**Phase 2**

**One Water Plan for**

**Integrated Management and Leadership**

**A Project of the Spring Creek Watershed Commission**



Prepared for the Spring Creek Watershed Commission

By

Headwaters Charitable Trust

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**Draft 2019**

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**Spring Creek Watershed Phase 2**

**Our One Water Plan for Integrated Watershed Management and Leadership**

**Introduction:**

Early in 2018, the Spring Creek Watershed Commission (SCWC) embarked on Phase 2 of the Spring Creek Watershed Management Plan. The approach started with hiring a facilitator to lead the process. The facilitator selection was based on criteria of: peer review, impartiality, credibility, leadership skills, working knowledge of the Spring Creek Watershed, the Watershed Commission and the Association, local government, non-profits organizations and familiarity with Penn State University. Several entities were considered, and Headwaters Charitable Trust was selected to move the planning effort forward. Additionally, the Commission contracted with a communications manager to organize information, revise the website and coordinate communication between partners and participants.

**Watershed Description**

The Spring Creek Watershed encompasses 146 square miles of surface water and 175 miles of groundwater in 14 municipalities and is a tributary to Bald Eagle Creek in the West Branch Susquehanna River Basin. Most of the watershed is classified as a high quality cold water fishery with several tributaries classified as a cold water fishery.

The main water supply source is the Spring Creek Aquifer. This Aquifer is comprised of limestone and dolomite rocks that underlie Nittany Valley. 86% of Spring Creek’s flow is groundwater discharge which supports the stream base flow. Recharge to replenish the aquifer amounts to about one third of the 38 inches of average annual precipitation. The remaining two thirds either runs off or goes back into the atmosphere via evapotranspiration as part of the hydrologic cycle. About 50 per cent of recharge drains from surrounding mountain ridges. There are seven major springs that each produce more than 1 million gallons per day (mgd) of clean, cold water, as well. One notable spring is the Bellefonte Big Spring which produces approximately 15 (mgd) of natural ground water for residents, businesses and industry.

Land use in the watershed in 2014 was 38% forest, 29% agriculture, 26% developed and 6% vacant (quarries, etc.). Population in the watershed as of 2017 is estimated at 130,748 according to the US Census Bureau.

**Current Watershed Challenges**

Watershed challenges can encompass many different aspects from environmental, socio economic, watershed scale, utility management, land use, political, population growth and climate change factors. The water quality challenges are well documented and include siltation from stormwater runoff; organic enrichment and metals from industrial point sources; thermal modifications from golf courses, impervious surfaces and agriculture.

According to the Susquehanna River Basin Commission groundwater resources maybe approaching or exceeding the sustainable limit of the resource, defined as the average annual baseflow available in the watershed during a 1-in-10-year drought. The State College area is undergoing rapid growth and the nature of the growth has changed from residential and industrial to dominantly residential, educational, and commercial, with a more diverse employment base. On average the population in the watershed has increase by 6.5% between 2010 and 2017 partly due to the Benner prison which increased the population in Benner Township by 50%. Other high growth areas include Harris Township 19%; Ferguson Township 9% and College Township 7%.

Municipal water use is currently drawn from several widely scattered well fields located in headwater areas but is discharged from a single wastewater treatment plant located downstream. This results in the loss of flow in headwater areas upstream of the treated wastewater discharge. Also, some of the water is being withdrawn from the headwaters of the Spruce Creek Watershed, and that water is discharged to the Spring Creek Watershed. This has resulted in diminished flow, and the loss of perennial flow in streams and springs in the Spruce Creek headwaters.

The “Living Filter” project, developed by the Pennsylvania State University, utilizes the natural filtration and recharge capability of native soils to return treated wastewater to the regional aquifer. The University Area Joint Authority provides high quality treatment and has established a beneficial reuse program. Similar opportunities to return water in the headwaters of the Spring Creek and Spruce Creek Watersheds would help restore natural stream and spring flow in headwater areas.

Municipal well fields contain multiple high capacity wells. These are generally located on fracture traces, which often coincide with stream valleys. The fracture traces are desirable sites for high capacity wells because of the intensive karst conduit development along them. The streams in these valleys have naturally gaining and loosing reaches, their behavior often varying seasonally. The drawdown from the municipal wells interacts with the natural flow system, causing additional loosing reaches, increased flow loss, and additional instream sinkholes.

