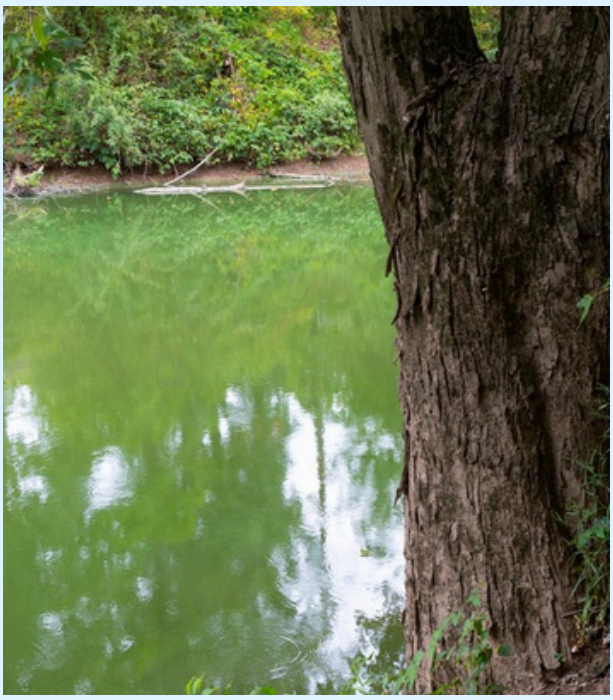

Figure 2*. HAB on Millstone River*

What Are Watershed Improvement Plans (WIPs)?

In 2023, the New Jersey Department of Environmental Protection updated a permit that provides an opportunity for municipalities to collaborate with their neighbors in watersheds they share. The Municipal Separate Storm Sewer System permit (MS4 permit) requires municipalities to develop a plan to improve water quality and reduce flooding. These plans, called Watershed Improvement Plans, are due by Dec. 2027. The plans are to be developed in three phases:

- **Watershed Inventory (Due December 2025)**
- **Watershed Assessment Report (Due December 2026)**
- **Watershed Improvement Plan Report (Due December 2027)**

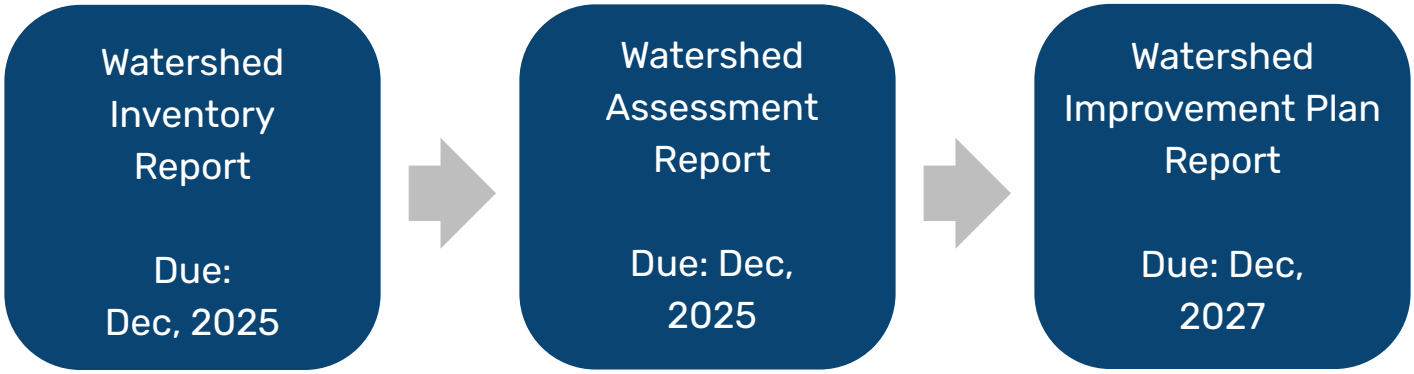

Figure 3. *Timeline.*

Each phase builds on the previous one and includes actions such as:

- Identifying impaired waters
- Incorporating Total Maximum Daily Loads (TMDLs)
- Locating flooding hotspots
- Mapping stormwater infrastructure
- Proposing and prioritizing improvement projects
- Engaging the public

WIPs are not optional. They are enforceable and critical for compliance with state and federal water protection laws.

For a general overview of WIPs see "What are Watershed Improvement Plans (WIPs) and why do Municipalities have to do them?". This paper will discuss the Watershed Assessment Report and the Watershed Improvement Plan Report in more detail.

Watershed Improvement Plans require municipalities to understand what waters do not meet surface water quality standards, what Total Maximum Daily Loads (TMDLs) are applicable, and where flooding is occurring. In addition, municipal inventories of their stormwater infrastructure and stormwater outfalls are incorporated. These items and more are developed or inventoried during the Watershed Inventory phase. This phase must be completed by the end of 2025.

After the Inventory phase, municipalities must develop the Watershed Assessment Report, which sets out the actions it will take to reduce water pollution, comply with the reductions of pollutants found in the TMDLs and reduce flooding. The municipalities must develop projects to achieve these goals, set out a schedule for the implementation of the projects and identify the funding sources for the projects. Municipalities must have semi-annual information sessions and provide for a public comment period on the plan. All these steps must be completed by the end of 2026.

Municipalities have until the end of 2027 to prepare a summary of the comments from the public, how the draft plan changed because of the comments, and identify areas that that are causing issues outside of their control (i.e. upstream Municipalities, or even other agencies within their borders, like county or state roads and buildings). In short, municipalities finalize the draft plan. The plans must also explain how stormwater management issues in overburdened communities will be prioritized.

Watershed Assessment Report requirements:

- Assessment of water quality improvement projects by subwatershed and parameter
- Estimate of the percent reduction in loading in of the TMDL/ impairment parameters due to projects
- Summary of feedback from public sessions
- Estimate of funding needs for each project
- Identification of the source of funding
- Proposed implementation schedule

Why Are WIPs Necessary?

