

**MEMORANDUM**

To: Project File – Comprehensive Stormwater Management Plan

From: Jennifer Lawson, Water Quality Manager

RE: TetraTech Workplan and additional scope

Date: February 1, 2024

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City staff released RFP 23-63 seeking proposals for the creation and establishment of a Comprehensive Stormwater Plan for the City of Ann Arbor. The proposed work included:

- *Update of existing InfoSWMM Model*
- *Incorporate Resiliency Planning into Stormwater Management Philosophy*
  - *Include Acute Event strategies and planning methods*
    - *Incorporate recommendations from the City’s Hazard Mitigation Plan*
  - *Longer term resiliency planning to incorporate Climate Adaptation Strategies*
    - *Include criteria for decision making and infrastructure management/investments*
    - *Utilize updated rainfall projections in partnership with the National Oceanic and Atmospheric Administration (NOAA)*
    - *Identify existing infrastructure assets vulnerable to changing precipitation patterns and improve adaptive capacity of these systems*
    - *Ensure alignment with the A2ZERO Plan*
- *Incorporate Watershed Planning efforts (3rd party initiatives)*
- *Incorporate Localized drainage studies/analysis*
- *Validate and/or make recommendations for update of Level of Service Principles from 2017 Level of Service Study*
- *Analysis of Existing Policies/Ordinances/Standards and strategies for alignment with to-be-established philosophy*
- *Project Management*

Upon selection of the desired consultant, city staff commenced conversations with the consultant regarding a finalized work plan and scope of services for contract documents. After much discussion, staff recognized that it would be appropriate to include migration of the City’s SWMM stormwater model to an updated software platform as a part of this project. As such, the selected consultant submitted a separate scope and fee proposal for the SWMM model migration work.

Both the original work plan and the additional migration work plan are attached to this memo.

Fees are as such:

Stormwater Comprehensive Plan:	\$495,154
Stormwater SWMM Model Migration:	\$42,900
<b>TOTAL:</b>	<b>\$538,054</b>

CITY OF

# ANN ARBOR

## C. PROPOSED WORK PLAN



TETRA TECH

## C Proposed Work Plan

### PROJECT UNDERSTANDING

Since ancient times, road maps have been valued tools to reach a destination. Maps provide a record of where one has been and plot a course for the future. The best maps provide options and allow the user to develop a strategy to reach the destination.

Ann Arbor requires a road map for its stormwater management programs. The RFP labeled Stormwater Management Plan is intended to be that virtual road map.

Ann Arbor has been at the Vanguard of mid-western municipalities with stormwater management. No fact is more evident of that than Ann Arbor establishing Michigan's first stormwater utility in the early 1980s.

That leadership continues to this day. As one of Michigan's greenest cities, incorporating green infrastructure into projects is a standard practice in most infrastructure projects. Recognizing the hydrologic cycle, Ann Arbor understands that stormwater is interconnected and uses and values stormwater as an asset and not a nuisance.

The completed Comprehensive Stormwater Management Plan will involve stakeholders from throughout the city and serve Ann Arbor in countless ways. A partial list of benefits that the completed plan will provide includes the following:

- ◆ **Policy Consolidation** – The City has numerous policies and initiatives that integrate with stormwater. The A2ZERO Plan, 2022 Hazard Mitigation Plan, Green Streets Policy, and MS4 permit are just a few of the many programs

where stormwater plays a leading role. A completed Stormwater Management Plan will outline the role and strategy that stormwater plays in each.

- ◆ **Resiliency Planning** – As outlined in the RFP, the impact of climate change on storm intensity is undeniable. Thus, the impact of climate change on stormwater runoff is changing and the city's policies need to reflect that change. This may be reflected in the way in which facilities are sized or the practices to manage the stormwater quality. As mentioned at the preproposal meeting, Ann Arbor recognizes that the way they managed stormwater in the past will not work going forward. A completed Stormwater Management Plan will provide the city with a road map for accommodating climate change.
- ◆ **Succession Planning** – Many Ann Arbor staff have decades of tenure in their positions. As they plan for the next stage in their life, the next generation of management needs to carry the torch for stormwater management. The Plan will provide a comprehensive outline of current practices and the vision for the future policy needs that will facilitate this succession.
- ◆ **Funding** – Any good trip will include a budget to get there. Ann Arbor stormwater CIP is over \$76 million and will only grow as infrastructure ages and climate change demands improvements. The Plan should chart a course for actionable steps for the city to maintain sustainable funding for municipal stormwater needs.

