

# A One Water Vision for the Jordan Lake Watershed, September 2021



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## Executive Summary

Jordan Lake One Water (JLOW) is an ongoing partnership to facilitate increased collaboration and integrated watershed management in the rapidly developing Jordan Lake Watershed. This group was established after stakeholders from across the basin recognized the need to increase the effectiveness, flexibility, and public support of water management activities.

Traditional water management approaches, such as those implemented through federal laws (e.g., Total Maximum Daily Load or TMDL implementation strategies), although well-intentioned, have not been able to sufficiently address water quality impairments or broader community needs, such as flood reduction, stream stabilization, climate vulnerability, or asset management, and have predominantly resulted in lower returns-on-investment than has been necessary for success.

One Water is an emerging alternative, popularized by the U.S. Water Alliance, that utilizes collaboration and integration to meet environmental, social, and economic needs. Using a One Water approach, stakeholders are better able to leverage knowledge and resources and more effectively communicate how water management decisions directly benefit citizens, businesses, and other community members. By taking a systems approach and addressing broader community needs, the One Water approach has the potential to better avoid or recover quickly from various threats including those related to the climate.

The following report presents a vision for how a One Water approach could be applied in the Jordan Lake Watershed to meet community needs, while also considering the regulatory implications. The intent is for JLOW to be an alternative to single-purpose regulatory programs such as the previously proposed Jordan Rules. The recommendations in this report are the result of a multi-year planning process involving extensive input and deliberation from a broad range of stakeholders throughout the basin, including representatives from local governments, water utilities, agriculture, conservation groups, universities, state agencies, developers and private industry. JLOW seeks to include all those interested in realizing watershed-wide environmental, societal, and economic benefits, while sharing the costs of water quality and quantity improvements.

### JLOW Goals:

- ✓ Goal 1 (Environmental) – To improve the hydrological and ecological function of the Jordan Lake Watershed.
- ✓ Goal 2 (Societal) – To enhance the health, vitality, and well-being of all residents and communities within the Jordan Lake Watershed.
- ✓ Goal 3 (Economic) – To foster a robust, prosperous, and viable economy in the Jordan Lake Watershed.

## Recommendations

We recommend providing the foundation necessary to establish an organization to support One Water activities in the basin. Cross-jurisdictional collaborative approaches to water management are not well tested in the state and many legal and regulatory questions remain. This report reflects ongoing work, and this vision document will be updated and revised as needed with subsequent documents created as new information, challenges, or opportunities arise.

The JLOW stakeholder group recommends a two-part approach. This approach is a humble acknowledgement of both our collective hard work and commitment to this process, but also an acknowledgement of the challenge of creating systemic change that balances stakeholder needs and interests while meeting basic regulatory needs.

### **Recommendation Part One—**

#### **Form a Transitional Jordan Lake One Water (JLOW) Organization**

We recommend that a transitional JLOW organization be formed as a 501(c)(3). While the Priority Investments section of this document reflects significant progress toward defining the “how” of JLOW, we recommend this group be tasked with reviewing, compiling, and refining a list of encouraged JLOW strategies and highlighting those that enhance community resilience. We recommend the process for selecting and evaluating practices assure that triple bottom line benefits are being met. We use the phrase “triple bottom line” to refer to the best possible outcome when considering environmental, social, and economic factors.

### **Recommendation Part Two—**

#### **Co-Develop a Framework for Collaboration Between Jordan Lake One Water and the North Carolina Department of Environmental Quality to Address Regulatory Concerns, Including Nutrient Requirements**

The JLOW stakeholder group recommends that the North Carolina Department of Environmental Quality (NCDEQ) work with the forthcoming JLOW to co-develop a regulatory framework and/or a plan for the Jordan Lake Watershed by the end of 2022. The intent is to provide an alternative to the traditional nutrient crediting approach used in the past with one that is equally or more protective of water quality while meeting other community needs and receiving greater public support. This framework can provide the regulatory flexibility requested by the stakeholders and account for the voluntary actions taken by jurisdictions to preserve Jordan Lake water quality in advance of the framework and/or plan. We are mindful that in a million-acre watershed that creating a flexible structure that allows action at various geographic scales may be the best way to achieve buy-in from local communities.

This finalized document will be shared with NCDEQ, stakeholders, and the elected officials in the Jordan Lake Watershed. Additionally, the document will be shared on the website and a press release will be released to mark this stage in the process.

## The Value Proposition of JLOW

*The Jordan Lake One Water stakeholders seek to shape water policy in the Jordan Lake Watershed to be integrated—to consider all water as valuable. The Jordan Lake One Water approach will offer a more flexible framework and a broader range of management options than the traditional regulatory model. It offers a path to finding solutions with a triple-bottom-line business case, helping to assure that money spent in the watershed will achieve more per dollar than the traditional regulatory model and play a role in creating a community that can better withstand disruptions. Better outcomes, more choice, and cost-neutrality, means a more resilient region and more public support and satisfaction at all levels.*

## VISION AND COLLABORATION

### Introduction

Jordan Lake One Water (JLOW) is an ongoing partnership to facilitate cooperation and integrated water resource management by stakeholders in the Jordan Lake Watershed. The group is composed of local governments, conservation groups, universities, water utilities, agriculture, state agencies, and private industry stakeholders. JLOW seeks to include all those interested in realizing watershed-wide environmental, social, and economic benefits, while sharing the costs of water quality and quantity improvements.

For the past decade and a half, state policymakers, regulatory agencies, local governments, and a range of other stakeholders have worked to restore water quality within Jordan Lake with little success. As water quality and water supply challenges continue to increase from growing populations, there is an opportunity to reevaluate water resource management within the Jordan Lake Watershed and move towards a more collaborative, interdisciplinary approach.

Since convening the first Jordan Lake summit in June 2017, stakeholders within the watershed met quarterly to learn about One Water; share perspectives, challenges, and possibilities; and discuss the application of an integrated watershed management framework in the watershed. These meetings brought together an average of 60+ representatives of organizations and stakeholders, many of which had never considered collaborating across jurisdictions to achieve tangible watershed-wide benefits. The group had a strong emphasis on looking at both individual community objectives as well as the collective vision across the watershed. This focus helped increase opportunities for upstream and downstream, as well as urban and rural, entities to work together in complementary ways to improve community conditions. The conversations at these meetings were unprecedented and implementing such an approach in the Jordan Lake Watershed would be the first of its kind in the state.

The NC Department of Environmental Quality's Division of Water Resources (DWR) has been involved in and supportive of the JLOW planning process since its inception, both as an original member of the Department of Transportation/Tetra Tech Reimagining Water discussions of 2017 and as a One Water planning participant in the early Triangle J Council of Governments (TJCOG) deliberations. As widespread stakeholder interest in the JLOW process materialized, at TJCOG's request, DWR agreed to fund the most recent 18-month JLOW planning endeavor with the goals of increasing public involvement and developing ideas for integrated watershed management. While DWR is responsible for Jordan Lake Watershed nutrient rules readoption, the Division will seek to design rules that enable JLOW's One Water intentions to the greatest extent possible. DWR also plans to build on the stakeholder involvement initiated by JLOW as it reengages interested parties toward rules revision in the next couple of years.

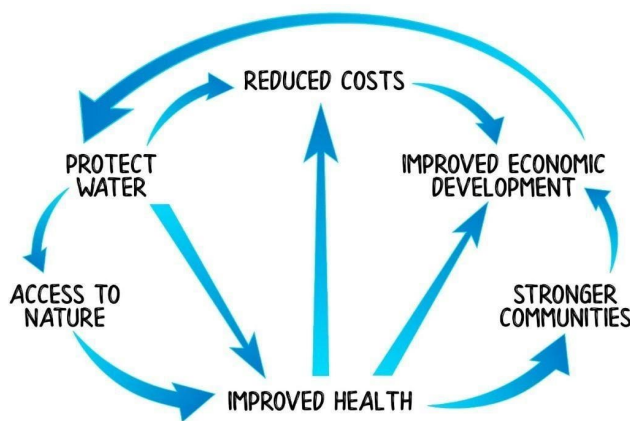
In October of 2019, JLOW developed a work plan and formed six work groups to facilitate key parts of the effort. See Appendix A for more background about the work groups. The JLOW initiative is administered by TJCOG with assistance from the Piedmont Triad Regional Council (PTRC) and JLOW Advisory Committee.

### *What is One Water?*

*One Water is a water management approach popularized by the U.S. Water Alliance. The One Water approach views all water - from the water resources in our ecosystems to our drinking water, wastewater, and stormwater - as resources that must be managed holistically and sustainably in order to secure a bright, prosperous future for our children, our communities and our country. The One Water approach is a success that is shared across the whole community - including all citizens, utilities, agriculture, cities, and businesses. A One Water approach has some unifying characteristics that were used to center JLOW discussions:*

- A mindset that all water has value
- A focus on achieving multiple benefits – environmental, societal, and economic
- Holistically approach decisions
- Utilize watershed-scale thinking & action
- Rely heavily on partnerships & inclusion

JLOW has committed to the One Water approach. Investments in clean water and clean water solutions yield many dividends-- like community well-being, public and ecosystem health, a robust economy, access to nature, and treatment cost control, to name a few. (See Figure 2) This makes the JLOWs goals and continued progress essential to assuring our growing communities will be as vibrant, healthy, and economically sound tomorrow as they are today. The work we support must acknowledge that there are many benefits to be reaped in selecting and supporting clean water solutions.



*Figure 2: Benefits of Clean Water*

## Community Challenges & Needs

*What community needs are not being met well by current management approaches?*

Watershed planning, by definition, encompasses all the land within a watershed. Past work in the Jordan Lake Watershed and elsewhere has involved planning and implementation based on water quality, water quantity, stream hydrology, stormwater management, and other technically specific natural resource categories. Thus far the missing piece of holistic watershed management has been the community itself. How does our management of water resources positively or negatively affect people's lives? Who benefits most and least from the watershed management work we do? Even more importantly, who do we negatively impact with our projects and planning and how might they be negatively impacted by inaction?

In general, water resource professionals use science and technical expertise to solve natural resource problems. Governments prioritize stewardship of tax dollars via the most financially affordable projects available to them. It is accepted, however, that no matter how significant the natural resource benefit nor how highly regarded the science, if a project is too expensive, it may not be implemented. We recommend that this same deference to affordability and technical viability also be granted to the social well-being of communities and people. However, our ability to measure the success of efforts to promote social well-being is inherently limited because each community can, and often will, define well-being differently.

From a social standpoint, natural resource management is working its way toward incorporating the human dimension into the planning process. It is common today to consider the importance of doing no harm, for example. The next step is asking how resource professionals can help. How can we improve people's lives? How can we prioritize social needs simultaneously with environmental and economic needs? The cost of resource degradation is borne by the community, and so should they have a stake in resource recovery.

The concept of planning for community impact is not new, but its practice is only now emerging across the developed world and turning it into action will take great effort and creativity from many different stakeholders. Decision makers need access to the language and tools to help incorporate social, economic, and environmental factors into natural resource planning and implementation, and they also need help to communicate the benefits of this work to the communities they represent.

We often think of 'decision makers' as elected and appointed officials, but this list also includes government civil servants and private business staff and leaders. It includes those protecting our natural environment, our food production, our growth and prosperity, our families, and communities. All have a role in empowering the planning process to a more deliberative end.

Financial professionals are adept at caring for and nurturing the economy, natural resource professionals are adept at prioritizing and protecting the environment, and health and human services professionals are adept at promoting and protecting societal well-being. We can all do better at bridging institutional divides, however, and we as community leaders have an obligation to consider each other's needs in our decision making. We can rightly consider each other's



needs as our own needs because while we have professional responsibilities to protect the community, we are each also a member of the community we serve.

## Benefits of One Water

*Why consider a One Water approach to address these needs?*

A One Water approach can take many different forms but has some unifying characteristics. As stated above, the hallmarks of One Water are:

- mindset that all water has value
- focus on achieving multiple benefits
- a systems approach
- watershed-scale thinking and action
- right sized solutions
- partnerships for progress
- inclusion and engagement for all

The three JLOW goals are:

- ✓ Goal 1 (Environmental) – To improve the hydrological and ecological function of the Jordan Lake Watershed.
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- ✓ Goal 3 (Economic) – To foster a robust, prosperous, and viable economy in the Jordan Lake Watershed.

The six arenas of action for JLOW are:

1. Resilient Water Utilities
2. Thriving Places
3. Competitive Business and Industry
4. Robust Agriculture
5. Social and Economic Inclusion
6. Water Quality and Healthy Ecosystems

These arenas are where the action can take place to achieve the three JLOW goals. It is important to note that these six arenas are naturally interdependent. The One Water approach involves interwoven solutions with many partners across jurisdictions.