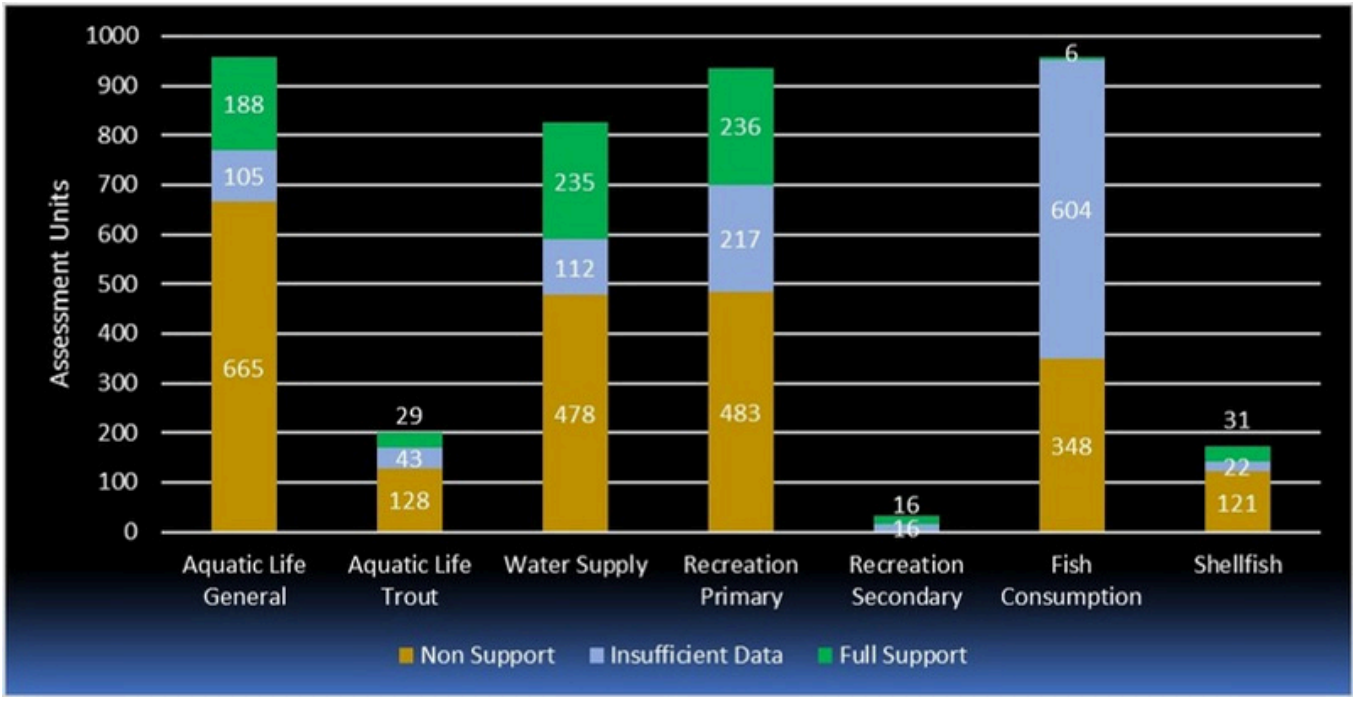

Figure 4. *Draft 2022 NJ Integrated Water Quality Assessment Report.*

As noted in the Introduction, water pollution is a growing issue. From a water quality perspective there are two aspects for Municipalities to be concerned with. First, are there impaired waters within their borders? What does this mean? As required by the federal Clean Water Act, the state monitors its surface waters and submits a report every two years.

This report, the Integrated Water Quality Assessment Report, lists all of the waters in New Jersey that are monitored. It then lists all of the monitored waters that do not meet the designated uses or have pollutants in excess of the surface water quality standards. In other words, what surface waters are impaired. The designated uses are: Aquatic life protection, drinking water supply, water-based recreation, etc. According to the 2022 Integrated report which is the most recent, most of New Jersey's waters do not meet the designated uses. It is apparent from this report and previous reports that a majority of New Jersey's waters do not meet the standards for one or more pollutants.

Assessment	Aquatic Life General	Aquatic Life Trout	Water Supply	Recreation Primary	Recreation Secondary	Fish Consumption	Shellfish
Full Support	20%	15%	28%	25%	50%	1%	18%
Insufficient Data	11%	22%	14%	23%	50%	63%	13%
Non Support	69%	64%	58%	52%	0%	36%	70%

Figure 5. *2022 NJ Integrated Water Quality Assessment Report*

Meeting the designated uses and limiting pollution is important. Both federal and New Jersey law requires that steps are taken to "restore, enhance, and maintain the chemical, physical, and biological integrity of its waters, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water."[1] In short, New Jersey has an obligation to address these impairments and take actions to restore waters so that they meet the designated uses and do not have pollutants in excess of set standards. These requirements were enacted roughly fifty years ago. While progress has been made to reduce pollution from industrial facilities and from wastewater treatment plants, stormwater pollution remains a major cause of pollution and the impairments to NJ's surface waters.

The other component of addressing water pollution is Total Maximum Daily Loads or TMDLs. Under the Clean Water Act, the State is required to develop TMDLs for all waters that are listed as impaired by the state in the Integrated Report. An easy way to think about TMDLs is to consider them a pollution budget. First, figure out how much of a pollutant is entering our waterways from both natural and human-caused sources. Then determine how much of a pollutant can be discharged into a waterway such that waterway still meets standards. Add a measure of safety or margin of error. The difference between "safe" amounts and actual discharges is allocated between Waste Load Allocations (i.e. point sources) and Load Allocations (i.e. nonpoint sources). This amount is the reductions that are required. The point sources are also further divided between wastewater treatment plant discharges, stormwater discharges, etc. Below is an example of the reductions for Total Suspended Solids for a part of the Raritan Basin: Upper Millstone, Stony Brook and Carnegie Lake Direct Watersheds.

[1] N.J.S.A. 58:10A-2. New Jersey's Water Pollution Control Act. See also Water Pollution Control Act, 33 U.S.C. 1251 (a)

Table 9. Distribution of TSS WLAs and LAs among source categories for parts of the Carnegie Lake Watershed

Long Term Average Daily Load (kg/d TSS)	Upper Millstone River Watershed			Stony Brook Watershed			Carnegie Lake Direct Watershed		
	Existing Condition	TMDL Allocation	Percent Reduction	Existing Condition	TMDL Allocation	Percent Reduction	Existing Condition	TMDL Allocation	Percent Reduction
Sum of Wasteload Allocations (WLAs)	3,961	1,506	62.0%	2,286	401	82.5%	602	96	84.0%
Treated Effluent from WWTP Discharges[#]	502	953	-89.6%	20	38	-89.6%	0	0	0%
Stormwater from Residential Land Cover Areas	1,615	258	84.0%	1,529	245	84.0%	272	44	84.0%
Stormwater from Other Urban Land Cover Areas	1,843	295	84.0%	737	118	84.0%	329	53	84.0%
Sum of Load Allocations (LAs)	2,775	2,060	25.8%	2,624	1,328	49.4%	58	49	14.9%
Boundary Inputs	0	0	0.0%	0	0	0.0%	0	0	0.0%
Tributary Baseflow	1,267	1,267	0.0%	297	297	0.0%	29	29	0.0%
Stormwater from Agricultural Land Cover Areas	851	136	84.0%	1,543	247	84.0%	10	2	84.0%
Stormwater from Forest and Barren Land Cover Areas	51	51	0.0%	525	525	0.0%	6	6	0.0%
Stormwater from Wetlands Land Cover Areas	605	605	0.0%	260	260	0.0%	13	13	0.0%
Total Margin of Safety (% of LC)	n/a	172	4.5%	n/a	152	8.0%	n/a	24	14.4%
Reserve Capacity (% of WWTP load)	n/a	103	10.8%	n/a	25	66.5%	n/a	0	n/a
Loading Capacity (LC)	6,735	3,841	43.0%	4,909	1,906	61.2%	660	170	74.2%