From a management perspective, there are many players making decisions or providing information addressing water challenges. This fragmentation is probably the biggest challenge. Currently, there are six separate water authorities comprising two water/sewer authorities and 3 sewer authorities. Additional oversight includes two state agencies, one interstate agency, and one federal agency all working to manage water in the Spring Creek watershed, oftentimes in an unorganized manner. Furthermore, there are 14 municipalities, 4 regional planning commissions along with the Centre County Planning Commission and the Centre County Metropolitan Planning Organization addressing land use and transportation that impacts water. Of the 14 municipalities, 6 including State College Borough, Ferguson, Harris, College, Patton Townships and Penn State University must adhere to MS4 permit requirements. Polluted stormwater runoff is commonly transported through Municipal Separate Storm Sewer Systems (MS4s), from which it is often discharged untreated into local water bodies. To prevent harmful pollutants from being washed or dumped into an MS4, operators must obtain a National Pollutant Discharge Elimination System (NPDES) permit and develop a stormwater management program. The table below illustrates the complexity of coordination for water management. Coordination among the municipalities, planning agencies, water utilities, regulators, Penn State and local businesses is imperative.

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| --- | --- |
| **Water Suppliers** | **Wastewater** |
| State College Borough Water Authority | University Area Joint Authority |
| Bellefonte Borough Water and Sewer Authority | Spring Benner Walker Joint Authority |
| College Township Water Authority | Centre Potter Sewer Authority |
| Benner Township Water Authority | Regional and County Planning |
| PSU (Water and Sewer) | Centre Region Planning |
| Walker Township Water Association | Nittany Valley Joint Planning Commission |
| Milesburg Borough Water Authority | Lower Bald Eagle Planning |
| Centre Hall Borough Water Authority | Penns Valley Region Planning |
| Mid-Centre County Authority | Centre County Planning Commission and Transportation MPO |
| Regulatory Agencies | PA Department of Environmental Protection |
| Environmental Protection Agency | Susquehanna River Basin Commission |

Pennsylvania’s water law also creates a challenge. Sources of PA water law date back many years and includes common law, interstate compacts regulating some parts of the Commonwealth, and statutes targeting specific water topics. Both surface and groundwater are legally managed separately under riparian law. However, PA water law is not well designed for future demands and emergency situations. Act 220, Pennsylvania’s State Water Plan, tries to address this issue.

**Phase 1 Overview**

Phase 1 of the Spring Creek Watershed Management Plan entitled “Our Challenges and a Direction for the Future” was completed in 2003 and primarily focused on environmental challenges and solutions. The Phase 1 report documented 17 watershed plans and studies specific to the Spring Creek Watershed and included an appendix of 39 additional watershed plans and integrated water resource plans from other regions in Pennsylvania and nationally. A Challenge and Solutions Matrix outlined 4 major focus areas; surface water, ground water, water supply, and land use/water resource planning.

In 1998, the Water Resource Monitoring Project started as part of the strategic planning effort of the Spring Creek Watershed Community which includes over 2,000 broad based stakeholders to promote actions that protect and enhance the quality of life, the environment and the economy throughout the watershed. Annual reports have been developed through the resource monitoring project from 1999 to current year *(http://springcreekmonitoring.org).*

Additionally, the Spring Creek Watershed Commission which has been meeting the third Wednesday of every month since 1997 began establishing environmental controls to address some of the identified issues in the Phase 1 plan. (*Appendix 2-Spring Creek Watershed- Environmental Controls)*

**Transitioning to A One Water Approach for Integrated Management**

The concept of “One Water” has been around for several years. The One Water approach views all water—drinking water, wastewater, stormwater, grey water, watersheds and more—as resources that must be managed holistically and sustainably. Doing so builds strong economies, vibrant communities, and healthy environments.

Governance, regulations, finance, culture, and industry knowledge/capacity are often cited as barriers to achieving integrated water management and innovation in water technologies. In addition, findings indicate that the lack of a common vision, political will, urgency, systems thinking, and lack of ability to collect and share data are underlying causes that can potentially stagnate an integrated management approach. The One Water approach relies heavily on partnerships and inclusion, recognizing that real progress will only be made when all stakeholders have a seat at the table.