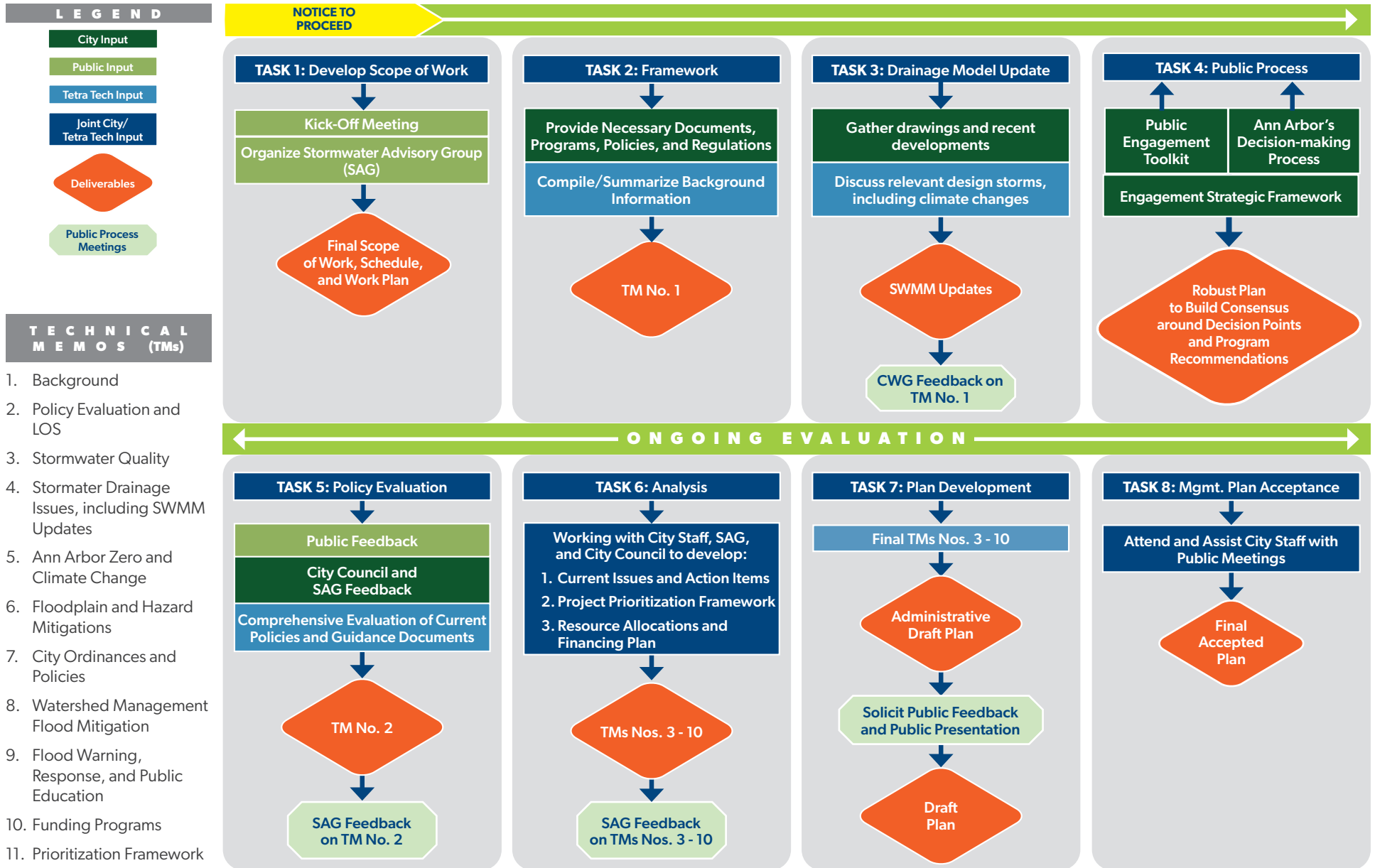
- ◆ **Stakeholder Acceptance** – A journey has little value if the participants do not wish to reach the destination. Thus, the Comprehensive Plan must involve city stakeholders to solicit their input and share the progress of the plan. Underrepresented groups must participate in the project. It is only with participation that the best plan will be developed, and the best destination achieved.
- ◆ **Model Update** – Along with the policy considerations, the city needs updates to the SWMM model to reflect capital improvements (many by private developers) since 2015. These improvements will aid the city in planning future capital improvements.