Our needs of social, economic, and environmental success within the Jordan Lake Watershed can be realized through the lens of this One Water mindset and more specifically within the realms of the six arenas of action. Our need to consider sustainability in social, economic, and

environmental fields can be achieved through these One Water principles that are being implemented in watersheds across the country. Appendix H lists resources and case studies. As stated above, the concept of community health through this threefold sustainability is not new, but its practice has been difficult to implement. JLOW is striving to incorporate these principles in the education of its residents, the facilitation of collaborative planning, and the management of water resources.

## Our Vision

*What is JLOW's proposed solution?*

Jordan Lake One Water (JLOW) is an ongoing partnership to facilitate increased collaboration and integrated watershed management in the rapidly developing Jordan Lake Watershed. This group was established after stakeholders from across the basin recognized the need to increase the effectiveness, flexibility, and public support of water management activities. As a society we have used the term 'bottom line' to mean only financial considerations. The group embraced the Triple Bottom Line (TBL) approach whereby the use of the phrase "triple bottom line" refers to the best possible outcome when considering environmental, social and economic factors. TBL thinking raises social and environmental factors to the same level of consideration.

The JLOW stakeholder group recommends a two-part approach.

### **Recommendation Part One—**

#### **Form a Transitional Jordan Lake One Water (JLOW) Organization**

We recommend that a transitional JLOW organization be formed as a 501(c)(3). While the Prioritizing Investments section of this document reflects significant progress toward defining the "how" of JLOW, we recommend that this group be tasked with reviewing, compiling, and refining a list of encouraged JLOW strategies and highlighting those practices that enhance community resilience. We recommend that the process for selecting and evaluating practices assure that triple bottom line benefits are being met. Additionally, we recommend JLOW be a tool for collaboration across jurisdictions.

### **Recommendation Part Two—**

#### **Co-Develop a Framework for Collaboration Between Jordan Lake One Water and NCDEQ to Address Regulatory Concerns, Including Nutrient Requirements**

The JLOW stakeholder group recommends that the North Carolina Department of Environmental Quality (NCDEQ) work with the forthcoming JLOW to co-develop a regulatory framework and/or a plan for the Jordan Lake Watershed by the end of 2022. This framework can provide the requested regulatory flexibility requested by the stakeholders and account for the voluntary actions taken by jurisdictions to preserve Jordan Lake water quality in advance of the framework and/or plan. We are mindful that in a million-acre watershed creating a flexible structure that allows action at various geographic scales may be the best way to achieve buy-in from local communities.

## Operations & Implementation

*How will JLOW operate to implement a One Water approach?*

This One Water approach for the Jordan Lake Watershed launches a system where individual, community, and regional activities and projects work collaboratively to improve the ecological function of the watershed, meet regulatory requirements, and deliver value to communities. A One Water approach requires an alternative way of doing business with policies that favor implementing practices to protect the ecosystem and restore healthy water quality and quantity, while simultaneously supporting community and economic needs that connect us all as stakeholders and users of the water. The following section explores and analyzes potential system, policy, and behavioral changes which will be required to realize improvement of our water resources and the communities which depend on them.

### **Increasing Collaboration and Integration**

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One of the vital tenets of One Water is the collaborative nature of managing water as a shared resource across a watershed. The existing structures of water management discourage this collaboration by instead identifying specific water allocations or pollution allowances (e.g., “nutrient credits”) for each individual or entity in a watershed system. To effectively implement the JLOW strategy, these barriers must be removed and replaced with incentives to encourage collaboration.

Currently, there is a lack of coordination between stakeholders within the watershed. Local governments and other entities are predominantly going-it-alone to meet regulatory requirements and community needs. Existing rules have created tension between up and downstream users, as well as between various sectors. There is a need to re-build trust among stakeholders and form new partnerships that bridge jurisdictional lines and sectors.

Key feedback that the Advisory Committee received during the drafting of this document is that for this approach to be successful, that developers and architects/engineers who work for developers across the watershed need to be actively involved in this effort. While participation of the Triad Real Estate and Building Industry Coalition (TREBIC) on the JLOW Advisory Committee, and three Triad-area engineers served on multiple JLOW committees, we believe that seeking buy-in from developers and those in the development community from across the watershed on this approach will be key. A key next step in Phase 1 will be to convene a development community committee to work with JLOW. Also, in Phase 1 the US Army Corps of Engineers will be engaged since they control the Jordan Lake Reservoir.

Jordan Lake One Water will provide a structure to support integration and collaboration, where all stakeholders can find collaborators and develop projects that meet shared values. Stakeholders will have the opportunity to network with other organizations and individuals throughout the watershed, share local priorities, ongoing initiatives, and best practices, and request assistance to support implementation. Shared communications and engagement infrastructure, including regular meetings, newsletters, and an integrated online database, will be established and maintained to increase awareness about ongoing watershed management

activities and improve coordination among stakeholders. Our goal is to encourage participation at all levels throughout the watershed and coordinate planning efforts between NC DEQ, JLOW, and other partners at various scales to support integrated and adaptive watershed management.

One way to do this is by emphasizing the local gains and co-benefits of water management strategies. Each local government unit and other stakeholders in the watershed have their own set of concerns and needs for water. Existing policy goals may not resonate with everyone in the watershed, especially those who do not use the lake for recreation or drinking water. Instead of focusing on nutrient reduction in Jordan Lake, stakeholders and regulators can advance the same goal by improving water quality and quantity in local streams through projects that provide a variety of environmental, societal, and economic benefits to the community.

Local watershed restoration planning is an accepted and proven method of collaboration, providing a path for implementing locally tailored One Water projects to address community needs. Up until this point, local watershed plans have primarily been developed on a voluntary basis for certain impaired streams within the watershed due to limited resources and incentives. However, this could easily be expanded throughout the Jordan Lake Watershed to encourage local participation in watershed planning activities. There are 56 local watersheds (12-digit hydrologic unit codes or HUCs) within the Jordan Lake Watershed, 41 of which are impaired, yet only a handful have approved watershed management plans. Each watershed bridges multiple jurisdictions and could provide an opportunity for large and small organizations to work together to increase local capacity. Local watershed plans have typically focused on individual water quality parameters that are contributing to impairment, so there is also an opportunity to integrate these plans with other local, regional, and state planning efforts and land and water management activities. This could include comprehensive land management, water supply and source water protection, transportation, parks and recreation, economic development, conservation, flood prevention and climate resiliency plans.

Equitable participation will be critical to the success of JLOW and ensure that any action produces beneficial outcomes for all stakeholders within the watershed. JLOW will strive to garner participation from historically underrepresented and disproportionately impacted groups, including low income, rural, indigenous communities, and communities of color. JLOW will engage with local community groups, activists, and leaders to address community driven needs and ensure equitable representation on the Board of Directors to reflect the diversity of interests in the watershed. Wherever possible, JLOW will also leverage resources to increase educational and outreach opportunities for all stakeholders, including residents, business leaders, and elected officials, to raise local awareness and capacity to support One Water practices.

The JLOW process thus far has been very successful in building a collaborative platform for work. One stakeholder concern regarding the Part 2 recommendation is that DEQ continue the collaborative approach into the development of nutrient regulations and that they fully include the perspectives and interests of the stakeholders.

## PRIORITIZING INVESTMENTS

### Choosing Strategies

Until now, nutrients have been the primary driving force behind management decisions in the watershed, which has, at times, led to lower returns on investment and resources that could have been used more efficiently if broader community goals had been considered. Stakeholders from across the basin have expressed the need for a simpler approach that connects water management decisions with local community needs.

A triple bottom line (TBL) approach considers the environmental, societal, and economic benefits and presents them in an understandable manner to a wide range of decision makers and stakeholders. Preconceived ideas about costs, effectiveness, and liabilities often limit the acceptance of new strategies outside of those we usually use. Striving to evaluate all strategies with the same method helps to compare and choose the most sustainable strategies for all three areas: environmental, societal, and economic. A strategy may be a physical project to be installed or program or policy to enact.

The geography of a strategy is also important. Since JLOW is inherently a watershed-based approach, then implementing the same strategy upstream (like land conservation) outside of the jurisdictional boundaries of a community, may be cheaper and offer the same or better TBL benefits. Again, JLOW offers flexibility in achieving the best outcomes in the Jordan Lake Watershed.

Stakeholders participating in JLOW's Evaluation workgroup designed a Two-step Strategy Prioritization Tool designed to foster conversation about water management strategies. If we consider the usual decision-making process, it often does not include the necessary voices, such as stakeholders and even agencies, who are typically not involved in the water resources decision making process. This tool is designed to highlight those areas where further conversations are needed with those who are typically outside the room.

The tool highlights strengths and weaknesses relative to the environmental, societal, and economic triple bottom line goals, and helps users like cities, counties, and developers to gather information which may assist them in choosing to implement a strategy. Additionally, the Prioritization Tool can help the users compare strategies, highlighting the positive and negative attributes of each.

The tool consists of *Screening Questions* and *Detailed Assessment* questions, each designed at a gut-check level of whether a strategy is a viable option. If the strategy does not pass the Screening Questions, there is no need to continue to the Detailed Assessment. The goal at that point is to further develop the strategy so it can pass the Screening Questions.

Once a strategy has passed the *Screening Questions*, the *Detailed Assessment* is next. At first, this may be done by individuals but then evaluators must collectively agree how to score each question. Conversations among evaluators may identify knowledge gaps and the appropriate professionals to help answer key questions where current knowledge is lacking. While help may be needed, the objective of the process is again to record a gut-check response for each question where the user has at least enough information to support an answer. If much further information

is needed to answer a question, then the strategy may need to go back to the *Screening Questions* for further research and development or if the strategy is innovative, then a pilot could be done to collect more information.

There are 21 *Detailed Assessment Factors*, separated into the 3 TBL categories: Environmental, Societal, and Economic. The same question is asked about each factor: What is the effect on the factor? And the answers are on a scale: Very Positive, Somewhat Positive, Not Applicable, Somewhat Negative, or Very Negative. Ideally, all strategies that have moved beyond the *Screening Questions* to the *Detailed Assessment* have a positive return on investment across all three categories: Environmental, Societal, and Economic. The questions and factors are designed to foster conversation about how to improve the Jordan Lake Watershed, to help compare strategies, and highlight their strengths and weaknesses. Evaluators that are not familiar with a particular factor and how to consider it relative to TBL goals are encouraged to use additional resources provided by JLOW.

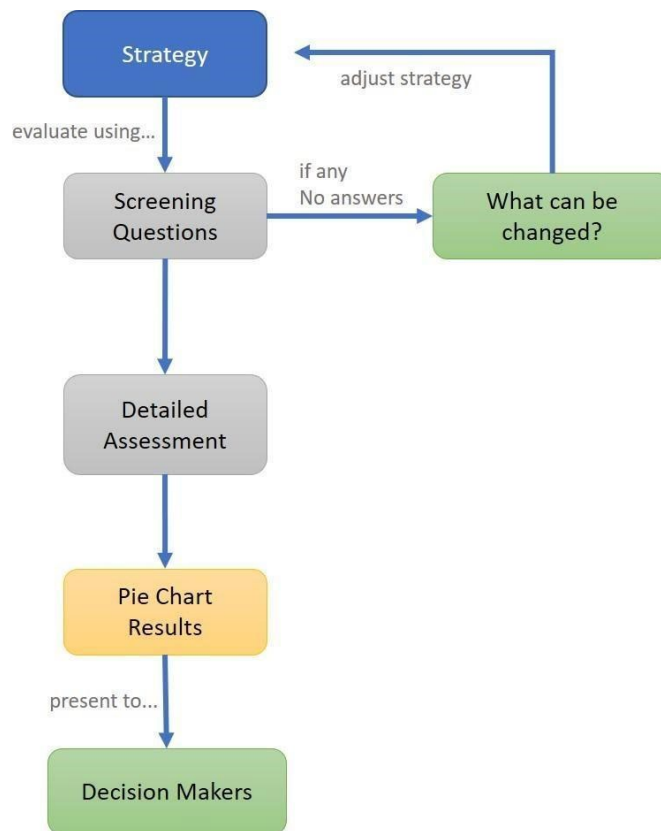
The result of the *Detailed Assessment* is a visual representation of a strategy's effect on 21 different factors. There are seven factors for each of the three TBL factors. The visual output for each strategy may also be used to compare two or more strategies.

#### *Prioritization Tool Flow Chart*

Each strategy gets tested with the *Screening Questions*. If it does not pass the *Screening Questions* by receiving a YES answer to all five, the strategy goes back to the drawing board to be developed further. When a strategy passes all five *Screening Questions* it moves on to the *Detailed Assessment*. The results are used to help decision makers determine if this strategy is a worthwhile investment.

The complete **JLOW Strategy Prioritization Tool** can be found in Appendix E.

The success of the One Water approach in the Jordan Lake Watershed will be tied to the strategies that provide value across the watershed. A significant amount of time and funding has been invested over the decades in researching, testing, refining, and implementing watershed management practices and that knowledge is a cornerstone of the One Water approach. There are numerous approved projects and designs that can be implemented to support single variable outputs (e.g., nutrient reduction, habitat protection, economic development, etc.) and most of them have robust secondary benefits that to date have not been valued. The ideal strategies selected for implementation provide multiple benefits for communities and ecosystems. Some stakeholders may find it more beneficial to pursue different strategies than others, and this is encouraged.