**One Water manages water resources for long-term resilience and reliability to meet both community and ecosystem needs**



In the spring of 2018 to initiate the One Water planning process, the Spring Creek Watershed Commission worked with Penn State law students through the “Mediation of Environmental and Public Conflicts” course, and the Sustainable Communities Program to host an open public forum which stakeholders shared their thoughts on issues affecting the watershed and opportunities to address issues and holistic management. Over 100 people attended the forum. As an outcome of the public dialogue, substantive sector-based issues, process related issues, a vison for the future, and opportunities for integrated water resource management were identified. *(https://www.springcreekwatershedcommission.org/april-public-forum).*

The Forum helped set the stage for Phase 2 which is taking a more proactive approach through establishing integration of management by focusing on the natural water cycle as an integrated system, recognizing the interconnectedness of surface water and groundwater supply, stormwater, wastewater, and energy. Rooted in a “One Water” approach as promoted by the US Water Alliance, the outcome of integrated management is to break down silos of how water is currently managed ultimately creating collaboration among local municipalities, state and federal agencies, water utilities, business and industry leaders, Penn State University, nonprofits and residents. While the focus is WATER, the goals lead to a thriving local economy, community vitality and healthy ecosystem which are the pillars from phase 1. Phase 2 builds the framework for One Water by establishing primary goals with an outcome-based approach. **Phase 3 will document the road map with specific actions and milestones to achieve outcomes identified in Phase 2 over a determined time period.**

In July 2018, Spring Creek Watershed Commission hosted a second public forum which provided an overview of a One Water approach and tasked the over 90 participants to envision “What would the **ideal** Spring Creek Watershed look like? *(Appendix 1 - Stakeholder vison comments)*.

In December 2018, the Watershed Commission hosted a third public forum to review the planning process, goals, objectives and desired outcomes. Participants were then asked to respond to 4 questions that address how the plan should be implemented. *(Appendix 2 – Stakeholder Implementation comments)*

The One Water approach relies on this vison and how decisions will be made through the establishment of “Guiding Principles”. The Spring Creek Watershed Commission which was established in 1997 had already drafted their mission statement but hadn’t included a vison for the watershed, value statements or guiding principles for decision making. These are included in Phase 2 plan update.

**Spring Creek One Water Plan**

**Vison Statement**

The vision for the Spring Creek Watershed is an integrated management of water resources in an environmentally, economically, and socially beneficial manner. This will foster a vibrant, prosperous watershed where natural and human communities thrive, where citizens embrace the value of our

assets and sustain our resources now and for future generations. This vison, developed collaboratively with stakeholders, is accomplished through the mission of the Spring Creek Watershed Commission.

**Spring Creek Watershed Commission**

**One Water Plan**

**Mission Statement**

* To implement the long-range vision for the watershed that represents a consensus of thoughts

and ideals that are commonly shared by the people of the Spring Creek Watershed.

* To establish a leadership role within the watershed to advance and coordinate projects and programs that are consistent with the long-range vision of the Spring Creek Watershed, including conservation and enhancement of the exceptional wild trout resources it supports.
* To develop a long-range comprehensive Integrated Watershed Management Plan that relies on quality scientific data and a program of meaningful associated projects to conserve and enhance the quality of life within the Spring Creek Watershed.

**Spring Creek Watershed Commission**

**One Water Plan Value Statements**

Spring Creek’s One Water Plan values are the core principles that the watershed communities’ governments, residents, water utilities, businesses and industry wish to maintain. They must be acknowledged and honored to ensure that change and development occur in accordance with these core principles.

*1. Recognizes that the Spring Creek Watershed is worthy of conservation and careful stewardship.*

*2. Conserve Spring Creek’s cold water ecosystem including its exceptional wild trout fishery.*

*3. Provides a clear visual image of the watershed community that reflects the highest standards of design quality for public and private commercial, residential, institutional and industrial development in Spring Creek resulting in the conservation of water and enhancement of its natural beauty, natural features and cultural heritage.*

*4. Promote buildings and public infrastructure development that are practical, sustainable, and in harmony with the environment and surrounding landscape.*

*5. Fosters a feeling of community spirit, community identity, and promotes a sense of full citizen participation, guaranteeing an opportunity for everyone to share in the duties and responsibilities that benefit the Spring Creek Watershed.*

*6. Provides cultural, recreational, and educational opportunities for the residents and visitors to the Spring Creek Watershed.*

**Guiding Principles**

Guiding Principles are statements that articulate shared or common values and expectations that support decision making and actions. **These are draft principles that should be vetted by the Spring Creek Watershed Commission.**

**Spring Creek – Our One Water Plan is not an effort to change local governance but to integrate management and leadership.**

Our One Water Plan envisions an approach that will pull parties together in every aspect of the water arena in a way that goes beyond the interests of any one government agency or stakeholder and in a way that has never been done before. Decision-making that spans political boundaries is essential to fully implement watershed management and achieve established goals for the watershed.