[#] Although the TSS TMDL allocation is reflective of discharging up to current permitted flow and existing NJDPES permit TSS limits, the WLAs for total phosphorus effectively limit loadings due to TP being present in suspended solids in WWTP effluent.
n/a - not applicable

***Figure 6**. Raritan Basin NonTidal TMDL*[2]

Up until the 2023 MS4 permit, New Jersey's implementation of the TMDLs has been limited. Wastewater treatment plants (WWTP) had to achieve the reductions set out for them. Various voluntary programs addressed non-point source pollution including the federal Clean Water Act 319 (h) grants and state programs.

Until 2023, New Jersey did not require meeting the required pollutant reductions from stormwater discharges even though legally, these reductions are required. Under the CWA all discharge permits, or New Jersey Pollution Discharge Elimination System (NJPDES) permits in New Jersey, must implement waste load allocation reductions in a TMDL.[3] The New Jersey MS4 permit is in fact a NJPDES permit; therefore, the permit must implement the reductions found in a TMDL. The Watershed Improvement Plans are NJ's method of implementing the required WLA reductions.

[2] Figure 6 is from NJDEP's Raritan Basin NonTidal TMDL, adopted May 24, 2016.
[3] 40 C.F.R. 122.44(d)(1)(vii)(B).

The Problem

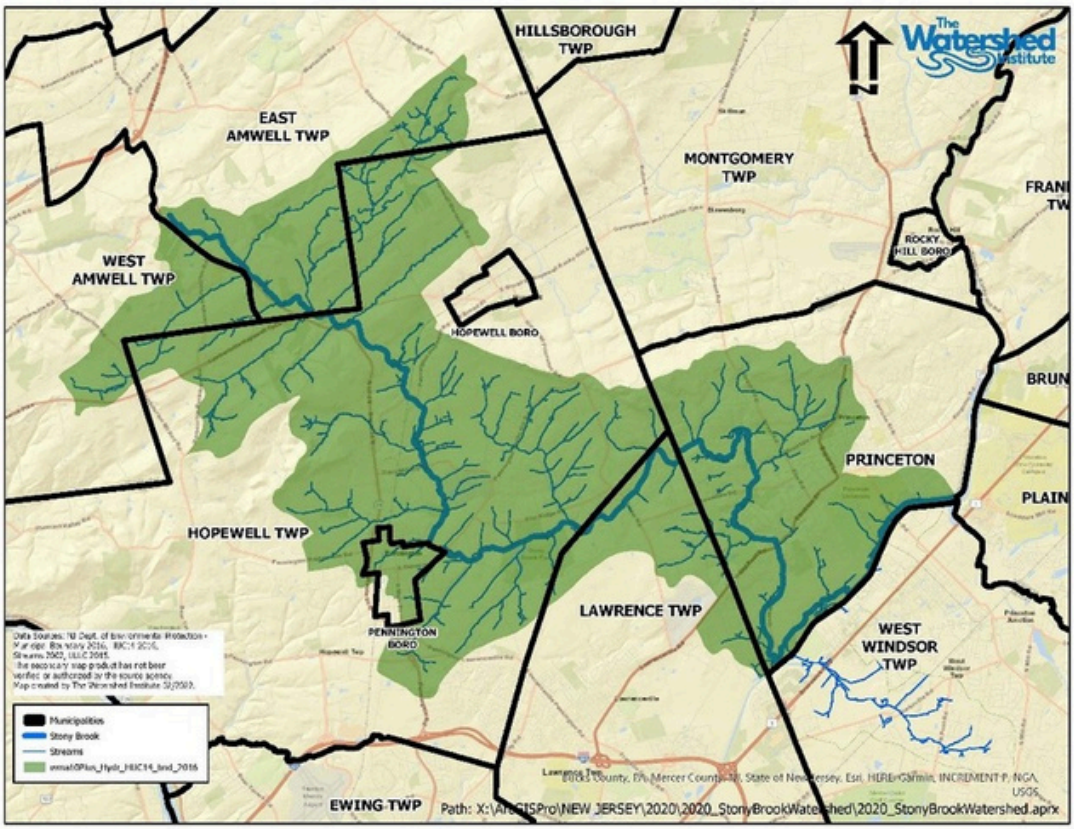

***Figure 7**. Stony Brook Watershed.*

TMDLs are watershed-based, not municipal. A watershed may span several municipalities, counties, state roads, and public complexes, all of which contribute to pollution and flooding.

When municipalities act independently:

- Data is duplicated and inconsistent
- Pollutant contributions are disputed
- Projects may conflict or overlap
- Regional problems go unresolved

This fragmented approach likely increases costs and fails to deliver results.

While portions of the WIP are specific to each municipality, others are necessarily watershed-based. Note that the TMDLs are not created on a municipality level but are on a watershed basis. For example, the Stony Brook Watershed, which requires an 84% reduction in Total Suspended Solids (e.g. suspended sediment) flows through six municipalities and two counties. How is that 84% reduction to be allocated between the Municipalities? That allocation becomes even more complex when it is realized that at least two state roads (Route 31 and Route 206) cross over the Stony Brook and its tributaries, each subject to a Highway Agency MS4 permit. How do these structures that are outside of the jurisdiction of the municipality contribute to the pollutant loading and what are their required reductions per the TMDL? In addition to the Highway Agency MS4 permit there is a Public Complex MS4 permit, applicable to public institutions such as universities or county facilities. There are similar requirements for these non-municipal permits as the municipal MS4 permit.

If each of the six Municipalities do their own thing and develop the watershed assessment report independently, what does that mean? When each Municipality calculates what is flowing from outside their jurisdiction, each of the downstream Municipalities can allocate pollution and volume differently. While some waters are monitored those monitoring stations do not necessarily line up with municipal borders. It may be very difficult to allocate pollution and volume loadings between Municipalities. For example, Township A may believe that only 5% of the TSS issues are from their jurisdiction, yet Township B may determine that Township A is responsible for 25%.