*Figure 3: Process for Evaluating Management Strategies*

The scale of possible projects varies as much as the stakeholders in the watershed - from One Water incentives and ordinance modification at the city or county level, to individual actions like using low impact design principles to develop a single site or installing stormwater projects to limit flooding.

While scientifically accepted strategies may simplify the environmental section of the Prioritization Tool, every inground project will occur in a different space and policy strategies may involve different locales, so the discussion and answers to the social and economic sections of the Prioritization Tool will need to be addressed for every strategy.

## Performance Evaluation

JLOW Goals:

- ✓ Goal 1 (Environmental) – To improve the hydrological and ecological function of the Jordan Lake Watershed.
- ✓ Goal 2 (Societal) – To enhance the health, vitality, and well-being of the citizens and communities within the Jordan Lake Watershed.
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## The Role of Performance Evaluation

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Any successful watershed management strategy needs to be responsive, flexible, and adaptive to changing circumstances and new information. Performance Evaluation can provide critical data to support timely decision making and adaptive management. This involves setting targets, collecting and analyzing data, and reporting findings, in an effort to determine what is working and to identify potential changes. The performance evaluation workgroup highlighted the importance of outreach and database coordination in supporting performance evaluation—acknowledging the likely eventual need to assure clear and transparent sharing of information across the watershed.

An evaluation plan based on the Strategy Prioritization Tool can help to:

- Foster transparency and trust
- Build accountability
- Retain public support
- Attract investment
- Support collaboration
- Facilitate learning and communication
- Determine progress towards goals
- Support adaptive management, and
- Support regulatory compliance

### *How will JLOW evaluate progress and performance to support adaptive management?*

It is important to note that evaluating JLOW progress and performance is not intended to be the determination of compliance with laws/regulations but is a way to mark progress toward the 3 greater goals of JLOW. The nutrient management goals of Jordan Lake are just a portion of the JLOW Environmental Goal: To improve the hydrological, geological, and ecological function of the Jordan Lake Watershed.

Program Evaluation for JLOW is built into the Strategy Prioritization Tool in Appendix F, Performance Evaluation and Example Metrics. The 21 evaluation factors and their corresponding metrics are used to determine if strategies align with JLOW goals, and if strategies are succeeding. As strategies succeed, JLOW gets closer to attaining its goals. The following objectives need to be a part of JLOW Performance Evaluation.

Evaluation Objectives:

- Be flexible to change
- Use available data
- Set a time period for success
- Evaluation will not limit implementation



## Metric Objectives

- Adopt performance-based metrics
- Match metric to evaluation factor
- Define success for each metric
- Redundancy through multiple metrics of each factor, if possible
- One metric can serve more than one factor

## Outreach Objectives

- Performance evaluation must communicate to a wide and diverse audience (data users).
- Different audiences (data users) may require different outreach formats ranging from raw data to basic educational outreach.
- Metric metadata (success determination) needs to be made available.
- Dashboard style communication, visually symbol heavy, to potentially include
  - Identify a successful target for each performance metric
  - Consider simple: Excellent, Average, or Needs Further Improvement types of outcomes
  - Current performance - for a given time period
  - Indicate if the target has been met
  - Indicate Trends in performance over time
  - Use

## Database Objectives

- Online
- Geospatially linked

The current JLOW workgroup stakeholders are predominantly natural resource professionals. The forthcoming JLOW organization will need help from the social and economic fields to develop the associated metrics.

## ORGANIZATIONAL & FINANCIAL STRUCTURE

*How will JLOW be organized and financed to support One Water operations?*

Once formalized, Jordan Lake One Water will be a broad, inclusive membership open to all local governments, non-profit organizations, private companies, state government agencies, and any other individuals or entities with interest in the watershed that support one water and integrated water management strategies in the watershed. The expectation is that the organization will have a broad representation from across the breadth of interests and actors in the watershed including cities, towns, counties, agriculture, community, conservation, environmental, economic development, forestry, residential & commercial development, and transportation interests. The organization would be chartered as a 501(c)(3) non-profit corporation to allow diverse and equitable representation from all stakeholders in the basin. During the draft review of this document one stakeholder asked why would a 501(c)(3) be chosen over another collaborative method like an intergovernmental Special District or Authority, that is already allowed under state law, like a Watershed Improvement District, or Water & Sewer Authority. The Advisory Committee believes that ultimately one of these structures may be the ultimate outcome, but that a transitional structure of a 501 (c)(3) would best serve the needs of the group at this time because it offers the ability to function as the group needs and to be unaffiliated with any region or regional entity. Another stakeholder reaffirmed support for a 501(c)(3) structure with an Executive Director like Upper Neuse River Basin Association (UNRBA).

The JLOW Advisory Committee acknowledges that the organizational and financial structures will need to be adaptive over time to meet the needs of the members. The organizational and financial recommendations are intended to get the group started and change over time as needed.

During the comment period a key stakeholder pointed out that municipal and county participation in membership, the Executive Committee, and the Board of Directors should be explicit since the stakeholder assumed that they will be carrying the heaviest cost burden. Those stakeholders also stand to gain the greatest return on investment by directly seeing how decisions meet broader triple bottom line objectives for their communities.

### *Membership*

Membership in Jordan Lake One Water would be voluntary. Membership is open to any entity or person supporting One Water policies in the watershed. Possible benefits of membership are listed in Appendix D.

### *Executive Committee and Subcommittees*

A strong Executive Committee can often contribute essential time and deliberation for a new organization. This can be a subset of the full Board that is tasked with developing and summarizing decisions for the full Board. Stakeholders seemed to want to know who would be selected for this committee and how. For example, several asked if a seat on the Executive Committee would be reserved for representatives from key stakeholder groups.

Multiple subcommittees will likely be needed to support key functions of JLOW, such as Monitoring and Evaluation.

## *Board of Directors*

The Board of Directors will guide the work of Jordan Lake One Water. The Board of Directors will make decisions based on consensus, though 100% agreement is not required. See Appendix B for more detail about consensus-based decision-making processes.

The Executive Committee will determine the size, quorum requirements, and by-laws structuring governance of the Board of Directors and will seek to have a wide diversity of stakeholder viewpoints represented. The Board of Directors is nominated from among the membership and elected by a 2/3 majority of the membership present during an annual meeting. Vacancies on the board may be temporarily filled by the Board of Directors until the subsequent annual meeting. Membership of the Board of Directors will have positions designated to ensure a broad representation of interests and geographies.

When selecting members for the board JLOW membership needs to consider certain technical expertise is needed to assure that the board has access to the latest accurate science and best practices. A diverse board whose members hold varied technical expertise in finance, utility, stormwater, land conservation, and green infrastructure to name a few, can strengthen JLOW's ability to achieve holistic management. JLOW will strive for membership representation that will strengthen social and economic perspectives—seeking members across communities, racial groups, and relevant business interests.

Board members will be asked to adhere to a standard vision, that no matter where you work, no matter what field or interest you represent, as a board member you are responsible to:

- Understand and work collectively to advance One Water concepts, including valuing all water as a resource, supporting integrated planning, and considering and balancing TBL objectives, and
- Seek out and understand all identified interests and issues. For example, if a board member doesn't hear agriculture brought up in the discussion, the board member will ask "how does this issue affect agriculture?"

One option that could be considered is to have a smaller board, with a strong fairness mandate, with a larger Advisory Committee to hear and advise on technical, community, and stakeholder issues.

## *Dues and Implementation Funding*

All members would contribute dues to support the operation of the organization. All members would pay a base participation rate set on a sliding scale with a minimum level set for individuals and all other dues based on the prior year's approved budget which will collect enough funding to cover the annual operational expenses of the organization. These funds will be used for the administrative functions of the organization including, but not limited to plan development, coordination, and educational activities. An annual meeting where all board members review and approve an annual budget is required. We anticipate working with members to budget for dues during fiscal year 2023 (July 2022 to June 2023). Administrative work will be contracted out and selected through an impartial process.

JLOW will work with members, the Board of Directors, and legislators to explore mechanisms to fund local measures that contribute toward the integrated water resource management approach for the Jordan Lake Watershed.

The broader funding issue is explored in a document called Paying for Nutrient Reduction and Management in Jordan Lake an August 2019 document by the UNC School of Government's Environmental Finance Center (EFC). Examples include the Catawba-Wateree Water Management Group, the Upper Neuse River Basin Association (UNRBA), and the Soil and Water Conservation Districts.

The Financial Workgroup recommends a voluntary dues-based model, like UNRBA, where there is a base participation rate and jurisdictions pay based on surface water withdrawals, water demand, or land area within the watershed. This could be expanded later if certain policy changes are made (see EFC report). Each jurisdiction would be able to identify the most effective means for raising funds. By collecting these fees from all residents in the watershed, every person in the watershed will maintain a financial stake in its improvement. In addition to jurisdictional fees, a base membership fee would allow non-profits and other non-regulated entities to participate and have direct buy-in. Depending on the level of participation and funding, the jurisdictional membership fees and base membership fees could cover administrative costs and project implementation.

During the comment period a local government expressed a desire to get credit for past initiatives when determining cost burden. Examples listed were wastewater treatment improvements, street sweeping, open space requirements, stormwater control retrofits, stream restorations and reforestations, etc. They also expressed a concern that ability-to-pay for each community (median income) be considered when determining dues. They asked how will the cost burdens be balanced between economically disadvantaged communities in the watershed and economically thriving portions of the watershed? The Advisory Committee is prepared to discuss these issues in determining a final dues structure.

Dues and JLOW activities will be leveraged with grant funding, donations, and existing programs/fees like stormwater fees, watershed improvement taxes, watershed improvement fees, or other financing mechanisms.

JLOW will require interim funding over the next year to support its incorporation as a 501(c)(3). The state may need to revise rule language to allow spending of resources and project implementation beyond utility jurisdictions.

## **Next Steps**

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1. Seek near-term funding to establish the organization's 501(c)(3) status.
2. Nominate a Board of Directors, Executive Committee, and Subcommittee(s).
3. Plan for member-funding in FY23 (July 2022 to June 2023).

## REGULATORY CONSIDERATIONS

*How will members with nutrient rule requirements achieve compliance under this approach?*

Jordan Lake One Water has the potential to dramatically shift how we manage water resources. Collaborative approaches to water management are not well tested in the state and many legal and regulatory questions remain. Stakeholders have tried to identify potential regulatory barriers, areas of overlap, and opportunities for better integration and collaboration. Certain actions can be taken now, while others will require policy changes at the state and local level. The following section outlines the existing regulatory landscape and provides recommendations to support an integrated watershed management approach.

In general, Jordan Lake One Water supports a multi-pronged regulatory scheme focused on overall ecological uplift rather than single-point compliance. Such an approach creates a framework for merging actions to meet multiple regulatory and non-regulatory goals, which will ultimately create a system that attracts greater investment and collaboration.

### Existing Regulatory Framework

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There are several federal, state, and local regulations that need to be considered when developing an integrated watershed management plan for Jordan Lake, including the Clean Water Act (CWA), National Pollutant Discharge Elimination System (NPDES), Jordan Lake Nutrient Rules, Riparian Buffer Protection Program, Water Supply Protection Program, and local development ordinances. These regulations work together to protect water quality and influence watershed management activities. Below is a summary of existing regulations and how they interact:

#### *Clean Water Act*

The Clean Water Act is the primary federal law in the United States governing water pollution. Through the CWA, the US Environmental Protection Agency (EPA) establishes water quality standards and pollution control programs to protect surface waters for drinking, fishing, and recreation. As part of the CWA, it is unlawful for anyone to discharge point source pollution into waterbodies without a permit under the NPDES program. Typical regulated point source dischargers include municipal wastewater treatment plants, industrial facilities, and Concentrated Animal Feeding Operations (CAFO). The intent of the permit is to quantify the amount of discharge that can occur without impairing water quality or human health.

Every two years, states are required by Section 303(d) of the federal Clean Water Act to list and report those streams, rivers and other bodies of water that do not meet water quality standards. If monitoring and assessment data indicate that a waterbody or segment fails to meet one or more water quality standard, it is placed on the 303(d) list. The state is then required to develop a Total Maximum Daily Load (TMDL), which determines the maximum amount of a pollutant that a body of water can withstand and still meet water quality standards. In North Carolina, the Division of Water Resources oversees point source permits and the bi-annual review process.

### *Jordan Lake Nutrient Rules*

The Jordan Lake Rules are a nutrient management strategy designed to restore water quality in the lake by reducing the amount of pollution entering upstream. Restoration and protection of the lake are essential because it serves as a water supply for several thriving communities, as well as a prime recreation area for more than a million visitors each year. The lake and surrounding forests also provide habitat for many plant and animal species. Specific issues addressed by the rules include reducing pollution from wastewater discharges, stormwater runoff from new and existing development, agriculture, and fertilizer application.