**Spring Creek - Our One Water Plan will strive for a systematic, watershed-wide, science-based approach to watershed management; driven by the participating local governments, state and federal governments, water utilities, planning commissions, Penn State University, citizens, businesses and industry.**

It will involve a broad range of stakeholders to ensure an integrated approach to

watershed management. A “bottom up” approach for water management—allowing the key discussions of major water resource issues, concerns, problems, goals and objectives and potential solutions to originate and be first fully vetted at the stakeholder level—is envisioned. Expanding involvement and collaboration at the ground-level creates greater buy-in and support at all levels of government.

**Spring Creek – Our One Water** **Plan planning and implementation efforts will recognize local commitment and contribution.**

History shows us that when local water management programs and projects rely almost entirely on outside funding, they are unable to sustain themselves over time. Locally supported and funded technical, administrative, and outreach activities that leverage funding from multiple sources including local, state and federal sources will be key to ensuring local government capabilities and long-term success on both the local level and watershed scale.

**Spring Creek – Our One Water Plan will embrace the concept of multiple benefits based on measures of social, economic and environmental outcomes in the development and prioritization of implementation strategies and actions.**

Prioritized, multi-benefit projects provide value to more than one group or interest and address more than one environmental resource within a watershed. These types of projects are necessary to build the support of citizens and agencies, achieve water quality and quantity goals, and produce the environmental goods and advantages that a healthy watershed provides.

**Technical Partnership**

In order to establish science-based outcomes, a technical work group was formed.

(*Appendix – 3 Technical workgroup members)*. Through the course of several meetings, the workgroup

identified relevant information, set metrics, and defined outcomes. For example, the Susquehanna River Basin Commission’s 2016 Cumulative Water Use and Availability Study for the Susquehanna River Basin identified the Spring Creek Watershed as a sensitive area in the Commission’s Groundwater Management Plan and the PA State Water Plan. Also, in the 2017 Centre Region MS4 Partner Pollution Reduction Plan, there are specific BMP recommendations that quantify Pollution reduction goals. In review of technical documents there is good news and still some concerns. Spring Creek has a lot of ground water. However, the water is unevenly dispersed throughout the watershed. Also, the primary pollutants identified in the 2003 report; sedimentation, nitrogen and phosphorus; remain as concerns even after the many restoration projects that have been implemented since the 2003 plan.

Ecological conditions that are measurable will be used to track the health of the Spring Creek Watershed. Metrics have been established to measure how we are meeting the desired outcomes. These metrics include water quality, habitat, hydrology and biological conditions.

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| **Framework for Spring Creek One Water Plan**  **Goals, Objectives, Metrics and Desired Outcomes**  **Goals** are statements that describe the fundamental endpoints or outcomes we are aiming to achieve through activities across all sectors of management. Goal statements are expressed in broad aspirational terms.  **Objectives** are statements about desired outcomes and support the high-level goals.  **Metrics** can be considered performance indicators. They can be considered benchmarks that can be measured to track how well we are achieving our desired outcomes. For example, “tons of sediment eliminated”.  **Outcomes** are specific changes we are trying to achieve. They should be measurable and realistic but challenging. If outcomes are unrealistic and too difficult to achieve, they may discourage people rather than motivate them. On the other hand, outcomes that are too easy to achieve can lead to complacency. | | | |
| **Goals 1: Protect, Enhance and Sustain Healthy and Resilient Coldwater Stream Ecosystems** | | | |
| **Objective** | **Description** | **Suggested Metric (s)** | **Outcome(s)** |
| Objective 1A: Protect Ecosystem Flows | Rivers, streams, wetlands and springs need certain amounts of water to support healthy aquatic ecosystems. Improve water quality and quantity for resiliency to ensure the capacity of the ecosystem to respond to a disturbance by resisting damage and recover quickly. This is especially critical given the unique and coldwater ecosystem supported by the Spring Creek Watershed and highlighted by the exceptional wild trout populations and fishery, which require cold, clean water to flourish. Management must consider the impacts of point and nonpoint discharges, development, stormwater, and water withdrawals. | The Nature Conservancy Ecosystem Flow Recommendations  Acres of impervious surface  Lbs of nitrogen, phosphorus and sediment reduced  Number of miles of riparian buffers installed  Miles of stream improved that meet criteria to be delisted from impairment  Development of a proactive TMDL to determine maximum amount of pollutants allowed to occur in spring creek and tributaries in the future. | Restore High, Seasonal and Low Stream Flows  Maintain and improve existing hydrology  Impaired stream sections improved to meet criteria for removal from impairment designation on 303D list  Voluntary Total maximum Daily Loads Met. |