This understanding is a snapshot to understanding the many objectives of the Ann Arbor Comprehensive Stormwater Plan. Tetra Tech is eager for you to review the road map we have prepared in the subsequent work plan to reach this destination.

# WORK PLAN

## Defined Process to Achieve Project Success

Tetra Tech’s general approach to the Comprehensive Stormwater Management Plan is graphically presented below. We envision a modular approach to complete the project where one module at a time is completed and summarized with technical memos. It is intended to provide a road map for project execution, deliverables, coordination with and inputs from the city and outside stakeholders, and provides a timeline of project milestones.



## APPROACH

The City of Ann Arbor is seeking proposals for a feasibility analysis of a selection of stormwater projects that have been included in the City's Capital Improvements Plan (CIP), but further engineering evaluation and cost/benefit analysis is necessary to inform City staff for responsible and equitable decision making for the proposed projects.

### **TASK 1: Achieving Success Through Proper Project Planning**

Planning activities start with scheduling the initial data gathering and are carried through to completion of the project. Planning activities include the following items, much of which will be discussed at the Kick-Off Meeting and are part of the public engagement planning efforts (Task 4):

- ◆ Establish goals, objectives, critical items, and priorities.
- ◆ Identification of the roles, authorities, and responsibilities of team members.
- ◆ Communication protocols and contact list.
- ◆ Schedule project progress meetings.
- ◆ Data gathering will include, among other items: a review of existing master plans, policies, programs, regulations, and ordinances; as well as interviews with staff to solicit feedback, reports, and policy and public participation guidance.
- ◆ Preparation of an initial list of required information needs.
- ◆ Review of Project Management Plan (including Work Plan, Quality Assurance/Quality Control Plan, schedule, budgets, and deliverables).
- ◆ Schedule an initial Scope Development meeting with key team members and city personnel to understand the city's needs further.

Under Task 1, the project scope and schedule will be discussed and developed in detail, as well as the initial and critical path tasks. Discussions at the scoping meeting will assist the Project Manager, Dan Christian, in developing a formal Scope of Work, further defining the division of work and collaboration opportunities, and refining the Project Management Plan. Key team members at the Kick-Off Meeting will include but aren't limited to, Dan Christian, Don Carpenter, Jenna Troppman, and Kate Bailey.

**Deliverables:** Final project scope, schedule, work plan, Community Engagement and Communications plan, and kick-off meeting minutes.

**Policies, Programs, & Projects.** Policies, programs, and projects are distinct concepts that play different roles in the realm of governance, management, and implementation.

**Policies** are overarching principles, guidelines, or rules established by an organization, government, or entity to guide decision-making and actions. Policies provide a broad framework for addressing specific issues or achieving particular goals. They set the tone for how an organization or government approaches various matters.

**Programs** are structured sets of activities or initiatives designed to achieve specific objectives or outcomes within a defined timeframe. Programs are characterized by their organized and strategic approach, involving multiple activities that work together to achieve a common goal.

**Projects** are temporary endeavors with a specific goal, scope, and timeline. They involve a series of tasks and activities undertaken to create a unique product, service, or result.

In summary, policies provide the overarching principles, programs offer a structured approach to achieving specific goals, and projects are the specific, temporary activities undertaken to produce tangible outcomes within the context of programs or broader organizational strategies. Each plays a crucial role in effective governance, planning, and implementation.

### **TASK 2: Gathering Insights for a Foundational Framework**

In pursuing comprehensive stormwater management, a crucial initial step involves collecting background information. This process encompasses collecting and reviewing applicable manuals, master plans, guides, programs, policies, ordinances, permits, vision and mission statements, and guiding goals. These resources serve as the foundation for understanding the status, approach, and legal requirements within the realm of stormwater management. The information will be distilled and organized into a cohesive document identifying and highlighting city policies and programs. The intent is to summarize the purpose and content of each document in a few paragraphs, with a focus on policy and programs. This approach ensures a well-informed starting point to create a robust framework for sustainable and resilient stormwater management practices. We will use the kickoff meeting to identify documents to include.