### *Stormwater – NPDES MS4 Program*

The NPDES program also regulates stormwater from municipal separate storm sewer systems (MS4s), construction sites, and industrial sites. An MS4 is a public network of structures (including municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that conveys stormwater to a stream, lake, or other waterbody.



All cities or counties with MS4s in an urbanized area, as determined by the latest census, are required to obtain an NPDES MS4 permit. However, communities located outside of an urbanized area that have a population of at least 10,000 people may also be designated as an MS4 if the state determines that stormwater discharges are causing significant water quality impacts.

MS4 communities must establish a stormwater program that meets 6 minimum control measures, including public education, public involvement, illicit discharge detection and elimination, construction control measures, post-construction control measures, and good housekeeping. Many of the MS4 requirements fit into the JLOW framework. The possible increase in resources that JLOW could provide to these efforts would 1) help prevent duplication of effort, and 2) amplify the benefit of existing workflows.

### *Riparian Buffer Protection Program*

Riparian Buffer Protection Rules were established by the State as part of the nutrient management package to protect and preserve existing riparian buffers throughout the Jordan Lake Watershed to maintain their nutrient removal and stream protection functions. These rules require 50-foot buffers for intermittent streams, perennial streams, lakes, ponds and reservoirs within Jordan Lake Watershed.

### *Water Supply Protection*

Jordan Lake is a drinking water source and flows into a stream system that feeds downstream communities' drinking water supplies. This means that all water quality improvement efforts in the watershed have a benefit to public health.

The NC Water Supply Watershed Protection Program is a state program developed to protect drinking water sources. It limits certain uses within water supply watersheds, establishes density and impervious cover limits, buffer requirements (buffers are called offset requirements in these rules), as well as stormwater control measure requirements for high density development.

The NC Source Water Protection Program (SWPP) is a voluntary program designed to support local efforts to protect public drinking water sources. The SWPP is administered by the Public Water Supply Section (PWSS) of the N.C. DEQ. A key feature of the SWPP is that each public water supply system develops its own local source water protection plan based on local conditions and priorities.

The NC Wellhead Protection Program (WHPP) is a voluntary program to protect underground sources of drinking water from pollution. In North Carolina, development of a local WHPP is not mandatory, but rather, is viewed as a valuable supplement to existing state groundwater protection programs.

### *401 & Isolated Wetlands/Waters Program*

The 401 and Isolated Wetlands/Waters Program is designed to protect water quality and state regulated waters. The goal is to avoid impacts and if that is not possible, minimize the impacts and provide a process of compensatory mitigation for projects that impact streams, wetlands, or buffers, or that are unable to meet water quality goals. Options for compensatory mitigation include:

- Mitigation Banks
- In-lieu Fee Mitigation
- Project Specific Mitigation

### *Wetlands—Section 404*

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 permits are required to discharge dredged or fill material, except for certain agriculture and silvicultural activities described in the federal rule; those exempted activities still have to meet provisions outlined in the rules but are exempted from the permitting process. Here again the goal is to avoid impacts, but for unavoidable impacts, compensation is required--in the form of restoration, establishment, enhancement, and/or in certain circumstances, preservation of wetlands, streams, and other aquatic resources.

### *Floodplain Protection Program*

Most local governments within the watershed have adopted floodplain protection ordinances to limit development in the floodplain and prevent or reduce the risk of flooding. Federal Emergency Management Agency (FEMA) has minimum floodplain management standards for communities participating in the National Flood Insurance Program (NFIP), but suggests adopting higher standards to lead to safer, stronger, more resilient communities. Here in North Carolina, the NC Office of Recovery and Resilience (NCORR) is working to meet multiple objectives through the lens of climate adaptation and floodplain resilience.

## **Regulatory Shifts Towards Collaboration and Integration**

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The JLOW Organizational Structure group reviewed numerous existing structures including the Upper Neuse River Basin Association (UNRBA). The UNRBA is a strong organization that has served its members well. It is made up of only local governments and therefore institutionally is driven by the opportunities and concerns of local governments. Even if local governments have a significant influence in the decisions of JLOW, the intent of the JLOW active stakeholder leadership is that from the beginning JLOW will organizationally include the opinions, needs, and values of a broader range of people and institutions in the watershed.

### *Falls Lake Existing Development Model Program & the IAIA*

Falls Lake is a waterbody north of Raleigh and between Durham and Wake Forest that serves as a drinking water source to Raleigh, Garner, Rolesville, Wake Forest, Knightdale, Wendell, and Zebulon. This lake has a history of nutrient pollution, including being on the 303(d) list of impaired waters since 2008 for chlorophyll a.

The 2011 nutrient management strategy for Falls Lake is a two-stage strategy. Stage 1 requires local governments in the Falls Lake Watershed to reduce nutrient loading to 2006 levels for all 2007 to 2012 development, and for a Model Program to be developed by the State of NC, which was completed in 2013. The model has two paths for compliance including a local load reduction program (pounds of nutrients reduced), and a joint compliance approach that allows for joint and coordinated work across the watershed. The joint compliance approach was developed with the Upper Neuse River Basin Association (UNRBA). The interim alternative implementation approach (IAIA) is an investment-based joint compliance approach that requires that affected parties commit to spending a fixed amount each year on water quality improvement projects. The IAIA is an agreement between affected local governments committing to their joint compliance work through investments in water quality projects, outreach and education, and other activities. Local government investments in utility-scale wastewater improvements in the watershed reduced nutrients very effectively, lowering the regulatory stakes on innovative investment-based approaches. The IAIA approach may be one that could be considered by governments in JLOW to provide structure moving towards a more multi-faceted One Water approach.



## *Integrated Planning for Water Quality*

Similarly, the Water Infrastructure Improvement Act (WIIA) of 2019 added a new Section 402(s) to the CWA to include the 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework. WIIA provides greater certainty that integrated planning provides a comprehensive path a municipality can take voluntarily to meet CWA requirements. The new amendments also require NPDES permitting authorities to inform municipalities that they can develop voluntarily an integrated plan that may be incorporated into permits, consent decrees, or administrative orders.

While this approach is not as comprehensive as One Water because it focuses only on water quality, it does provide some examples of jurisdictions working with their state agencies and EPA to shift the regulatory conversation to allow for a more integrated approach between wastewater and stormwater, allowing for compliance dollars to be spent on the best approach—using either a triple bottom line analysis or a Sustainable Return on Investment (SROI) analysis. In North Carolina the cities of Raleigh and Charlotte are using the integrated planning model. Further afield eleven jurisdictions in the Philadelphia area are working together to determine if the state environmental agency will allow them to use an integrated planning and investment-based compliance model in lieu of a 303(d) listing.

## **Regulatory Realignment**

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A goal of One Water is to break down traditional silos of regulatory compliance that have been built over many decades. These structures have been designed to affect and achieve specific outcomes but rarely incentivize innovation beyond the achievement of a minimal level of compliance. Successful implementation of a One Water system requires a realignment of those structures to break down existing silos and satisfy core interests across applicable regulations while also producing a range of community benefits that may not have been considered under the framework of regulating to achieve a single outcome. Additionally, existing state and federal regulatory structures have focused on point source pollution, while never adequately addressing nonpoint source pollution. JLOW is intended to be a more adaptable and flexible approach for addressing nonpoint source pollution. With JLOW watershed stakeholders will be more flexible in pursuing innovative approaches to watershed improvement if One Water efforts are mutually beneficial with existing obligations and do not strip away capacity which is necessary to meet other regulatory requirements. To do this the following actions need to be taken:

It is anticipated that Jordan Lake One Water could help stakeholders meet a suite of state or state delegated regulatory requirements, including:

- Jordan Lake Nutrient Management Strategy
  - Agriculture
  - New Development
  - Existing Development

- Protection of Existing Buffers
- Source Water Protection Requirements
  - Water Supply Watershed Protection
- MS4 Stormwater Requirements
  - Public Education
  - Public Involvement
  - Post-Construction

As well as other planning and review processes, such as:

- Local Watershed Management Plans/303(d) Bi-annual Review
- Source Water Protection Plans & Assessment Program

We recommend that the State (primarily NCDEQ), work with JLOW stakeholders, to develop and adopt policies deeming Jordan Lake One Water an alternative management strategy to comply with these state or state delegated regulatory requirements.

- The State with support of JLOW members could develop minimum standards for participation with JLOW. These standards may already exist and may be within existing regulatory permits. Wherever there are opportunities to address watershed metrics more efficiently on a collaborative basis, accomplishments and investments will be the responsibility of all watershed stakeholders in concert rather than individual users, sectors, or stakeholders.
- JLOW members will determine the feasibility of local code revisions that support and incentivize stormwater management and site design on new development in participating jurisdictions, including but not limited to, practices which improve flood mitigation, infiltration, green space protection, and habitat conservation. If individual developers and property owners intend to not support and implement these One Water related code revisions set forth within the framework of the JLOW process, then jurisdictions will be responsible for delineating minimum numerical on-site stormwater management requirements for each development project which comply with the overall water quality goals set forth by DEQ.
- The State with support of JLOW stakeholders will set metrics and adopt evaluation criteria to show quantifiable outcomes of the One Water approach based on the Monitoring and Reporting recommendations.
- The State with support of JLOW stakeholders will identify ways that integrated watershed management in Jordan Lake can be used to satisfy requirements for other state and federal permits and propose legislative and regulatory changes for adoption by the North Carolina General Assembly (NCGA) and the Environmental Management Commission (EMC).
- Entities intending to use this approach could sign a MOA or another legally binding agreement with the State outlining their obligations and commitments and setting a time period that the agreement would remain in effect prior to renewal. An active MOA will be recognized by the State as a measure of compliance with existing regulatory obligations until the State determines further action is necessary.

- MOAs will specify measurable goals for certain intervals so that signatories can demonstrate compliance to the State
- Stakeholders will also have the option of operating under the umbrella of an MOA signed between DEQ and the JLOW organization.
- DEQ consults with JLOW stakeholders to ensure that water quality monitoring is synchronized with project implementation whenever possible (see Monitoring & Reporting).
- County and municipal governments will review existing and expected state and federal regulatory requirements to identify areas of overlap (like TMDL requirements, NPDES Permits, MS4 permits or flood protection requirements) with the goal to develop and implement plans and local policies that could meet multiple goals.
- The State helps One Water members identify legal barriers to the flow of financial resources beyond utility jurisdictions. Whenever possible One Water stakeholders will identify currently allowable funding arrangements, but when necessary, the State will commit to revising rule language which is inhibiting resource sharing among local entities.

## Acknowledgements

The Jordan Lake One Water effort has harnessed the expertise, energy, and effort of so many people. We would like to highlight the Advisory Committee and the members of the work groups. However, so many elected officials from local governments in the watershed have supported and cheered on our work and continue to do so. We appreciate each of you.

### **Facilitation and Administrative Support:**

Grace Messinger, Danica Heflin, and Cameron Colvin\*      Piedmont Triad Regional Council of Governments

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## **Benefits Workgroup**

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\*As of mid-April 2021, Joey Hester no longer works at the NC Department of Agriculture. Cameron Colvin and Jen Schmitz no longer work for PTRC and TJCOG, however their efforts were integral to this document. As of July 21, 2021, J.V. Loperfido will take Syd Miller's place on the JLOW Advisory Committee. As of July 2021, Allie Dinwiddie will serve on the JLOW Advisory Committee as a representative of NCDA&CS and Division of Soil and Water Conservation.

### **Important Note:**

The professional affiliations of the individuals serving on the advisory committee and the workgroups are listed to reflect the broad range of technical and stakeholder expertise contributing to this effort. The positions, opinions, and recommendations contained in this document do not reflect the positions of the elected boards, governing boards, or governing bodies of those organizations where JLOW members are employed. We appreciate the time, expertise, and time that each member of the JLOW advisory committee, workgroups, and the elected officials who have dedicated time to this effort, and the organizations and citizens for whom they work.

## A GUIDE TO THE APPENDICES

Appendix A – JLOW Background and Work Groups

Appendix B – Consensus Based Decision Making

Appendix C – Examples of Project Types and Projects

Appendix D –Why Is JLOW Better? The Benefits of JLOW Membership

Appendix E – Strategy Prioritization Tool

Appendix F – Performance Evaluation and Example Metrics

Appendix G– Key Outstanding Questions from Stakeholders

Appendix H– Resources and Case Studies for One Water and Integrated Water Resource  
Management

## Appendix A – JLOW Background and Work Groups

The goal of JLOW is to have a diverse set of stakeholders in the watershed work together to produce integrated watershed management recommendations for the Jordan Lake Watershed. This document reflects the work done by six stakeholder workgroups. These groups formed in late 2019 and worked for more than a year to develop a unified set of recommendations for moving JLOW forward. This document reflects those recommendations.