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| **Goals 1: Protect, Enhance and Sustain Healthy and Resilient Coldwater Stream Ecosystems** | | | |
| **Objective** | **Description** | **Suggested Metric (s)** | **Outcome(s)** |
| Objective 1B: Create Resilient Habitats | Stream habitat is one of the important factors that affect aquatic communities. This includes physical habitat and water quality. Based on the macroinvertebrate diversity and sensitivity to pollution, and wild trout population dynamics and densities, we gain an understanding of our streams' health. Degraded in-stream habitat often results from uncontrolled storm water runoff and uncontrolled runoff from cultivated agricultural land. Other reasons for poor stream habitat include altered stream flows, excess sediment, and a loss of surrounding trees and shrubs that help slow the erosion of the stream banks and provide shade to help maintain cool water temperatures during critical summer months. Chemicals and pollutants also negatively impact stream habitat/water quality. | Index of Biological Integrity Scores    DO, water temperature, sediment loads, stream channel surveys (fluvial geomorphology)  Number of trout, biomass, sizes and redds  % of Impervious surface reduced  Miles of riparian buffers installed | Diversity of macroinvertebrates.  Improved water quality and thermal regime  Wild trout populations at or above current levels.  Maintain and improve existing water quality, including water temperature and D.O.  Acres and/or # of Green Infrastructure |

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| **Goal 2: Maintain and improve water quality and quantity to sustainably meet the needs of the human community.** | | | |
| **Objective** | **Description** | **Suggested Metric (s)** | **Outcome(s)** |
| Objective2A: Maintain a reliable water supply for residents, agriculture, and industry | Protecting, maintaining, improving and developing new water supply sources and recharge/storage areas ensures a supply for future uses. Water management must consider the multiple uses of groundwater to ensure reliability. Recycled water can offer a reliable source that can displace a portion of the need for additional surface or groundwater withdrawals | % loss from water systems,  #gallons of drinking water from new sources,  % stormwater volume directed to recharge areas;  % reduction in treatment costs | % water use served by recycled water  # new large-scale storage areas developed |
| Objective 2B: Implement a water demand strategy | Water demand management involves the adoption of policies and investments by water utilities to achieve efficient water use by all members of the watershed community. This strategy requires a major paradigm shift from conventional supply management to the management of demand. The aim is to promote the use of the right quantity of water on the farm, industry, household, and by the watershed community as a whole. | # of tributaries with water budgets,  # of critical supply areas identified  % critical contribution areas with practices/policies in place to support sustainable yield/withdrawal scenarios  # of effective ordinances/policies  Gallons of water from natural systems, withdrawals per capita | No exceedance of sustainable withdrawal rates.  Number of new sources to mitigate impact.  % public water supply loss reduced.  Drinking water needs met  Maintain low flows at or above long-term monthly median flows at each of the 3 USGS gages on Spring Creek and on tributaries while meeting daily drinking water needs |
| Objective 2C: Sustain and protect groundwater | Groundwater accounts for 86% water supply. Aquifers provide critical storage to meet needs during droughts. The amount of groundwater in storage in each basin is dependent on the precipitation, recharge and the total extraction of all the wells. A groundwater plan designed for the political, institutional, legal and technical specifics can help maintain supply. | # of BMP’s to minimize recharge loss  # of source water plans updated  # of emergency water supply plans developed, % change in well levels  % flow in and out of the watershed  % deviation from historic baseflows | sustained well yields, ground water management plan  % attainment on meeting historic base flows |