An initial list of the documents includes:

- ◆ 2017 Stormwater Rate and Level of Service Analysis
- ◆ 2017 City of Ann Arbor BMP Maintenance Manual
- ◆ 2015 SWMM Report
- ◆ A2ZERO Plan
- ◆ 2022 Hazard Mitigation Plan
- ◆ Green Streets Policy
- ◆ Public Service Standard Specifications
- ◆ Stormwater Management Guidelines for Public Street Construction and Reconstruction
- ◆ City Department websites: Emergency Management, Engineering, Natural Area Preservation, Parks and Recreation, Planning, Public Works, Sustainability, Systems Planning
- ◆ Huron River Watershed Council Watershed Management Plans (for Ann Arbor region)

**Deliverables:** Technical memorandum #1 – Framework Informational.

 **TASK 3: Updating Drainage Model to Reflect Recent CIPs**

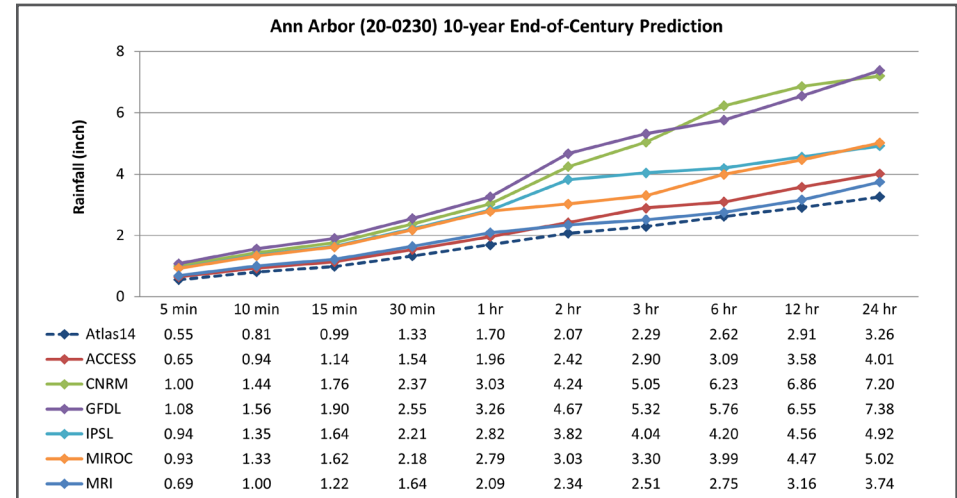
It is our understanding that the City’s InfoSWMM model is not up to date with hydraulic drainage characteristics based on constructed capital improvement projects since 2015. Further, we understand that the constructed infrastructure details are contained within the City’s GIS. As a part of the scope, we will update the model based on the GIS data.

**Private Development**

We further understand the stormwater runoff characteristics of recent private development projects are also not reflected in the City’s InfoSWMM model. We will update the hydrologic variables including the percent impervious and rate of drainage (width) for the affected subcatchments. Discharge from the private development to the City’s collection system is typically governed by an outlet control structure contained in a detention basin. We will add the detention basin to the model if the data is available in the City’s GIS or if construction drawings are provided. For budgeting purposes, we are assuming no more than 10 development sites need to be added to the model.

**Future Design Storms**

For added value, we will add estimated future precipitation design storm data to the model. The intent is to showcase the impacts future design storms may have on the collection system and utilize this information for discussion purposes when formulating resilient stormwater policies. NOAA is currently working on updates to precipitation frequency data and future rainfall projections as a part of Atlas 15, however, this information is not expected to be available until 2026 at the earliest and may very well be delayed. As an interim step, we suggest using data from a study by the North Carolina Institute for Climate Studies (2020), EPA’s Climate Resilience Evaluation and Awareness Tool (CREAT), and Tetra Tech’s future precipitation project for SEMCOG (2020). For budgeting purposes, we will enter up to twelve different future design storm hyetographs into the model.