The recommendations in this report are the result of a multi-year planning process involving extensive input and deliberation from a broad range of stakeholders throughout the basin. Triangle J Council of Governments (TJCOG) began holding quarterly interest meetings to discuss One Water concepts in the Jordan Lake Watershed in June 2017. Within a year, interest was so high among stakeholders that a Jordan Lake One Water (JLOW) Advisory Committee was formed to develop a workplan and begin moving forward on collaborative planning efforts. The work plan finalized in October 2019 outlined a strategic process to facilitate collaboration among the many interested parties and produce concrete recommendations to support integrated watershed management. This work plan was used to guide planning efforts.

The bulk of responsibility fell to six workgroups, which were formed to discuss specific topics and recommend appropriate actions. Each workgroup was composed of 6-15 self-selected volunteers, subject matter experts, and interested parties, and led by a member of the Advisory Committee. Invitations to participate in the workgroup meetings were made widely available at in-person stakeholder meetings and through an online sign-up form, which was shared on the JLOW website and distributed through the Jordan Lake Listserv. Members of the public could participate in one or many workgroups based on their level of interest. The Advisory Committee made a concerted effort to ensure that each workgroup represented the diversity of communities and interests in the watershed. In instances where certain interests were missing from the conversation, the Advisory Committee led targeted outreach campaigns to recruit representatives from sectors, such as private development, industry, and agriculture, and historically under-represented communities.

Workgroups met on a regular basis to address key questions and develop detailed recommendations. In total, nearly 40 meetings were held across the six workgroups and JLOW Advisory Committee between January 2020 and March 2021. Over 80 stakeholders from across the basin volunteered their time to support this effort.

Workgroup decisions were made using a consensus-based approach to promote transparency and understanding. Consensus does not mean unanimous agreement, but rather that everyone involved understands the issue, understands why people agree/disagree, is comfortable letting the decision move forward, or is in a very small minority who has helped everyone to understand why they disagree with the decision. For more information on the consensus process see Appendix B.

Each of the workgroups submitted draft recommendations to the JLOW Advisory Committee in January 2021. By March 2021, these recommendations were compiled into a unified document and opened for additional input and feedback. This report is the final compilation. An initial

draft was made available in an online format for review in April 2021 to enable all workgroup members and stakeholders to review and comment. Additional comments were incorporated into the plan, which was finalized in July 2021. This plan is intended to be a living document and will be updated and revised as new information, challenges, or opportunities arise. The JLOW Advisory Committee intends to submit this plan to the North Carolina Department of Environmental Quality (NCDEQ) in September 2021 for consideration as an alternative management approach.



## Appendix B – Consensus-Based Decision Making

Developing watershed management recommendations through an open and transparent process can be aided or hindered by its decision-making along the way. Knowing that the recommendations made by the workgroups and Advisory Committee may not be the final management decision for Jordan Lake Watershed, it is important to not only keep track of the history of decisions, but also the content of the minority opinions. Eventually JLOW recommendations may be subject to local and state government, as well as private industry and public institutions.

The JLOW Advisory Committee and workgroups have been using a consensus-based decision making, where all those involved accept the decision. Once the JLOW organization is formalized, the JLOW Executive Committee, Board of Directors, and work groups will also use this approach. Consensus does not mean unanimous agreement, but instead everyone involved understands the issue, understands why people agree/disagree, is comfortable letting the decision move forward, or is in a very small minority who has helped everyone to understand why they disagree with the decision.

JLOW Advisory Committee and workgroups used a 5-finger scale of agreement to move decisions forward and reported on the presence and content of minority opinions. Once the JLOW organization is formalized, the JLOW Executive Committee, Board of Directors, and work groups will also use this approach. Sharing minority opinions about decisions allows more of the issue to be understood by others in JLOW, the public, and potential decision makers. Requiring those disagreeing with a decision to help others understand “why” instills a level of transparency in the entire process.

The 5-finger scale:

1. Enthusiastic support – “I will champion the motion”
2. Modest support – “I like the motion”
3. Neutral position – “I can live with the motion but without enthusiasm”
4. No support – “I don’t like the motion and need to state my opposition”
5. STOP! Active resistance – “I will work against the motion”

Votes resulting in only 1s, 2s, or 3s allow the proposal or decision to move forward. Votes resulting in any 4s or 5s require the voter to explain why they voted a 4 or 5 and work toward suggesting an alternate proposal. All voters are asked to help others understand their votes and work toward a proposal that receives only votes of 1, 2, or 3. Proposals receiving votes of 5 by less than 20% of voters, will move forward with the requirement of including the alternate opinion of those voting 5.



### Five Finger Scale

A more abbreviated scale that allows a show of hands is a five finger scale. Participants show by the number of fingers they hold up their level of agreement to a given proposal:

- 1 Finger:** Endorsement (*I like it*)
- 2 Fingers:** Endorsement with a Minor Point of Contention (*Basically, I like it*)
- 3 Fingers:** Agreement with Reservations (*I can live with it*)
- 4 Fingers:** Formal Disagreement, but Willing to Go with Majority (*I want my disagreement noted in writing, but I'll support the decision*)
- 5 Fingers:** Block (*I won't support the proposal*)

If all members of the group express approval at levels 1, 2, 3 or 4, then they have reached consensus. If some members continue to disagree sufficiently to block the proposal (level 5), then consensus has not been reached. The challenge to the group is to see what interest must be addressed in the proposal to move people at 5 to 4 (or higher) and from 4 to 3 (or higher).

\*Graphic from Making Consensus Work, a Ruckelshaus Institute One-Page Document

## Appendix C – Examples of Project Types and Projects

Examples of Project Types and Projects
State-approved practices with established nutrient credits, including stormwater control measures
<p>Green infrastructure and best management practices that include water quality and quantity improvements</p> <ul style="list-style-type: none"><li>• Promote and encourage utilization of the Green Growth Toolbox, Low Impact Development (LID), and green stormwater infrastructure.</li><li>• Complete streets design that integrates green infrastructure.</li><li>• Enable adoption of local codes and ordinances that allow more widespread and thus more effective LID implementation (see Center for Watershed Protection’s Tackling Barriers to Green Infrastructure). This includes codifying requirements, wherever feasible, that green infrastructure be implemented before and during construction, which helps avoid the hefty costs and unavoidable site constraints of retrofits.</li></ul>
Stream and riparian buffer restoration and enhancement
<p>Water recovery and reuse</p> <ul style="list-style-type: none"><li>• Preserve potable water for potable use to extend community water supply by finding suitable alternative water supplies for non-potable uses (e.g., irrigation, boiler/steam, flushing toilets) and simultaneously save on treatment cost and reduce direct discharges to receiving waters</li><li>• Incentivize use of innovative practices such as institutional/higher-density residential scale urine separation and processing, expanded organics recycling and composting operations, and strategic planning and implementation of decentralized wastewater projects that integrate effluent back into the landscape for irrigation.</li><li>• Support master utility planning that moves away from isolated utility planning to multi-sector/multi-disciplinary master planning to integrate water practices that recover and reuse stormwater and wastewater close to the source to decrease asset management cost and support preserving potable water and use of innovative practices.</li></ul>
<p>Incentivize better site design through the use of site-fingerprinting (in-person site walkthroughs) in urban and rural land development and redevelopment</p> <ul style="list-style-type: none"><li>• Minimize site disturbance, clearing, and grading to the smallest area necessary for the particular phase of development. Encourage retention of topsoil before initial site</li></ul>

disturbance and redistribution of topsoil after construction is complete and during final landscaping.

- Preserve hydric soils, low areas, and densely vegetated native plant communities, and areas of high-quality native vegetation for rainfall intercept and stormwater runoff conveyance, filtration, and infiltration
- Conserve areas that provide natural hydrologic function including streams, wetlands, buffers, and floodplains
- Prioritize and incentivize green stormwater infrastructure in pre-development site preparation
- Implement stormwater volume and velocity requirements for construction discharge, including more rigorous training for and enforcement of sedimentation and erosion control practices during construction
- Counties can require builders and contractors to undergo training regarding improved site design

Supporting sustainable land management that maintains or enhances ecological function

- Prioritize local sourcing of agricultural products
- Incentivize conversion of existing impervious areas to improve moisture retention, infiltration, drought tolerance, or soil health
- Convert underutilized impervious surface to public open space amenities or urban agriculture systems
- Incentivize the use of cover crops, composting, no till cropping, rotational grazing, and other agricultural conservation practices that enhance ecosystem services
- Incentivize practices which improve or enhance carbon sequestration on rural, forestry, and agricultural lands
- Incentivize practices which eliminate in-stream disturbances on agricultural lands and improve waste storage, management, and application

Programmatic measures that measurably yield better watershed management

- Education of fertilizer application by businesses and homeowners
- Leverage and facilitate existing partnerships between local governments and watershed groups to better assess existing stormwater infrastructure and prioritize green stormwater practices.

<ul style="list-style-type: none"> <li>• Onsite wastewater treatment system inspection programs, maintenance tracking, repair, replacement, and pump-out programs, education of owners regarding proper maintenance, and training of professionals who inspect and repair onsite systems</li> <li>• Pet waste pickup education, waste management stations, and enforcement</li> </ul>
<p>Infrastructure asset management</p> <ul style="list-style-type: none"> <li>• Promote use of life-cycle cost assessment and triple bottom line-based decision support systems for planning, designing, constructing, operating, maintaining, and replacing water infrastructure to lower water infrastructure asset management cost burden.</li> <li>• Repair and replacement of leaky infrastructure, including replacement of combined stormwater and sewer systems to minimize risk of overflow during heavy rain events</li> <li>• Reduction of sanitary sewer overflows, including increased fines/penalties for repeat offenses and development of a rapid SSO notification system</li> <li>• Extension of sewer lines to areas with failing or minimally effective onsite systems or package plants</li> <li>• Reduce vulnerability of water infrastructure to hazardous threats (drought, flood, wind, fire).</li> </ul>
<p>Illicit discharge detection and elimination</p>
<p>Land conservation in high priority areas, including acquisition of development rights for existing agricultural operations, enrollment in voluntary agricultural districts, or farmland preservation</p>
<p>Projects which help maintain and increase tree canopy to improve stormwater management, including via protection of existing mature trees from the impacts of construction</p>
<p>Floodplain conservation, restoration, and reconnection</p>
<p>Urban catchment-level drainage stormwater management whereby large stormwater infrastructure retrofits can be implemented across large land areas to manage flow from older developed parcels where on-site treatment is constrained by space and/or expense</p>
<p>Rural stormwater control that demonstrates multiple co-benefits</p>
<p>Agricultural land and activity improvements</p>

- Technical and financial assistance for producers to enable and encourage acquisition of land development rights by third party entities (land trusts, farm policy task forces, etc.) to ensure that farming remains profitable in exurban transition zones
- Protection of Present Use Value taxation on properties participating in a One Water process
- Incentivize agricultural water reuse and enhancements of on-farm water storage capacity
- Incentivize local sourcing of manure fertilizer and encourage monitoring and digitizing of third-party manure hauler records and biosolids application
- Reduce the distance between sourcing and application of human and animal waste
- Incentivize local sourcing of animal feed within the watershed by helping to reduce the cost of local supplies to farmers
- Incentivize farm energy reduction and efficiency projects and electrification of farm equipment to lower operating costs, reduce farms' carbon footprints, and improve resiliency
- Create markets for local consumption of recovered waste, nutrient products, and agricultural commodities and help connect producers with local buyers to improve profitability of local farms. Provide financial or technical assistance to producers who source local markets, retail, restaurants, etc. This has the added benefit of reducing their overall carbon footprint.

Projects and activities implemented by individuals and entities to address other state and federal water quality regulations and objectives would be included (MS4 permits/Phase I or II communities, TMDLs on streams, etc.)

Greenways and parks with water quality and quantity benefits

Projects and activities that focus on flooding that have an associated water quality benefit

Coordinated planning efforts between DEQ, JLOW, and other partners at various scales to support integrated and adaptive watershed management

## Appendix D –Why Is JLOW Better?: The Benefits of JLOW Membership

- Developing a One Water strategy that provides multiple benefits to upstream and downstream communities, including assured supplies of clean water and flood reduction;
- Increasing collaboration in the watershed;
- Implementing cost-effective One Water projects in the watershed;
- Providing an alternative to compliance with the Jordan Lake Nutrient Management Strategy;
- Providing an alternative to compliance for source water protection requirements;
- Providing an alternative to compliance for MS-4 stormwater requirements;
- Managing and expanding the Upper Cape Fear River Basin Association’s (UCFRBA) monitoring program;
- Providing a mechanism to implement natural working lands and flood reduction strategies identified in NCDEQ’s June 2020 Climate Risk Assessment and Resilience Plan;
- Addressing risks identified by Triangle Regional Resilience Partnership’s Risk Assessment in October 2018 and developing projects to compete for funds from FEMA’s Building Resilient Infrastructure & Communities (BRIC) program (BRIC replaced FEMA’s Pre-Disaster Mitigation (PDM) Program);
- Implementing the [Jordan Lake Watershed Conservation Strategy](#) developed by Triangle Land Conservancy, the Triangle Community Foundation, and the Triangle J COG in 2019 in consultation with local governments in the watershed;
- Supporting implementation of the USDA NRCS-NCDA Regional Conservation Partnership Program (RCPP) for the Upper Cape Fear River Basin to store water and improve water quality. NRCS is providing \$8,500,000. NRCS funds must be matched 1:1;
- Ongoing engagement with the NC Policy Collaboratory and other universities on research.