If plans to address pollution and flooding are developed using these very different assumptions, how are the proposed projects expected to deliver improvements? Will these very different plans achieve the goal of reducing flooding and improving water quality? Are they not destined to fail? NJ should not be developing plans that are likely to fail. Ultimately, if we do not develop and implement plans that improve water quality and reduce flooding, our communities will continue to suffer, and municipalities and the state will have to develop additional plans to address the shortcomings of inadequate WIPs.

The Solution

The process described above is inefficient and probably more expensive in the long run. The solution is to develop WIPs on a regional watershed basis. By developing a regional approach, Municipalities will likely save money and will have a plan that can be more effective.

The efficient, logical solution is **regional collaboration** through a **shared WIP** for a watershed area.

Key Advantages of a Regional WIP:

- Reduces costs by avoiding duplication
- Yields more effective projects by considering upstream-downstream dynamics
- Expands potential locations and types of interventions
- Aligns technical analysis and data
- Leverages stronger grant applications and funding strategies
- Increases compliance with MS4 obligations

By sharing consultants, planning, and public outreach, municipalities can develop a single, high-quality watershed plan tailored to meet everyone's needs.Why is it more effective to develop a regional plan as opposed to individual plans? First, each Municipality will have to study the entire watershed, at least up to their most downstream point. Some Municipalities in order to reduce costs may limit the study to the boundaries of their municipality and ignore the upstream portions of the watershed. This will result in an inaccurate picture of what is occurring in the watershed and will result in plans that do not accomplish the required goals of restoring water quality and reducing flooding. For those Municipalities that do study the upstream aspects of their watershed, each Municipality that does that will be repeating the work that upstream Municipalities are doing. This is a duplication of effort and as pointed out above can lead to inconsistent assumptions. By doing the study once, each Municipality reduces costs.

Another area where efficiency can be realized is the development of improvement projects. By looking at the entire watershed instead of a very narrow portion within the municipal boundaries and control, there are likely to be opportunities to implement projects in locations that are more effective and less costly. For example, if Trenton were to go it alone, one of the more likely solutions would be the removal of impervious cover and installation of rain gardens/bioretention systems. That is an expensive process. On the other hand, upstream opportunities may be identified that result in the restoration of stream banks and flood plains, which increase flood storage and reduce the amount of runoff and pollutants that enter a stream in both these upstream locations and everywhere downstream. This may be less expensive and generate larger reductions for all downstream communities. Another benefit of using regional approaches for solutions will be the increased types of solutions that can be implemented. A Municipality with poor soils and low infiltration rates may not be the best and least costly location for the implementation of stormwater infiltration systems. But if the Municipality goes it alone, they do not have many options. Looking at the region allows allocation of the most effective Best Management Practice (BMP) in the most effective locations.

Third, few municipalities have the technical capacity to develop an effective Watershed Improvement Plan. Therefore, most will hire a consultant to develop these plans with costs of advertising, contract development and project management. A regional approach can save on these transaction costs through the hiring of a single consultant, which also can help avoid situations where multiple consultants conflict in their advice to different municipalities in the same watershed.

A consultant would develop a variation of a Watershed Management Plan. Watershed Management Plans are a well-known device to study the region's sources of pollution and devising restoration strategies to reduce pollution. The Watershed Management plan can be thought of as a "regional WIP." The elements of a Watershed Management Plan are:

- Identify causes and sources of pollution
- Estimate pollutant loading into the watershed and the expected load reductions
- Describe management measures that will achieve load reductions and target critical areas
- Estimate amounts of technical and financial assistance and the relevant authorities needed to implement the plan
- Develop an information/education component
- Develop a project schedule
- Describe the interim, measurable milestones
- Identify indicators to measure progress
- Develop a monitoring component.[4]

There are many similarities between watershed management plans and the MS4 WIPs. Watershed management plans or watershed based plans may also qualify for funding under the 319(h) grant program or other assistance, while the WIP program does not have dedicated funding.

Are Regional WIPs allowed?

The short answer is yes. While each municipality is a MS4 permittee and must submit its own WIP, that WIP can incorporate the watershed-based results for each watershed contained or partially contained within the municipality. In fact, DEP encourages municipalities to address their MS4 obligations on a regional basis. At the very least the permit "**requires municipalities to interact with stakeholders including their neighboring municipalities** that discharge to the same waterbodies so that watershed improvement actions can be coordinated within the subwatersheds."[5] In the Department's response to comments, "**These are ideal opportunities for more regional efforts to be developed and multi-municipality collaboration**. However, while **the Department prefers and encourages the WIPs to be developed on a regional basis**"[6]. The Department's fact sheet goes even further to recognize that "[r]egionalized WIPs will be accepted as compliant with this requirement…"[7] The regional approach could also benefit from prioritizing resources, including funding.[8]

[4] NJDEP Watershed-Based Plans. See also EPA Resources for Watershed Planning, https://www.epa.gov/nps/resources-watershed-planning
[5] 2023 Tier A Stormwater Master General Permit Response to Comments, page 15. https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/tier-a-response-to-comments.pdf
[6] Id. at 15.
[7] 2023 Tier A Stormwater Master General Permit Fact Sheet, page 80.
[8] Id.

How to Implement a Regional WIP

There are multiple steps to bring a regional WIP to fruition. Some of these steps can be very time-consuming and since time is of the essence those that are interested should start the process as soon as possible. If your Municipalities missed the opportunity, there will be other opportunities in the future to harmonize individual plans. But this is not the best or most efficient approach.

Identify the Region

This first place to start is to identify the relevant scale of the watershed. One of the first places to look may be the relevant TMDLs. NJDEP has a TMDL Lookup Tool that assists with this process. As an example, the Raritan River Basin TMDL addresses much of this large region. The basin covers over 1,100 square miles and includes seven counties and 100 municipalities. That area would not be practical to use as the basis of a regional WIP. The region is too big and encompasses too many municipalities. Bringing that many stakeholders together would be unlikely to succeed. Further, the issues impacting the various portions of the region can be very different. Likewise, we also suggest that using Watershed Management Areas (which generally include many individual watersheds) might be too big to effectively convene stakeholders, etc.

