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

Draft 2019

Table of Contents

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.

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)*

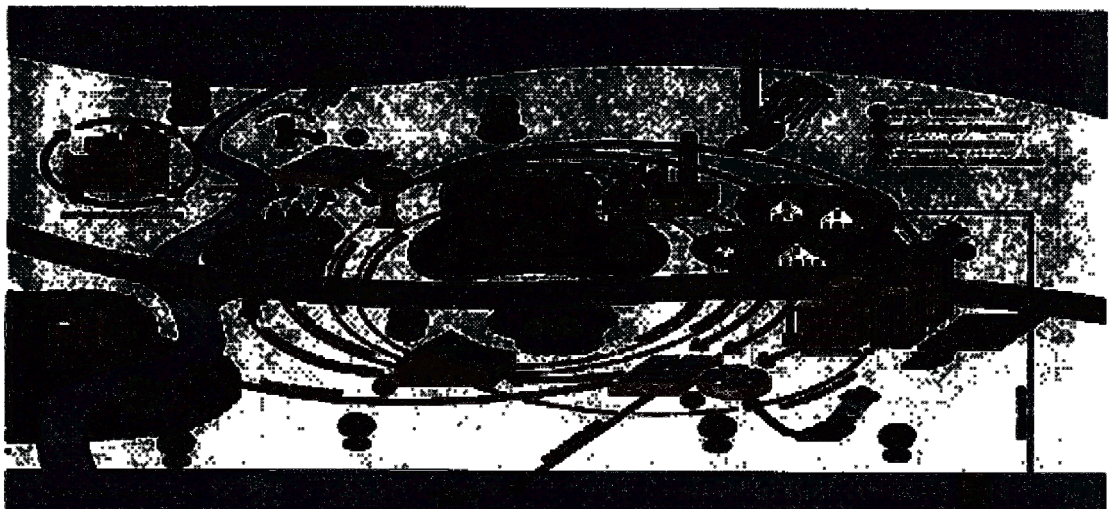
Transitioning to A One Water Approach for Integrated Management

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.