# JLOW Strategy Prioritization Tool

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## Why Use this Tool?

**Triple-Bottom Line (TBL)** frameworks are used to compare environmental, societal, and economic benefits and to present them in an understandable manner to a wide range of decision makers and stakeholders. Preconceived ideas about costs, effectiveness, and liabilities often limit our acceptance of new strategies outside of those we usually use. Striving to evaluate all strategies with the same method helps us compare and choose the most sustainable strategies for all three areas: environmental, societal, and economic.

The JLOW Prioritization Tool helps spur conversation among decision makers. It will not tell you which strategy to implement but it helps compare strategies, highlight their strengths and weaknesses, and give the users reason to choose or fund one over another.

## How to Use this Tool

This tool is designed to foster conversation about water management strategies. A strategy may be a physical project to be installed or policy to enact. If we consider the usual decision-making process, it often does not include the necessary voices, such as stakeholders and even agencies. The perspective and knowledge of those who are typically not involved in the water resources decision making processes is therefore missing. This tool is designed to highlight those areas where further conversations are needed with others outside the room.

This tool is perhaps most informative when it is used to develop a comparison between two or more strategies and highlight the positive and negative attributes of each with respect to the TBL categories of environmental, societal, and economic. However, even if one strategy is being evaluated, the tool can help inform decisionmakers of positive and negative aspects for that strategy.



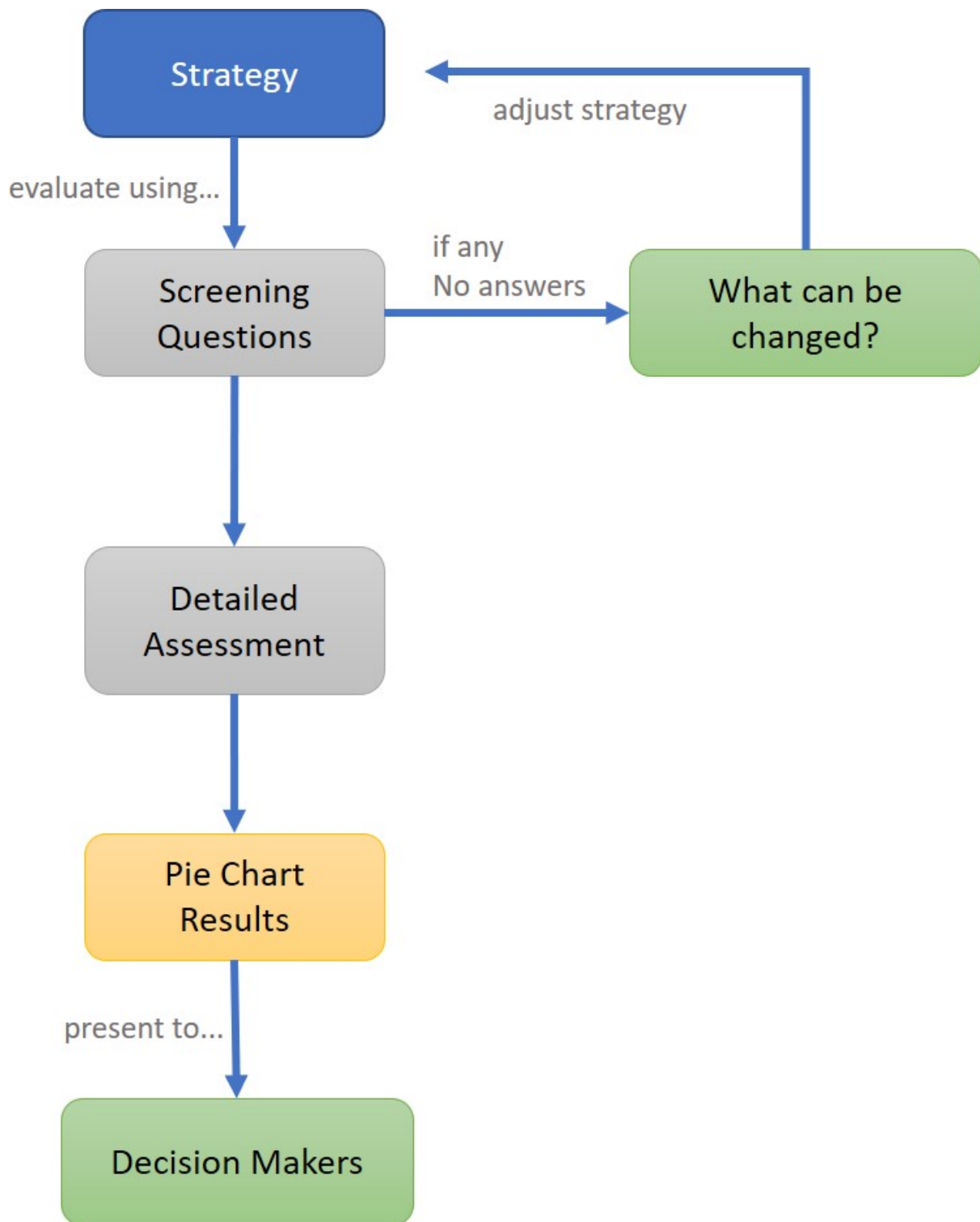
These *Screening Questions* are used to determine whether a strategy is a viable option, from a gut-check level. If it isn't, there is no need to continue to the *Detailed Assessment*. The goal at this point is to further develop the strategy so it can pass the Screening Questions. At some further strategic planning and implementation stage, a gut-check response is not good enough to fund a strategy, but at this early stage a gut-check decision by professionals is enough to allow a strategy to move forward. Initially, final screening questions will be established by the Executive Committee. Revisions to screening questions will be governed by organization by-laws approved by the JLOW Board of Directors.

Once a strategy has passed the Screening Questions, the Detailed Assessment is next. At first, this may be done by individuals but then evaluators must collectively agree how to score each question. Conversations among evaluators may identify knowledge gaps and the appropriate professionals to help answer key questions where current evaluator knowledge is lacking. While help may be needed, the objective of the process is again to record a gut-check response for each question where the user has at least enough information to support an answer. If much further information is needed to answer a question, then the strategy needs to go back to the Screening Questions for further research and development.

The result of the Detailed Assessment is a visual representation of a strategy's effect on 21 different factors. There are seven factors for each TBL category: environmental, societal, and economic. Completing the Detailed Assessment provides visual summary for comparing strategies. This is where the real decision-making work begins, comparing two or more strategies to decide which to implement in a situation where more than one strategy is being considered.

### **Tool Flow Chart**

Each strategy gets tested with the Screening Questions. If it does not pass the Screening Questions by receiving a YES answer to all five, the strategy goes back to the drawing board to be developed further. When a strategy passes all 5 Screening Questions it moves on to the Detailed Assessment. The results are used to help decision makers determine if this strategy is a worthwhile investment.



## JLOW Goals

Environmental: Improve the hydrological, ecological, and geological function of the Jordan Lake Watershed.

Societal/Social: Enhance the health, vitality, and well-being of the citizens and communities within the Jordan Lake Watershed.

Economic: Foster a robust, prosperous, and viable economy in the Jordan Lake Watershed.

## Screening Questions

For each strategy identified, answer the questions below. You may need to gather information to be able to answer the questions. Keep track of that information to be able to share it with others and return to it for justification. While you may need further information, this is intended to be a gut-check response. If you can answer YES to all 5 questions, proceed to the Detailed Assessment Questions.

### 1. Does the strategy align with JLOW Goals?

YES / NO

Consider the following:

- What is the purpose of the strategy and will it help provide environmental, societal, and economic benefits?
- What One Water behaviors are supported by the strategy? (See Targeted One Water Behaviors.)

### 2. Does the strategy provide an overall positive Return on Investment (ROI)?

YES / NO

Consider the following:

- For the effort, time, and money invested, does the strategy accomplish its objective and offer a positive ROI from a TBL and Full Life Cycle cost perspective? (Full Life Cycle costs include the initiation of the strategy, its operation and maintenance for the duration of its intended life cycle, and the replacement costs when its life cycle has ended.)

### 3. Social Weak Link Test: Have we addressed potential damage, confusion, anger, or opposition this strategy could create?

YES / NO

Consider the following:

- How might this strategy negatively affect quality of life?
- What social equity issues may arise from implementing this strategy?
- What conflicts or confusion might result from pursuing this strategy?
- Does this strategy help or hinder public safety?

**4. Environmental Weak Link Test: Does this strategy address the weakest aspect of each ecosystem process involved?**

YES / NO

Consider the following:

- Identify the weakest links of each ecosystem process involved in the strategy (i.e., hydrologic, mineral/nutrient, biological, energy).
  - For example, will the strategy affect hydrology on the site or in the watershed and if so, will it maintain or repair water storage, infiltration, evapotranspiration, and runoff volumes to natural (undisturbed) levels?
  - Will it affect soil health or stability, and if so, will it enhance or potentially degrade these features?
  - Will the strategy enhance or potentially degrade the health and diversity of the biological community at the site or in the watershed?
  - Will the strategy result in net zero emissions of carbon, sequestering carbon, or will it increase greenhouse gas emissions?

**5. Economic Weak Link Test: Will investment of time and money address the weakest aspect of the strategy's implementation?**

YES / NO

Consider the following:

- How can this strategy fail?
- Are negative economic impacts resulting from this strategy reduced or eliminated for all parties?

**Screening Question Scoring**

If you answered YES to all 5 Screening Questions, proceed to the Detailed Assessment Questions. If you answered NO to any of them, this highlights an area of the strategy that needs further discussion to determine if it can be amended successfully to advance or needs to be dismissed.

## Detailed Assessment

There are 21 Detailed Assessment factors, separated into the 3 TBL categories: Environmental, Social, and Economic.

The same question is asked about each factor: What is the effect on the factor? The question and factors are designed to foster conversation about how to improve the Jordan Lake Watershed, to help compare strategies, and highlight their strengths and weaknesses. Evaluators that are not familiar with a particular factor and how to consider it relative to triple bottom line goals are encouraged to use additional resources provided by JLOW.

**Question:** What is the effect on ‘the specific factor’?

**Answer choices:**

**Very Positive - Somewhat Positive - Not Applicable - Somewhat Negative - Very Negative**

Ideally, all strategies that have moved beyond the Screening Questions to the Detailed Assessment have a positive return on investment across all three categories: environmental, societal, and economic, and therefore support the JLOW Goals. The use of the terms “positive” and “negative” are directly related to whether the strategy is expected to move toward or away from the three JLOW goals. This is a qualitative process; it is subjective and dependent upon the evaluators. Different evaluators, especially from different organizations, can be expected to scale their responses differently with their use of the terms “Somewhat” and “Very”.

Not Applicable:

Choose if the strategy is not applicable to the factor.

For example, if a strategy has nothing at all to do with cultural resources and does not have the potential to affect it, positively or negatively, choose Not Applicable for #12, “What is the impact on Cultural Resources?”

Somewhat Positive and Very Positive:

Choose if a strategy positively affects the factor.

The choice between Somewhat Positive and Very Positive depends on the evaluator’s interpretation of how significantly the strategy contributes to the JLOW goals.

Somewhat Negative and Very Negative:

Choose if a strategy negatively affects the factor; does nothing to move toward the goals; moves away from the goals; or has the potential to improve the factor but does not.

The choice between Somewhat Negative and Very Negative depends on the evaluator’s interpretation of how significantly the strategy impacts the factor. A possible

consideration is how easy or hard would it be to include missing opportunities to positively affect the factor.

## **21 Detailed Assessment Factors**

### Economic Category

#### **1. What is the effect on Financial Savings?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Full Life Cycle Costs and Avoided Costs. Full Life Cycle Costs include implementation, operation, maintenance, and replacement. Avoided Costs include those that a more traditional strategy may incur but this strategy will not incur. For example, if reusing water meant not having to develop a new source of water or not having to treat water to potable standards, cost savings could be realized.

#### **2. What is the effect on Freshwater Availability?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Meeting future water supply needs for various sectors (public drinking water, energy, commercial, agriculture, etc.).

#### **3. What is the effect on Rural Economy?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Agriculture, forest industry, rural businesses.

#### **4. What is the effect on Revenue from Locally Sourced Resources?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Local agriculture, business, and industry. What is the ripple effect on local supply chains? For example, the strategy may create new jobs leading to an influx of people that spend money in the local economy for things like homes, food, entertainment, and supplies.