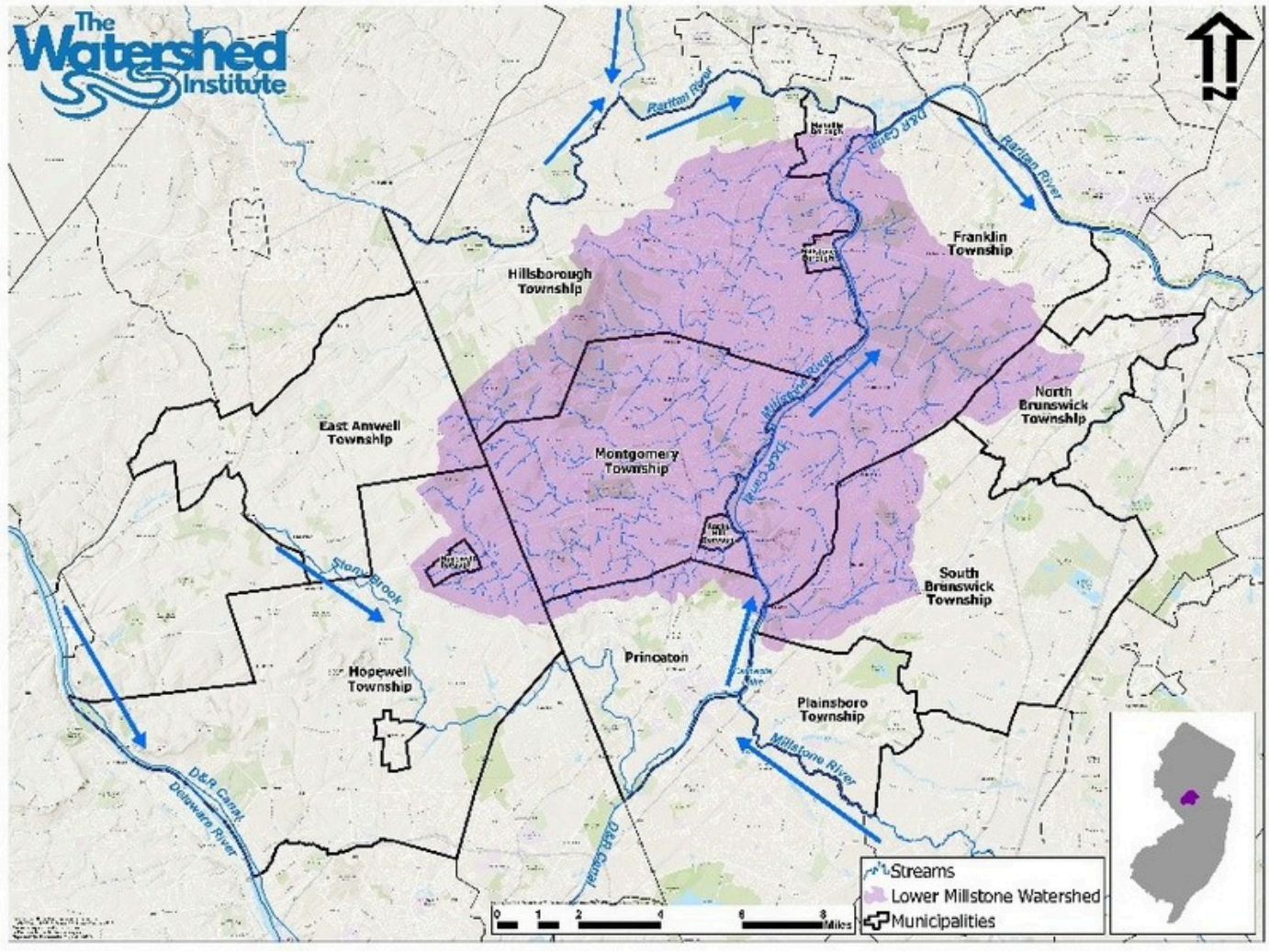

***Figure 8**. Lower Millstone Watershed*

While the Raritan Basin TMDL is too big on its own, it breaks the basin into watersheds and subwatersheds. As illustrated in Figure 6 the basin is divided into Upper Millstone, Stony Brook and Carnegie Lake watersheds. As noted above, the Stony Brook Watershed has part of six municipalities and two counties. See Figure 7. The Lower Millstone River Watershed, a region the Watershed Institute is convening, has part or all of 13 municipalities and four counties. See figure 8. Using these already-created regions is a very good place to start. If there is not a relevant TMDL, take a look at the HUC 11 level of watersheds. If that watershed consists of more than one municipality that is another good setup for a regional approach.

Use the NJDEP's TMDL Lookup Tool, Integrated Report, or HUC11 watersheds to define a reasonable planning area. Avoid regions that are:

- Too large (e.g., entire river basins)
- Too small

A good candidate will:

- Contain multiple municipalities
- Share pollution sources and hydrological connections
- Align with a defined subwatershed with known TMDLs or Watershed Management Plan

Identify the Stakeholders

Once the region is identified, who can be the convenor of the stakeholders and who are the stakeholders? Is there a watershed organization that can take the role of convenor? Is the county planning or engineering department available to play that role? Or is there a municipality with the staff and resources to be the convenor? Does that municipality have a good relationship with its watershed neighbors?

Who are the stakeholders of the meetings? Obvious answers are each Municipality's stormwater coordinator. Other municipal stakeholders are municipal engineers and planners as well as environmental commission members. An important stakeholder is also getting at least one elected official at the meetings. These are the people that ultimately must be convinced that this is a worthwhile endeavor and will have to approve any contracts and funding. Experience in developing the regional approach for the Stony Brook Watershed highlights the need for elected officials to be part of the process. Having elected officials in the room allows them to hear the support from their colleagues in other Municipalities, to have their questions answered directly and to hear the questions and answers of other stakeholders. Their involvement increases their buy-in.

Once the obvious stakeholders are identified, there are non-obvious ones. The first and a very important one is county representation. Invite a member of the county planning department and engineering department. County commissioners should also be on the invite list for very similar reasons as the municipal elected officials.

Are there other public institutions that have property in the focus watershed? Universities and colleges, county agencies, and others may meet the definition of Public Complex and have their own WIP requirements. Fortunately, these requirements meet the time frames of the municipalities MS4 requirements. So, not only can they be another stakeholder at the table but participating in the process will also help them comply with their WIP requirements. To the extent counties have facilities that meet the definition of public complex, the Public Complex MS4 permit will require the county or other entity to develop a WIP. The timeframes for Public Complex WIPs are on the same schedule as the Tier A Municipal WIPs. The Public Highway MS4 permit also has a WIP requirement but the timeframes are different from the Tier A and Public Complex permits. Even though compliance timeframes are different, Public Highway Agencies will benefit from participating in the process and can benefit from the development of BMPs to solve the water pollution and flooding issues in the watershed.

Does the county or state have roads in the focus watershed? The newly released Highway Agency MS4 permit also has similar WIP requirements but on different timelines. Inviting them may help them get a jump start on their requirements and provide a more holistic and consistent look at the watershed. The work done to develop the WIPs has to identify those issues that are outside the jurisdiction of the municipality. So those flooding and water pollution issues that are the result of roadways owned by counties or the state will be identified by the municipal WIPs. To the extent that the highway agencies are participants in the regional WIP they are able benefit from identifying those issues they are responsible. It also brings together another player to the table that can help fund the plan and provide locations and funding for solutions.