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| **Goal 3: Integrate and Coordinate Management for Sustainability, Economic Growth, Recreation and Quality of Life** | | | |
| **Objective** | **Description** | **Suggested Metric (s)** | **Outcome(s)** |
| Objective3A: Implement an Integrated Water Management Network/Governance Model | This network would promote the coordinated development and management of water, land and related resources, to maximize environmental, economic and social results in an equitable manner without compromising the sustainability of the watershed. Participation would involve applying knowledge from various disciplines and insights from diverse stakeholders to devise and implement efficient, equitable and sustainable solutions to water and development problems. Network members could include the Spring Creek Watershed Commission, municipal governments, water utilities, Penn State, state and federal agencies, industry, and planning organizations. | Build capacity of Spring Creek Watershed Commission to administer the network  Utilize Penn State to evaluate existing networks in other states or other governance options  Include MS4 Partnership and Central PA Source Water Protection Partnership | Cross agency and cross scale interaction and communication  Administrative process implemented  Network charter in place |
| Objective 3B: Implement network subcommittee for technical support, data driven science, education and information exchange. | Diversity of membership includes utility personnel, academia, government employees (federal, state,  local), non‐governmental organizations, industry representatives and consultants. Review, evaluate, and disseminate information on best practices on integrated watershed management. Encourage adoption of new advances and applications for watershed management, develop workshops and organize/moderate technical discussion and educational events. | #of members representing diverse capabilities  #of educational events  Data driven science metrics  % economic growth  % biological growth  Centralized data sets | Science based collaboration  Land Use plans coordinated  Online searchable data base |

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| **Goal 3: Integrate and Coordinate Management for Sustainability, Economic Growth, Recreation and Quality of Life** | | | |
| **Objective** | **Description** | **Suggested Metric (s)** | **Outcome(s)** |
| Objective 3C: Promote the value of the watershed’s recreation, aesthetic and cultural assets | Ecosystems provide recreational opportunities and cultural and aesthetic value. Communities rely on clean air, water, green space, and other natural amenities for economic sustainability and quality of life, yet their benefits are not always fully understood or considered in local decisions. Recreation and tourism associated with outdoor environments can play a huge role in local economies. Many citizens place high value on historically or culturally important landscapes because of their significance. However, human activities can stress natural areas where people recreate or visit cultural sites. | #of clean up events  # of recreational users  # cultural sites  # of groups involved  % value of ecosystem services  Reenergize “Spring Creek Day”  Recreational growth and economic value | Stewardship |

**Phase 3 Concept**

As indicated previously, Phase 2 builds the framework which will be followed by Phase 3 which will begin in 2019 if approved by the Spring Creek Watershed Commission. Phase 3 will document the road map with specific actions and milestones to achieve outcomes over a determined time period ranging from short term actions to long term efforts over a 50-year period

A major emphasis for Phase 3, beyond addressing ecosystem and water supply concerns, will be a process for integration of water management. The potential to build an informal network to facilitate communication and work across political boundaries will be needed. Additional financial resources will also need to be secured to facilitate science driven milestones and outcomes and to add staffing capacity to the Spring Creek Watershed Commission.

Multiple benefits balance environmental, economic, and societal goals. There are many strategies for ensuring a reliable, high-quality water supply, including stormwater capture, source water protection, water reuse, and efficiency improvements. Many of these strategies also provide additional benefits, such as reducing greenhouse gas emissions, improving water quality, and enhancing community livability. Incorporating the value of these benefits into investment decisions will be established.

**Phase 3 Short Term Actions for 2019:**

* Continue to convene the technical workgroup and expand participation to begin drafting an RFP for technical services for Phase 3.
* The expanded technical workgroup will develop a cost and funding strategy for implementation of phase 3.
* Implement a speaker series addressing the 10 substantive based issues.
* Continue to improve SCWC website to serve as a centralized data base and document storage.
* Continue to use SCWC communication contractor to coordinate website information, communication, speaker’s bureau logistics and additional services as needed.

**Appendix 1 – Stakeholder Vision Comments – July 2018**

Group Breakout- Ideal Watershed Vision

• Balanced priorities- meeting local community needs

• Integrated water/sewage management

• Spring Creek watershed governance structure for surface water- not dependent

• Surface and ground water boundaries are different

• Sustainability without degradation

• Government accountability without degradation

• Healthy clean water (clean and clear of contaminants) for people and wildlife

• Support biodiversity for region

• Regulations with teeth- managing entire watershed

• With overarching collective governance- robust against outside forces

• Growth and prosperity for all living creatures

• Decision making criteria from unintended consequences and encroachment from larger forces

• Creative use (recharge of groundwater) of wastewater for sustainability

• Awareness of cost of regulations, management framework that impacts families, persons, ag systems.

• Innovate with science/ fact driven education

• Energy positive/ water positive regenerative economy

• Water not seen as ‘commodity- or should it be seen as a commodity on which we all benefit

• Well informed engaged community

• “Humans and the rest of the environment living together in a way that allows for growth & prosperity for all living creatures to thrive and flourish”

• We don’t need extractive industries

• PSU as environmental leader and part of the solution

• PSU cooperative activity and respectful with transparency

• Everyone is not on the same page with respect to growth

• How to turn a liability (stormwater/ growth) into an asset.