#### **5. What is the effect on Local Jobs?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Short-term and long-term employment opportunities.

#### **6. What is the effect on Local Tax Base?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Potential for adding revenue to the community through increased business operations, general population or workforce population. Another consideration may be the reduced need to provide future utilities to conserved land.

**7. What is the effect on Property Values?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Studies showing willingness to pay more to live and work in areas with amenities.

Social Category

**8. What is the effect on Community Education?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Will this strategy enhance education? with whom? to what degree?

**9. What is the effect on Sense-of-Place?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Relationships between people and spaces; what makes a place special to a community.

**10. What is the effect on Community Resilience?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Community's ability to identify vulnerabilities to health and well-being, and to plan for, prevent, withstand, respond to, and recover from severe events (flood, drought, climate change, wind, wildfire, pandemic, etc.).

**11. What is the effect on Vulnerable Populations?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Social, economic, or physical vulnerability; flooding; affordable housing; environmental equity or justice; transportation; access

**12. What is the effect on Cultural Resources?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Diversity, historic properties, cultural improvement.

**13. What is the effect on community connection to greenspace?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Natural open space, viewsheds, passive recreation space such as trails, woodlands (not actively developed recreation space such as ball fields.) The connection may only be visual.

**14. What is the effect on Alternative Transportation?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Mass transit, cycling, walking, traffic reduction.

Environmental Category

**15. What is the effect on Water Quality?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Aquatic life, pollution, sedimentation, nutrients, water chemistry.

**16. What is the effect on Stable and Healthy Soil?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Soil quality, soil erosion, bare soil.

**17. What is the effect on Hydrologic Function?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Stormwater runoff, flooding, water storage, infiltration, streamflow, habitat.

**18. What is the effect on Wildlife Habitat and Natural Plant Communities?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Habitat that supports aquatic and terrestrial wildlife and native plant communities.

Resources: [NCWRC Conservation Recommendations for Priority Terrestrial Wildlife Species and Habitats in NC](#)



### **19. What is the effect on Native Biodiversity?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Ecological communities.

### **20. What is the effect on Air Quality?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Odors, particulate matter, mercury, nitrogen, etc.

### **21. What is the effect on Carbon Sequestration?**

Very Positive - Somewhat Positive – n/a - Somewhat Negative - Very Negative

Considerations: Removing and storing carbon from the atmosphere.

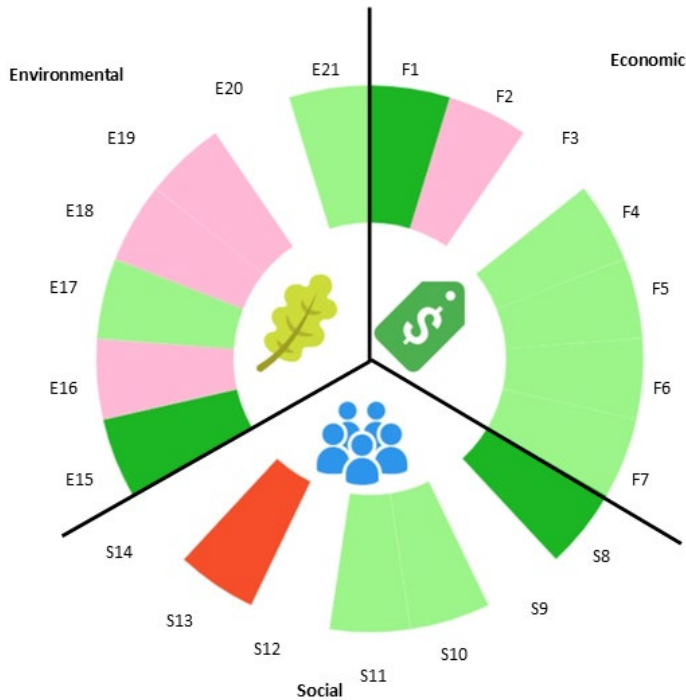
## Results

The results from the Detailed Assessment questions are visualized in a pie chart consisting of 21 sections, 1 for each factor. The objective is a visual representation of a strategy allowing the user to quickly view the results and compare multiple strategies. In addition to the visual, a numeric score for each TBL category is given based on assigning the following values.

- Very Positive +2
- Somewhat Positive +1
- Not Applicable 0
- Somewhat Negative -1
- Very Negative -2

The purpose of this tool is to spark further conversation on strategies and to help compare possible strategies across all three bottom lines. Projects that score low in one of the bottom lines, are encouraged to determine if revisions to the strategy are possible to increase the project score in the parameter with the lowest ranking.

## Example Detailed Assessment Results



	Very Positive
	Positive
	Not Applicable
	Negative
	Very Negative

<u>Economic</u>		<u>Social</u>		<u>Environmental</u>	
1. Financial Savings	2	8. Community Education	2	15. Water Quality	2
2. Freshwater Availability	-1	9. Sense of Place	0	16. Stable and Healthy Soil	-2
3. Rural Economy	0	10. Community Capacity	1	17. Hydrologic Function	1
4. Revenue from Locally Sourced Resources	1	11. Vulnerable Populations	1		-2
5. Jobs	1	12. Cultural Resources	0	18. Prime Habitat	-2
6. Local Tax Base	1	13. Undeveloped Land	-2	19. Native Biodiversity	-2
7. Property Values	1	14. Alternative Transportation	0	20. Air Quality	0
<b>Economic Score:</b>	<b>5</b>	<b>Social Score</b>	<b>2</b>	21. Carbon Sequestration	1
				<b>Environmental Score</b>	<b>-2</b>

## Appendix F – Performance Evaluation and Example Metrics

Factor	Considerations	Example Metrics	Resources/Notes
<b>ECONOMIC</b>			
<p>1. What is the effect on Financial Savings?</p>	<p>Considerations: Full Life Cycle Costs and Avoided Costs.</p> <p>Full Life Cycle Costs include implementation, operation, maintenance, and replacement.</p> <p>Avoided Costs include those that a more traditional strategy may incur but this strategy will not incur. For example, if reusing water meant not having to develop a new source of water or not having to treat water to potable standards, cost savings could be realized.</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• Full Life Cycle Cost (all projects/strategies) typically includes first cost and maintenance costs over time, and have a pre-defined length of project “life”:</li> </ul> <p>Option A: \$15,500 over 15 years.</p> <p>Option B: \$30,000 over 15 years.</p> <ul style="list-style-type: none"> <li>• Avoided Costs (treatment, repair, new potable reservoir, damage avoidance) savings through cost sharing)</li> </ul> <p><u>Watershed/JLOW Scale:</u></p> <ul style="list-style-type: none"> <li>• Total avoided cost (sum of strategies) on annual and five-year basis</li> </ul>	<p>All projects and strategies should have life cycle cost instead of capital cost only so that alternatives can be compared directly and with full cost in mind.</p> <p>Example mgmt. areas for cost avoidance:</p> <ul style="list-style-type: none"> <li>- Water treatment</li> <li>- Wastewater treatment</li> <li>- Stormwater retrofit</li> <li>- Collection systems</li> <li>- Distribution systems</li> <li>- Reservoir construction</li> <li>- Flood risk reduction</li> <li>- Integrated planning</li> <li>- Materials/supplies</li> <li>- Equipment</li> <li>- Production cost</li> </ul>
<p>2.What is the effect on Freshwater Availability?</p>	<p>Considerations: Meeting future water supply needs to support economic growth. In particular, applying One</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• Volume (MGD) of wastewater converted to water supply</li> <li>• Volume (MGD) of</li> </ul>	<p>Project/Strategy designs for recovery and reuse would provide initial estimates. Annual numbers may be available in future</p>

Factor	Considerations	Example Metrics	Resources/Notes
	<p>Water principle of treating wastewater and stormwater as resources such that every gallon recovered and reused is one less gallon of potable water from reservoir or groundwater source that can be saved for potable use only. Also, consider impacts on baseflows and groundwater table of infiltration/recharge strategies.</p>	<p>stormwater converted to water supply</p> <p><u>Watershed/JLOW Scale:</u></p> <ul style="list-style-type: none"> <li>• Total volumes provided by wastewater (WW) and stormwater (SW)</li> <li>• Years postponed for new water supply reservoir</li> <li>• Annual probability of water scarcity</li> <li>• Water conservation plans implemented</li> </ul>	<p>from operations records.</p> <p>Estimate of years postponed for new or expanded reservoir might be based on demand forecast compared with volume provided by recovered WW and SW.</p> <p>Water scarcity can be tied to State drought monitoring program.</p>
<p>3.What is the effect on Rural Economy?</p>	<p>Considerations: Agriculture, rural businesses.</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• Permanent and temporary jobs added</li> <li>• Revenue or tax base impact</li> </ul> <p><u>Watershed/JLOW Scale:</u></p> <ul style="list-style-type: none"> <li>• Health of agriculture – NCDAs calculates on statewide basis</li> <li>• NC Dept. of Commerce annual statistics for population growth, median income, unemployment, adjusted property tax base per capita</li> </ul>	<p>Potential partners include Governor’s Hometown Strong program and NC Department of Commerce, and NC Dept. of Agriculture.</p> <p><a href="#">NC Commerce: Data, Tools &amp; Reports</a></p> <p><a href="#">NC Hometown Strong</a></p> <p>County and municipal input</p>

Factor	Considerations	Example Metrics	Resources/Notes
4. What is the effect on Revenue from Locally Sourced Resources?	Considerations: Local agriculture, business, and industry. What is the ripple effect on local supply chains? For example, the strategy may create new jobs leading to an influx of people that spend money in the local economy for things like homes, food, entertainment, and supplies.	NC Department of Commerce metrics  U.S. Bureau of Economic Analysis	<a href="#">NC Commerce: Data, Tools &amp; Reports</a>  <a href="#">U.S. Bureau of Economic Analysis (BEA)</a>
5. What is the effect on Local Jobs?	Considerations: Short-term and long-term employment opportunities.	Multiple metrics maintained by the State (work with them to establish best ones)	Partner with NC Dept. of Commerce  <a href="#">NC Commerce: Data, Tools &amp; Reports</a>
6. What is the effect on Local Tax Base?	Considerations: Potential for adding revenue to the community through increased business operations, general population or workforce population. Another consideration may be the reduced need to provide future utilities to conserved land.	Multiple metrics maintained by the State (work with them to establish best ones)	Partner with NC Dept. of Commerce  <a href="#">NC Commerce: Data, Tools &amp; Reports</a>
7. What is the effect on Property	Considerations: Studies showing willingness to pay more to live and	Multiple metrics maintained by the State (work with them to	Partner with NC Dept. of Commerce  <a href="#">NC Commerce: Data,</a>

Factor	Considerations	Example Metrics	Resources/Notes
Values?	work in areas with amenities.	establish best ones)	<a href="#">Tools &amp; Reports</a>  <a href="#">GSI-Impact-on-Property-Values.pdf (cnt.org)</a>  <a href="#">"Impact of Green Infrastructure on Property Values within the Milwaukee" by Catherine Madison (uwm.edu)</a>
<b>SOCIAL</b>			
8. What is the effect on Community Education?	Considerations: Will this strategy enhance education? with whom? to what degree?	<u>Watershed/JLOW Scale:</u> <ul style="list-style-type: none"> <li>• Number of projects/strategies with community outreach component</li> <li>• Number of hits on JLOW website education page</li> <li>• Number of community partners (or JLOW tracked interactions with community groups)</li> <li>• Public dollars to support healthy ecosystems</li> </ul>	Examples include: <ul style="list-style-type: none"> <li>- site scale projects with signage or interactive learning</li> <li>- articles and videos on JLOW website</li> <li>- public events including site tours, open houses, field events, school events</li> <li>- Active watershed groups</li> </ul>
9. What is the effect on Sense-of-Place?	Considerations: Relationships between people and spaces; what makes a place special to a community.	<u>Project/Strategy Scale:</u> <ul style="list-style-type: none"> <li>• Post-implementation survey response (for select projects) <ul style="list-style-type: none"> <li>- Local distinctiveness</li> <li>- Uses</li> <li>- Expenditures</li> <li>- Sense of civic pride</li> </ul> </li> </ul>	Survey capability dependent on JLOW resources or individual member in-kind contributions