Does it make sense to invite representatives from the local water utility? Yes. Water supply utilities and NJ Water Supply Authority are looking at ways to protect their source water. This is the water they use, treat and distribute to their customers. Any endeavor that helps reduce pollution and reduces flooding can benefit water utilities. Also, they may have projects planned that can assist in meeting the requirements of the WIP. Even if the water utility does not have a project that directly benefits water quality, they may be undertaking other work that adding a water quality benefit may be more economical than if pursued separately. For example, they may be digging up a portion of a road to replace water lines. Adding curb bumpouts to install a raingarden at the same time may cost less than if the projects were done separately. They may also have funding available to help develop the WIP and implement them.

Even if a local environmental organization or watershed association is not playing the role of conveyor, they can be a valuable player in the meetings. They have members that can be educated and provide the public support for this project. They may have GIS capabilities, water quality data or other resources they can bring to the table. They should be invited.

Other organizations may also be valuable to ask to the meetings. Land trusts may play a role in preventing future pollutant generation by purchasing open space. If the watershed includes major agricultural areas, then the NJ Farm Bureau, the county agriculture development boards and the USDA Natural Resources Conservation Service can play valuable roles in TMDL implementation as part of a regional solution. NRCS may also be helpful in non-agricultural land and stream management.

Lastly, NJDEP may be a good stakeholder. NJDEP staff can help municipalities understand their obligations under the MS4 permit in addition to help the group look at it not only as a MS4 compliance requirement but on a more holistic watershed basis bring those resources and potential grant opportunities to bear.

Municipal Participants:
- Stormwater Coordinators
- Engineers and Planners
- Environmental Commission Members
- At least one Elected Official (for political support and budget approvals)

County Participants:
- Planning Department
- Engineering Department
- County Commissioners

Others:
- Watershed Organizations
- NJDEP Staff
- State Agencies (e.g., DOT, D&R Canal Commission)
- Water Utilities
- Universities and Public Complexes
- Land Trusts and Agricultural Agencies
- NRCS and County Agriculture Boards

Convene stakeholders early and maintain regular, structured meetings to build trust and accountability.

All The Rest

Meetings should be organized as soon as possible. The meetings should be frequent until there is a decision made. The time to begin the Watershed Assessment Report is rapidly approaching for this MS4 permit cycle. Municipalities must budget for it, which takes time. It also takes time to introduce and adopt resolutions approaching the process. The consultant needs sufficient time to prepare the plan.

How to Select the Consultant – Obvious options are to use one of the Municipality's engineer, whether in-house or a consultant. Could the County engineering department play this role? Should the group ask an outside consultant? The Watershed Institute, in conveying three regional approaches, (Stony Brook, Assunpink, and Lower Millstone) asked a consultant to develop a proposal to present to the group. Whichever approach is used, one of the questions that should be asked of the consultant is if they have any experience preparing a watershed plan? Do they routinely study water quality and flooding issues? Is the engineer or consultant well versed in the MS4 permit and stormwater management? A successful regional WIP is more than an engineering exercise, but it is a comprehensive scientific study of the watershed paired with engineering, landscape architecture, land use planning, and regulatory solutions.

Allocating the Cost **–** Once there is agreement by the municipalities on pursuing the regional approach, there are several important questions. First, how is the cost of the plan development going to be allocated amongst the participants? There may not be an obvious answer. There are several options. The cost can be divided equally between the participants. That is easiest, but smaller municipalities will have a larger proportion of the cost compared to larger municipalities. Another approach is to allocate the cost in proportion to the amount of acres of the watershed in the municipality. A third approach is similar, but it allocates the costs on a proportion of impervious cover each municipality has in the watershed. The allocation can be by relative population.

Town Name	Total Acres within SBW	IC Acres within SBW	% of IC Acres within SBW
East Amwell Township	3465.87	136.98	4.22%
Hopewell Township	16839.03	1184.88	36.47%
Lawrence Township	2382.58	253.03	7.79%
Pennington Borough	510.02	194.07	5.97%
Princeton	7299.45	1293.92	39.82%
West Amwell Township	3751.95	186.36	5.74%
Grand Total	**34248.93396**	**3249.256121**	**100.00%**

Figure 9. *Stony Brook Impervious Cover Numbers.*

Using the impervious cover cost allocation approach seems to be the most logical as the MS4 program primarily addresses stormwater runoff from impervious cover. There may be options not considered and there is no one right answer. Allocating costs according to the amount of impervious cover a municipality has in the watershed is the approach that the Stony Brook Watershed Municipalities ultimately took.

However, the cost is allocated, it is important that enough municipalities within the watershed participate. If one or more municipalities that make up a significant portion of the watershed does not participate, going forward may be too expensive. For example, two municipalities in the Stony Brook did not participate but their total impervious cover was less than 10% and was reallocated to the participating municipalities. If that number was higher, the remaining Municipalities may not have been able to absorb the cost. Thoughts must be given on how to compensate for this. Does the group rethink the scale addressed by the plan? Can the remaining municipalities cover the additional cost? Are there grants that may be available to help reduce the cost and thus may be an incentive to keep the missing Municipality in the process or at least help compensate for the missing funding?

Who retains the consultant? Like the question of who the convenor will be, who is entering into the contract should be decided. It is recommended that one entity retains the consultant and then through shared services agreements or other contracts the other participants commit to the process. While it is not impossible for each municipality to contract directly with the consultant to develop a regional plan, the transaction costs and oversight obligations by the municipality negate some of the cost savings to this approach. Additionally, a consultant may be less willing to prepare one plan when they must bill and collect from multiple parties.

Project management can be a role the counties can play to assist their municipalities. The concept of shared service agreements is not uncommon to counties and municipalities. If it is a county there may be a requirement for the county to send a request for proposal to develop the regional approach. Between preparing the RFP, receiving RFP and selecting the consultant can take several months. Then the selection must be confirmed by the County Commissioners, which is another reason having a county commissioner involved in the meetings is important. The shared services agreements must be prepared and signed by the municipalities. This may also require resolutions by the municipalities. All of this can take months to accomplish.
A municipality or a watershed organization may also be the one to engage the consultant. However this is settled, it is important that all of the participants are formally on board with the decision and enough time is set aside to complete it so that the consultant has enough time to develop the regional plan.

Public Meetings. The permit requires informational sessions for the public to learn and provide information. Also, the permit requires a public comment period on the Watershed Assessment Report. A good practice is for there to be a public meeting on it to solicit feedback from the public. Each municipality can have its own public meeting, or the meeting can be a joint one for all the municipalities. Either way the plan should be published on each municipality's website and comments collected and shared between the municipalities.