• Regulate population growth

• Make better what we have an draw population with our assets

• Watershed management from municipalities

• Eco-systems approach

• Good access and communication- How to be good stewards- Public awareness and education

• High quality, protected, maintained (surface and ground)

• Considers the High-Quality Water Source- uses it well & cares for it.

• All stakeholders work together in responsibility

• People understand the watershed concept and outside watersheds do their part too

• We are what we are and probably can’t change it. We need a voice from the non centre county region municipalities.

• Well managed pipes/delivery

• Celebrate watershed as a community (agriculture resource, recreation, drinking, etc.

• Willingness to work together & BE RESPECTFUL of decisions that are made

• Help us to become Aware & Educate us to take care

• Double down on Education and Community Outreach

• We need to find ways to replace the water we pull

• Utilize beneficial reuse of water

• 2050-2100 have a master plan – preservation of open space; water quality- use of resources impact of agriculture

• Master plan for development, especially impervious surface, non- personal and nonindustrial, controls on development, consumption, fewer roads, less driving

• Steady state economy- not growing more, sustainable agriculture

• Better education about different needs for water (conservation, science-based surface water, protected springs

• Quality and quantity- healthy water benefits to all (regulations, all streams meet designated uses and controls, so quantity meets demand and quality downstream goals

• Policies to achieve goals, planning documents, guidelines

• Enjoying clean, drinkable, swimmable, good standard of living

• Get out into the environment to appreciate it

• Remain on of the most admired communities in the country

• Sustainable use of resources – economy, electricity, self-sufficient, food

• Respect water- be water citizens

• Balance of water- what’s coming in/ what’s going out

• Be water neutral (balance)

• Collectively reduce water footprint

• Informed use and innovation for water conservation (education) to reduce water utility expansion

• Regenerative purity

• One organization that oversees water

• Reduction of water use by citizens

• Understanding of priority and collaboration

• Education on management of hazardous materials (septic systems)

• Education is backbone to water management

• Communicate and understand common use beyond municipal boundaries

• Educate businesses on water reuse and recharge

• Limit land use growth- carrying capacity

• Rethink what we mean by economic growth

• Identify compatible businesses

• Sound/ updated pipelines

• Plant more trees to reduce the need for more infrastructure

• Stormwater management- use of Best Management Practices- potential for small business startups to implement BMP’s (rain gardens, plants, etc.

• Use technology to monitor water use, to save money and conserve water

• Dedicated water authority representative to be responsible for education outreach

• Financial incentives/ water use audit as implemented in other cities

• Carbon capture potential for climate and water resiliency

• Communication on water use/ equipment failure

Actions to take:

- Work with school districts on education

- Still should use some silo approaches

- Develop a coffee table book to celebrate the watershed

- Use art to educate and engage artists

- School educational tools/ partnerships for education

- Substantial buy-in by government (local)- help government engage in vision

- Shared data

- PSU to add water resource monitoring reports

- No development that degrades water quality

- What is data on impacts of development / what are the gaps

- Experiences to get people out and engage them in water issues

- Use of new technology

- Get municipalities regulations and policies

- Coordinate planning commissions around us- zoning

- Restrictions form state facility development

- Use creativity to get around

- Proposing framework of laws for all to use

- Identify areas worthy of protection- equal investment in open space

- Use examples from other places

- Need enforceability – county wide? Have teeth, who controls zoning?, have to be onboard with the plan

- Zoning priorities (residential, commercial)

- What’s the role of citizen groups? - influence on master plans

- Public education- local media- get the word out

- Protecting what we have

- Township solicitors- what’s possible (friendly)

- Understanding history of the watershed – assessment of stormwater management plan