Factor	Considerations	Example Metrics	Resources/Notes
		<ul style="list-style-type: none"> <li>- Quality of life</li> <li>- Farmers markets/local food</li> </ul> <u>Watershed/JLOW Scale:</u> <ul style="list-style-type: none"> <li>• Periodic survey of JLOW members</li> </ul>	
10. What is the effect on Community Resilience?	<p>Considerations: Community's ability to identify vulnerabilities to health and well-being, and to plan for, prevent, withstand, respond to, and recover from severe events (flood, drought, climate change, wind, wildfire, pandemic, etc.).</p>	<u>Watershed/JLOW Scale:</u> <ul style="list-style-type: none"> <li>• Consider Community Resilience Benchmarks (CRB) of ANCR</li> <li>• Flood damage risk reduction (NC DPS – Office of Recovery &amp; Resiliency; FEMA CRS)</li> <li>• Annual probability of water scarcity</li> </ul>	<p>ANCR is the Alliance for National &amp; Community Resilience; consider partnering with ANCR as they are seeking pilot communities for further collaboration and benchmark development</p>
11. What is the effect on Vulnerable Populations?	<p>Considerations: Social, economic, or physical vulnerability; flooding; affordable housing; environmental equity or justice.</p>	<u>Project/Strategy Scale:</u> <ul style="list-style-type: none"> <li>• Billing rates (where applicable) – ratepayer affordability (EFC method)</li> <li>• Environmental Justice metrics: <ul style="list-style-type: none"> <li>- Proximity to environmental hazards</li> <li>- Proximity to pollution</li> <li>- Air quality</li> <li>- Access to transportation</li> <li>- Access to health food</li> <li>- Equity of public expenditure</li> </ul> </li> </ul>	<p><a href="#">Technical Guidance for Assessing Environmental Justice in Regulatory Analysis - April 2016 (epa.gov)</a></p> <p><a href="#">measuring environmental justice</a></p>

Factor	Considerations	Example Metrics	Resources/Notes
		<ul style="list-style-type: none"> <li>- Displacement &amp; gentrification</li> <li>- Inclusion &amp; measures of tolerance</li> <li>- Access to nature</li> <li>- Access to parks &amp; open space</li> <li>- Noise</li> <li>- Visual quality</li> </ul> <p><u>Watershed/JLOW Scale:</u></p> <ul style="list-style-type: none"> <li>• (variations of above metrics compiled at watershed scale)</li> </ul>	
12. What is the effect on Cultural Resources?	Considerations: Diversity, historic properties, cultural improvement.	<p>For Project and Watershed scale assessments, consider post implementation surveys:</p> <ul style="list-style-type: none"> <li>• Elected officials, businesses, and residents</li> <li>• Use social benefit measures: <ul style="list-style-type: none"> <li>- Infrastructure cost savings (reuse and reduced sprawl by preserving buildings)</li> <li>- Brownfield redevelopment</li> <li>- Education improvements</li> <li>- Social inclusion</li> <li>- Community stability (e.g., length of housing tenure)</li> <li>- Crime incidence</li> <li>- Health &amp; well-being</li> <li>- Attractiveness to visitors</li> </ul> </li> </ul>	Survey capability dependent on JLOW resources or individual member in-kind contributions



Factor	Considerations	Example Metrics	Resources/Notes
<p>13. What is the effect on community connection to greenspace?</p>	<p>Considerations: Natural open space, viewsheds, passive recreation space such as trails, woodlands (not actively developed recreation space such as ball fields.) The connection may only be visual.</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• Wetland acreage</li> <li>• Land conservation – acres preserved</li> <li>• Farm preservation – acres preserved</li> <li>• Parks acreage (perhaps per capita of regional unit; or distance for citizens in the watershed to access and interact with public open space)</li> <li>• Increased vegetative coverage – acres</li> </ul> <p><u>Watershed/JLOW Scale:</u> (Sum of the above categories at watershed scale)</p>	<p>Dependent on JLOW data base development and maintenance</p> <p>Potential Conservation Score available (noted in Monitoring workgroup recommendations)</p>
<p>14. What is the effect on Alternative Transportation?</p>	<p>Considerations: Mass transit, cycling, walking, traffic reduction.</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• Post-implementation survey response (for select projects such as green &amp; complete streets)</li> </ul> <p><u>Watershed/JLOW Scale:</u> (Sum of the above such projects at watershed scale)</p>	

Factor	Considerations	Example Metrics	Resources/Notes
<b>ENVIRONMENTAL</b>			
<p>15. What is the effect on Water Quality?</p>	<p>Considerations: Aquatic life, pollution, sedimentation, nutrients, water chemistry.</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• If project/strategy is large enough, then biologic community response will be helpful long-term indicator</li> <li>• Intermediate measures: <ul style="list-style-type: none"> <li>- lbs./tons of pollutant load reduced or avoided</li> <li>- Gallons of WW/SW recovered and reused rather than discharged to surface waters (this could then be translated to lbs./tons of pollutant load reduced)</li> <li>- Consider similar metrics to those below for soil health where inputs by holistic management land managers are being tracked (see Factor 16)</li> </ul> </li> </ul> <p><u>Watershed/JLOW Scale:</u></p> <ul style="list-style-type: none"> <li>• Long term would be biologic indices collected by NCDEQ and universities</li> </ul>	<p>Note: the goal should be to look for systemic impacts and indicators related to root cause</p>

Factor	Considerations	Example Metrics	Resources/Notes
<p>16. What is the effect on Stable and Healthy Soil?</p>	<p>Considerations: Soil quality, soil erosion, bare soil.</p>	<p><u>Project/Strategy Scale:</u>            (Short-term metrics (measured/tracked by implementers):</p> <ul style="list-style-type: none"> <li>• Acres of farmland under holistic management approach (growing soil agreements for carbon credits; local food production by certified HM farmers)</li> <li>- lbs./ton of imported food avoided</li> <li>- lbs./ton of imported/manufactured fertilizer avoided</li> <li>- lbs./ton of load avoided from stormwater and wastewater recovery and reuse</li> <li>- lbs./tons of load avoided by runoff volume reduction</li> </ul> <p><u>Watershed/JLOW Scale:</u></p> <ul style="list-style-type: none"> <li>• Long-term metrics (measured by S&amp;W Extension, USGS, university researchers)</li> <li>- Trends in soil health</li> <li>- Trends in water quality monitoring data where extensive practices implemented</li> </ul>	<p>NOTE: metrics should not be for isolated BMPs but for actual soil health measures that reflect cumulative impact (i.e., similar to the way that biologic indices composite water quality impacts). The business model for trained implementers of holistic management for farming is to track inputs of fertilizer, pesticides, herbicides, etc. and soil health parameters; thus, implementers could be partnered with JLOW to provide this information to a JLOW centralized database</p>

Factor	Considerations	Example Metrics	Resources/Notes
17. What is the effect on Hydrologic Function?	<p>Considerations: Stormwater runoff, flooding, water storage, infiltration, streamflow, habitat.</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• Short-term metrics (measured/tracked by implementers):</li> <li>- acres of developed land or retrofitted land where volume matching to pre-development (wooded) condition is achieved for 90th percentile storm</li> <li>- Cubic feet (CF) of runoff volume reduction and peak flow reduction documented by GSI in urban development and redevelopment (for example, using Storm-EZ application for site design)</li> <li>- CF of runoff volume reduction and peak flow reduction documented for stormwater harvesting and reuse</li> <li>- CF of stormwater harvesting or reclaimed wastewater recharging groundwater aquifers</li> <li>- Acres of reconnected floodplain</li> <li>- Stream channel profile restoration –</li> </ul>	<p>Note: while indicators such as disconnected imperviousness or impervious surface reduction are important, they don't reflect a systemic measure; we really need to understand how the actions help mimic the natural hydrologic cycle. This means reflecting runoff volume, infiltration rates, etc.</p>

Factor	Considerations	Example Metrics	Resources/Notes
		<p>linear feet</p> <ul style="list-style-type: none"> <li>• Long-term metrics (measured by USGS, university researchers):</li> <li>- Draw on strengths of partners using experts for actual long-term environmental monitoring</li> <li>- Stream gaging profiles for seasonal flow statistics and hydrographs</li> <li>- GW table profiles</li> </ul> <p><u>Watershed/JLOW Scale:</u></p> <ul style="list-style-type: none"> <li>• Long-term metrics (measured by USGS, university researchers):</li> <li>- Draw on strengths of partners using experts for actual long-term environmental monitoring</li> <li>- Stream gaging profiles for seasonal flow statistics and hydrographs</li> <li>- Cumulative change in diversion of flows from the watershed</li> <li>- GW table profiles</li> </ul>	

Factor	Considerations	Example Metrics	Resources/Notes
18. What is the effect on Wildlife Habitat and Natural Plant Communities ?	Considerations: Habitat that supports aquatic and terrestrial wildlife and native plant communities.	<u>Project/Strategy Scale:</u> <ul style="list-style-type: none"> <li>• Wetland acreage (net)</li> <li>• Acres of revegetated/reforested land (net)</li> </ul> <u>Watershed/JLOW Scale:</u> (Sum of the above such projects at watershed scale)	<a href="#">NCWRC Conservation Recommendations for Priority Terrestrial Wildlife Species and Habitats in NC</a>
19. What is the effect on Native Biodiversity?	Considerations: Ecological communities.	<u>Project/Strategy Scale:</u> <ul style="list-style-type: none"> <li>• Wetland acreage (net)</li> <li>• Acres of connected riparian corridor and habitat corridor (net)</li> </ul> <u>Watershed/JLOW Scale:</u> (Sum of the above such projects at watershed scale) <ul style="list-style-type: none"> <li>• Long term would be biologic indices collected by NCDEQ and University researchers</li> </ul>	
20. What is the effect on Air Quality?	Considerations: Odors, particulate matter, mercury, nitrogen, etc.	<u>Project/Strategy Scale:</u> <ul style="list-style-type: none"> <li>• lbs. of air pollution removed (net)</li> <li>• ppm of CO2 emissions removed (net)</li> </ul> <u>Watershed/JLOW Scale:</u> (Sum of the above such projects at watershed scale)	Need help from air experts here

Factor	Considerations	Example Metrics	Resources/Notes
<p>21. What is the effect on Carbon Sequestration?</p>	<p>Considerations: Removing and storing carbon from the atmosphere.</p>	<p><u>Project/Strategy Scale:</u></p> <ul style="list-style-type: none"> <li>• lbs. of carbon sequestered</li> <li>• Kw of energy required to operate &amp; maintain project/strategy (i.e., energy consumption - reduced energy consumption due to reduced water treatment and pumping for example)</li> </ul> <p><u>Watershed/JLOW Scale:</u> (Sum of the above such projects at watershed scale)</p>	<p>Idea is to look for projects and strategies that move toward net zero energy usage; this is a long-term goal for the utility industry</p> <p>Thus projects/strategies that use less energy to pump and treat water/ wastewater should rise to the top</p>

## Appendix G– Key Outstanding Questions from Stakeholders

- Choosing Strategies Section:
  - Who are the evaluators referenced in the document? Will they reflect diverse backgrounds that could speak to social and economic benefits?
  - At what scale and scope is an analysis supposed to occur?
    - Concerns:
      - Extremely complicated analyses are embedded within these relatively simple questions and require specialized technical knowledge to answer. Foresee issues with evaluators being able to answer these questions accurately, efficiently and cost-effectively.
      - If evaluation is meant to occur at smaller areas and within shorter time period considerations, this may impact the ability to accurately assess an activity that may have temporary short-term negative impacts, but long-term net positive benefits.
  - How is the best possible outcome selected if a particular strategy does not achieve a net positive on all three bottom lines? Is the highest score used to select best possible outcome? For situations where two strategies score very similarly, what is the tie-breaking procedure?
  - Are any of the factors listed designed to weigh more than others? Who decides what criteria are used for selecting and evaluating practices? How will additions or revisions to screening questions be processed?
    - Concern: Those controlling criteria and ranking methodologies will be able to manipulate results.
  - How is Return of Investment (ROI) calculated for subjective and qualitative criteria such as sense-of-place and cultural resources?
  - Is it required for evaluators to use the designed Strategy Tool when assessing potential project?
    - Concern: The low-threshold of a 'gut-check' for using the Evaluation Tool may result in screening questions not taken seriously by stakeholders using the Evaluation Tool to compare strategies.
- Dues and Implementation Funding Section:
  - For budgeting purposes, what would JLOW administration include?
  - Would the JLOW Admin group administer (select, evaluate, and implement) projects or would individual jurisdictions/partners implement projects? Or would it be a combination?
- JLOW Governance:
  - Is legislation required to create JLOW and give it the authority proposed in this document?
  - What group will draft JLOW bylaws and governance structure and how will organization by-laws be ratified?
  - Which interests and geographies will have seats on the Board? How many seats will there be?



- Timeline:
  - Why was the current timeline chosen to form a 501c3 nonprofit and finance the organization? There is a concern that the timeline may be too ambitious.
- What obligations does an entity or business have if they do not join JLOW? If JLOW members are ultimately not regulatorily required to “reduce nutrients” through this organization, then what is the incentive to share in the cost?

## Appendix H– Resources and Case Studies for One Water and Integrated Water Resource Management

1. [One Water Roadmap: The Sustainable Management of Life’s Most Essential Resource](#), US Water Alliance, 2016.
2. [Integrated Water Resource Management](#), American Planning Association’s Knowledgebase Collection. Website.
3. [Case Studies in Integrated Water Resources Management: From Local Stewardship to National Vision](#). American Water Resources Association. Editors B. Bateman and R. Rancier. November 2012.
4. [Integrated Water Management Resource Center](#), American Rivers. Website.