As noted above, once completed, public comment received and incorporated, the plan is submitted as part of each municipality's Watershed Improvement Plan by December 2027. It is our understanding from NJDEP that each municipality does not have to submit its own copy of the plan but can reference the plan submitted by one municipality.

One last thing to consider is the regional projects. If the plan identifies regional projects how are those going to get funded? The NJDEP will likely want to see legally binding commitment from the various contributor Municipalities to the funding and implementation of those projects. If a Municipality is going to take credit in their WIP for reductions accomplished in another Municipality, how is the Municipality on the hook to make sure that project is implemented?
A final thing to consider is that many municipalities are in multiple watersheds. This should mean that municipalities and counties are participating in several regional meetings and approaches. Can the same convenor convene with the other watersheds or does there need to be another convenor?

When Is It Too Late?

Even if your municipality initially opted for a standalone WIP:

- You can coordinate with other municipalities during the public comment period
- Consultants can meet to harmonize data and assumptions
- Plans can be reconciled during future updates triggered by new TMDLs or Integrated Reports

While the ideal time to enter into the development of the regional watershed-based WIP is at the beginning, there may be fallback options if your Municipality decided to develop the plan in isolation. The permit requires municipalities to solicit input from various stakeholders including other municipalities that share watersheds.[9] Taking these opportunities to provide information is a starting point.

An informal method would be to direct your municipal consultant to reach out to the consultants utilized by the other municipalities in the watershed. The consultants should seek common ground on what various contributions to surface water pollution; TMDL allocations, etc. That way the Watershed Assessment Report and final Watershed Improvement Plans are less likely to be inconsistent with each other.

Another opportunity to reconcile inconsistent plans is during the public comment period. The MS4 permit requires semiannual information sessions and must provide a 60-day public comment period on the Watershed Assessment Reports.[10] Each municipality must summarize the comments received during the comment period and the changes made to the Plan Report as a result.

These are both opportunities to provide information to municipalities that share the watershed. It would be useful for the municipality to task its consultant to review the relevant Watershed Assessment Reports; revised its own WARs as appropriate and provide technical comments on the other WARs. Doing this will help highlight inconsistencies which could lead to plans that do not reduce flooding and improve water quality.

Two items to consider with this approach. First, other municipalities may provide comments to your WAR. Be prepared to address those comments. Maybe suggest the consultants meet and work through their mutual comments. Second, there is a very short time frame to provide comments; and it is highly likely that all of the relevant WARs will be released for comment in a relatively short time period. The need to review multiple plans, provide comments and address comments will be significant. Time and resources will have to be allocated to this endeavor. This limited time to review and comment is another factor for the consultants to meet and discuss their plans and adjust as appropriate.

The last opportunity to retroactively work on a regional basis is the MS4 permit requires the Watershed Improvement Plans be updated when necessary.[11] This means when NJDEP updates its Integrated Water Quality Assessment Report and that update impacts waters in relevant watersheds or NJDEP adopts a TMDLs for the relevant watersheds, municipalities will have to examine their plans and revise them to address the new/revised impairment or TMDL. This is another opportunity for municipalities to look to the WIPs from other Municipalities that share watersheds and collaborate on revisions resulting in a more regional approach.

[1] 2023 MS4 permit, Section H(1)(b), page 42. https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/tier_a_full_permit_no_reponsetocomments-1.pdf
[1] Id. at (c) and (f). Pages 39 and 44.
[1] Id. at (i).Page 45.

Conclusion

Flooding and water pollution are worsening. Municipalities cannot solve these problems alone.

A regional approach to Watershed Improvement Planning:

- Saves time and money
- Increases project effectiveness
- Meets MS4 compliance
- Improves public health and resilience

The time to act is now.

All municipal officials have witnessed the increasing impacts of weather causing flooding and the impacts of flooding on the lives of its residents and businesses. Unfortunately, municipalities also see increasing water quality impacts from stormwater, stream erosion, or Harmful Algal Blooms (HABs) in its waterways. We are increasingly recognizing our interconnections with our immediate neighbors and those that are far downstream.

Extreme and heavy rains continue to occur with increasing frequency and flooding is an all too often result. The need to address flooding is harder and harder to ignore or take half measures. No one benefits from ignoring opportunities to address flooding. Likewise, no one benefits from plans that are developed that will not address problems and sit on shelves without implementation.

Developing a watershed-based management plan for use by municipalities to comply with the Watershed Improvement Plan requirements can lead to efficient use of strained municipal staff and financial resources and lead to more effective and efficient projects. Ultimately, we will see a reduction in flooding and improvement in water quality. The time to reengage on watershed planning is now.

Resources

MS4 Permits

2023 Tier A MS4 permit - https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/tier_a_full_permit_no_reponsetocomments-1.pdf

2024 Public Complex MS4 permit - https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/public-complex/njems-final-permit.pdf

2025 Highway Agency MS4 Permit - https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/highway-agency-final-permit.pdf

Response to Comments for the Tier A MS4 Permit - https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/tier-a-response-to-comments.pdf

2023 Tier A Stormwater Master General Permit Fact Sheet - https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/2023-draft-tier-a-ms4-permit-fact-sheet.pdf

Water Quality

NJ's Integrated Water Quality Assessment Report - https://dep.nj.gov/wms/bears/water-quality-assessment/integrated-report/

The Watershed Institute Stream Watch - https://thewatershed.org/streamwatch/

Watershed-Based Plans

TMDLs - https://dep.nj.gov/wms/bears/tmdls/

TMDL Look Up Tool - https://dep.nj.gov/njpdes-stormwater/municipal-stormwater-regulation-program/tmdl/

NJDEP's Info Page - https://nj.gov/dep/wms/bears/wbplans.htm

EPA Information Page - https://www.epa.gov/nps/resources-watershed-planning

Watershed Group Locator - https://thewatershed.org/group-locator/

Implementation Checklist

□Identify the Convenor of the meetings:

- County
- Municipality
- Environmental Organization
- Other

□ Identify Stakeholders:

□ County

- Planning Department
- Engineering Department
- Commissioner

□ Municipal

- Stormwater Coordinator
- Engineer
- Planner
- Environmental Commission
- Elected Official

□ Watershed Organization/Environmental Organization

□ Water Supply Authority

□ Local Drinking Water Purveyor

□ NJDEP

- NJPDES Stormwater Permitting Program
- Division of Water Quality

□ Other State Agencies

- Regional Agencies
  - Pinelands
  - Highlands
  - Delaware & Raritan Canal Commission
- Others

□ Others

□ Identify the Watershed
- Existing TMDL
- HUC11
- Watershed Plan

□ Meetings

- Set up an initial meeting
  - In-person
  - Virtual

- Frequency of Meetings

- Preparation of meeting materials

  - WIP explanation
  - Water Quality Information
  - Existing TMDLs
  - Map of watershed
  - Impervious Cover analysis of the watershed

□ Selection of consultant

- County Planning/Engineering Department
- Municipal Planning/Engineering
- Outside Consultant
  - Watershed Plans
  - Stormwater Engineering
  - Other

□ Selection of entity to engage consultant

- County
- Watershed Association
- Municipality
- Other entity
- Each municipality contract with consultants

□ Set up Individual Meetings

- Elected Officials
- Council/Committee Meetings
- EC meetings
- County Commissioner Meeting

□ Passing of resolutions by

- County
- Municipality
- Others

Draft Model Municipal Resolution

A sample municipal resolution is included to help your town formally authorize participation in a regional watershed planning process, select a consultant, and allocate funding. It complies with New Jersey's public contracting laws and pay-to-play rules.