**Appendix 2- December 4 Public Meeting**

1. What key steps need to be taken to ensure clean, plentiful and affordable water in the Spring Creek Watershed?

* More land conservation to keep open space (preserving recharge areas and riparian zones)
* Complete critical area recharge mapping
* Strengthen the Spring Creek Watershed Commission in terms of funding and staffing
* Retrofit impervious surfaces with green infrastructure (rain gardens, green roofs)
* Design developments to limit impervious surfaces
* Consensus on what is “affordable”
* Collect money for phase III
* Restoration of degraded areas (protection of wetlands, bank stabilization, habitat improvement)
* Compile existing data for where we are (water quality and quantity)
* Guarantee from entities that follow through will happen (multiple partner commitment: list of partner commitments and level of commitment)
* Partner commitment needs to be contractual “Stormwater Impact Fee”
* Adoption of well construction and septic system maintenance standards by all municipalities
* More cover crops to reduce runoff / pesticides / phosphorus and nitrogen
* Look at climate change factors, since water input heavily dependent on precipitation
* Nutrient management can affect development: know more how nutrient management will shape future development
* Increase emphasis on water conservation
* Keep monitoring the quality of the water in Spring Creek and if there is pollution identified then address it and enforce existing rules and regs. I don't recall in last 20 years that any polluters have been identified and prosecuted. Help educate the farming community on how to protect Spring Creek and all of our waterways

2. Some steps will require funding to be completed; particularly for phase 3 which is estimated at $500,000. How should key steps be paid for?

* Coordination among entities for funding (government, non-profit, grant, foundation, and commercial sources)
* Further explore potential funding through DEP
* Scope of work created (RFP, technical workgroups)
* Money for permanent staffing for Spring Creek Watershed Commission: How should this be paid for?
* Increase funding, $30,000 too low for coordination and also include funding for professional technical staff.
* Ask the County to provide funding for what is needed. What more really needs to be done. Hasn't the quality of Spring Creek actually improved over the last 20 years?

3. Information will be needed to manage water differently. Key information needs to be obtained and new ways of coordinating across local and regional entities will be critical in future watershed management. How should this occur?

* Coordination of Centre Region Integrated Water Plan with the Spring Creek Plan and Centre County Planning Office
* Develop and maintain institutional memory of how these regulatory and management processes work (info graphic / flow chart of all entities and their processes of how they interact with each other)
* Spring Creek Watershed Atlas Project (springcreekwatershedatlas.org)
* Put data to work right away: vet it early and decisions made by these entities should be more transparent / publicized more
* Understand consequences of decisions more by conducting more studies / more complete data collection
* Creation of a structure made up of stakeholders so that they continue to play a part in decisions (Spring Creek Watershed Association and 10 topics from PSU Law Report). Naturesteps.org, Instream Flow Council, American Rivers Association, Star communities all as an example. Revival of Springs and Sinks newsletter to inform public.
* Environmental education about Spring Creek Watershed as a whole in schools (present in some schools already)
* Involve CNET in public information / transparency
* Need to educate people on how they can conserve water that is used in homes and non-residential properties. If people use less water they will generate less sewage which makes both the water and sewer system more sustainable. Bill for sewer service based on water usage financially incentivizes all people to use less water and lowers our carbon footprint and makes our water and sewer systems more sustainable. Why isn't volumetric billing for sewer service the right thing to do?

**Appendix 3**



**Appendix 4 – Technical Committee**

SCWC Technical Workgroups: Overarching duty of the workgroup is to provide guidance on the development, collection and dissemination of information and technology for integrated water resource management and protection. Information developed by the workgroup is an integral part of the Spring Creek Phase 2 Action Plan report. Members were selected for their technical abilities and diverse representation.

THANK-YOU MEMBERS!

Dennis Hameister- Spring Creek Watershed Commission

Bill Sharp – Spring Creek Watershed Commission

Joanne Tosti-Vasey – Spring Creek Watershed Commission

Dave Yoxtheimer - Water Resource Monitoring Project

Brian Walker - Bellfonte Borough Water Authority

Andy Gavin and John Balay -Susquehanna River Basin Commission

Jason Deter and Dave Kristine - PA Fish and Boat Commission

Cory Miller/ Dave Smith- University Area Joint Authority

Dennis W. Risser- US Geological Survey

Brian Heiser - State College Water Authority

Dave Robert- Nittany Valley Environmental Coalition

Dave Swisher - Penn State University Physical Plant

Jim Gazza- Cocoa Cola Company

Ford Stryker- Spring Creek Chapter of Trout Unlimited

Betsie Blumber- PA Sr. Environmental Corps

Deb Nardone- ClearWater Conservancy

Terry Melton- Nittany Valley Environmental Coalition

Scott Heidel- PA DEP- Review only

**Appendix 5 – Report Information Sources**

Spring Creek Watershed Atlas

Water Resources Monitoring Project

US Water Alliance

Water Environment Federation

US Census

County Planning Directors Association of Pennsylvania One Water Task Force

SRBC -Cumulative Water Use and Availability Study for the Susquehanna River Basin

**County Planning Directors Association of Pennsylvania | March 2016 | One Water Task Force**