Key provisions include:

- Acknowledgement of MS4 permit requirements
- Support for regional collaboration
- Agreement to contribute a defined share of the total project cost
- Reference to the selected consultant and scope
- Authorization for contract execution under applicable NJ statutes
- Certification by municipal clerk

WHEREAS, the Municipality of **X** as well as all municipalities are required by the 2023 Municipal Separate Storm Sewer System (MS4) permit to develop a Watershed Improvement Plan (WIP) to reduce flooding, reduce water pollution, meet the pollution reduction goals in Total Maximum Daily Loads and achieve designated uses for waterways within each municipality.

WHEREAS, the Department of Environmental Protection encourages municipalities to interact with their neighboring municipalities and to develop the Watershed Improvement plans on a regional basis.

WHEREAS, the proposed watershed management plan would study the current status of water quality in the Lower Millstone River Watershed and its tributaries; develop a matrix of best management practices (stormwater management systems) to address the water pollution impairments and flooding; and identify potential locations, projects and costs within the watershed to reduce water pollution and reduce flooding.

WHEREAS, the proposed agreement would help the municipality meet many of the obligations of the MS4 permit to develop the WIP.

WHEREAS, it is anticipated that a regional approach for the Lower Millstone River Watershed will reduce costs in development and implementation of the Watershed Improvement Plan by working on a watershed approach in comparison to a situation where each municipality does the required studies and project development independent of the other Lower Millstone River Watershed municipalities.

WHEREAS, X through its professionals has been engaging with the participants of the Lower Millstone River Watershed work group organized by The Watershed Institute. The group started meeting in October 2024, to discuss issues of stormwater management, flooding and water pollution.

WHEREAS, One Water Consulting, LLC proposed to develop the watershed management plan for the Lower Millstone River for a total cost of $254,300. The cost of the plan is anticipated to be divided amongst the participating municipalities. The proposed cost to **X** is not to exceed **Y**, which is **Z** percent of the total cost of the proposed budget.

WHEREAS, One Water Consulting, LLC proposed to develop the watershed management plan for the Lower Millstone River for a total cost of $254,300. The cost of the plan is anticipated to be divided amongst the participating municipalities. The proposed cost to X is not to exceed Y, which is Z percent of the total cost of the proposed budget.

WHEREAS, pursuant to N.J.S.A. 40A:11-5(1)(a)(i) of the Local Public Contracts Law, X may award a contract for professional services without public advertising for bids; and

WHEREAS, this contract is not being awarded as a "fair and open" contract as defined in N.J.S.A. 19:44A-20.7; and

WHEREAS, pursuant to N.J.S.A. 19:44A-20.5., **X** may award a non-fair and open contract to a business entity if, during the preceding one-year period, that business entity has not made a contribution that is reportable by the recipient under P.L. 1973, c.83, N.J.S.A. 19:44A-1 et seq. to any municipal committee of a political party in that municipality if a member of that political party is serving in an elective public office of that municipality when the contract is awarded or to any candidate committee of any person serving in an elective public office of that municipality when the contract is awarded; and

WHEREAS, One Water has completed and submitted the required pay-to-play forms which certify that One Water has not made any reportable contributions

WHEREAS, the Certified Financial Officer has certified that X has appropriated sufficient funds for these services in account; and

WHEREAS, the term of this contract shall be eighteen months.

NOW, THEREFORE, BE IT RESOLVED by the Mayor and Council of **X**, County of **M**, State of New Jersey, as follows:

1. The Mayor and Council, or their designee, are hereby authorized and directed to enter into an agreement for the Lower Millstone River Watershed Management Plan for an amount not to exceed $Y without competitive bidding as a Professional Service in accordance with N.J.S.A. 40A:11-5(1)(a)(i).
2. The Term of this contract shall be for eighteen months.
3. A copy of this Resolution, Pay-to-Play Forms, and contract will be kept on file in the Office of the Clerk.

I, **N**, Municipal Clerk of **X**, do hereby certify that the above is a true copy of a resolution adopted by the Mayor and Council of X at a meeting held [ ], 2025.

_____

, Municipal Clerk

Flowchart: Developing a Regional Watershed Improvement Plan

This flowchart outlines the major milestones and dependencies for regional WIP development:

Step 1: Identify the Region
- Use TMDLs, HUC11 watersheds, or NJDEP datasets
- Select a manageable and hydrologically relevant area

Step 2: Assemble Stakeholders
- Invite municipalities, counties, agencies, utilities, and nonprofits
- Confirm key participants including elected officials

Step 3: Convene Stakeholders
- Hold kickoff meetings
- Define roles and expectations
- Secure commitments

Step 4: Hire Consultant
- Select qualified firm experienced in watershed planning and MS4
- Decide on contracting structure (county, municipality, nonprofit)

Step 5: Develop Regional WIP
- Conduct Inventory
- Complete Assessment Report
- Identify BMPs and capital projects
- Estimate costs and funding sources

Step 6: Public Engagement
- Publish draft plan
- Host joint or individual public meetings
- Open and manage public comment period

Step 7: Finalize Plan
- Incorporate feedback
- Ensure consistency across municipalities
- Secure legal agreements for regional projects

Step 8: Adopt and Submit
- Municipalities pass resolutions
- Submit WIP or reference regional version by December 2027

Step 9: Implement and Monitor
- Begin construction or restoration projects
- Track milestones
- Update plan as needed per new TMDLs or impairments


The
Watershed
Institute

Don’t Wait

The success of New Jersey’s clean water future depends on regional cooperation. Watersheds don’t follow municipal boundaries, and neither do the solutions to flooding and pollution. Watershed Improvement Plans offer a rare opportunity for municipalities to join forces, share costs, and make lasting, effective improvements.

Start now. Convene your neighbors. Build your plan together.

The Watershed Institute