Example Future Rainfall Projections

**Model Solutions**

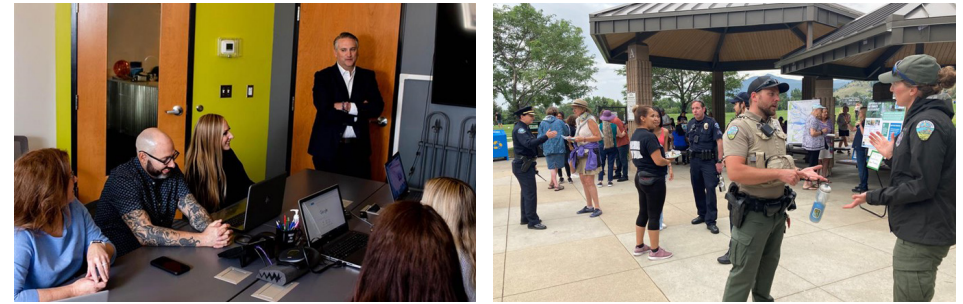
We will solve the existing model, before making any changes, to benchmark the results. After updating the model with CIP and private development data, we will resolve the model and check that the results make sense. To accomplish this, we will solve the model for two different design storms (e.g., 5- and 10-year 24-hour) and check the flow rates and depths at several locations in the areas that changed and immediately downstream. Results will be summarized in a table. For policy discussion purposes, we will solve the model for three different future rainfall scenarios and summarize the impacts at a few example locations around the city.

**Deliverables:** Technical memorandum #2 – Urban Model Updates. The technical memorandum will document the changes made to the model, updated model input files, updated GIS data for the private (if applicable), tabular comparison data of the model results before and after model changes, and a summary of the impacts from future rainfall scenarios. RFP Deliverable “A. Update of existing InfoSWMM Model” is included in this task.

 **TASK 4: Public Engagement & Communication Strategy**

Our team members have a solid understanding of public engagement and the role we play in a successful public process. Don Carpenter and Dan Christian will lead this effort on behalf of the consultant team. Don has been engaged in stormwater master planning and implementation projects in southeast Michigan for 20 years as an educator with Lawrence Technological University and consultant. Don is a certified community engagement specialist by the National Charrette Institute, and he has led focus groups and community planning projects across the region. With 33 years of expertise in stormwater projects, Dan has seamlessly integrated community engagement into numerous initiatives, showcasing his adeptness as a skilled public speaker and workshop facilitator, all while leading master planning endeavors.

Stakeholder outreach and engagement associated with master planning efforts are critical to ensure effective communication, collaboration, and engagement with the community. **The goal is to gather input, raise awareness, involve/collaborate with the public, and build support for Ann Arbor’s stormwater management initiatives by empowering the community to be part of the decision-making process.** We typically initiate community planning projects by co-creating a public engagement and communications plan with the client.



Ann Arbor is a community with a strong history of community engagement and advocacy. This history is personified in the A2 Engage Public Engagement Hub (a2gov.org) and the *Achieving Equitable Engagement in Ann Arbor* (April 2023) report that provides a mechanism for individuals to participate in decision-making and engage with fellow community members. We will suggest a plan for community engagement and communications that will be modified early in the project based on client feedback and completing the City of Ann Arbor’s Community Engagement Toolkit with City staff below.

While it is important to have a well-thought-out engagement and communications strategy, it is also important to acknowledge the importance of continuous improvement and adaptation. The proposed plan is a starting point and will be customized based on the specific needs and characteristics of those involved in the City’s Comprehensive Stormwater Management Planning efforts.

**Community Engagement Facilitator.** Having a skilled facilitator is critical to the success of any project with a community engagement and outreach component. The facilitator makes sure everyone’s voice is heard and all thoughts are captured. It is impossible to please everyone, but everyone should believe their voice was heard in the planning process.

**Communications Strategy.** It is important to draft a communications plan at the beginning of any project. A communications plan is the who, what, where why and how of any project that involves stakeholder engagement and lays the foundation for a successful project. However, the plan should be adaptable based on early engagement to meet the needs of the community and the project. Our team’s robust Public Engagement & Communication Strategy includes 11 elements described in detail on the following page:

## Tetra Tech Team's Public Engagement & Communication Strategy

### 1 City of Ann Arbor's Community Engagement Toolkit

Complete the City of Ann Arbor's Community Engagement Toolkit with City Staff to inform subsequent steps.

### 2 Stakeholder Identification

In collaboration with City staff, identify and create a comprehensive list of stakeholders, including residents, businesses, local community groups, environmental organizations, and government agencies. Organize stakeholders based on their interests, concerns, and level of involvement in stormwater management. Identify historically under-represented communities during the engagement process.

### 3 Communication Strategy

Develop a communication strategy (i.e., communication plan) outlining key messages, communication channels, and a timeline for outreach activities including documenting how historically under-represented communities will be reached. Establish a central communications hub (website, social media, etc.) for sharing information, updates, and resources related to stormwater master planning. The A2 Engage Public Engagement Hub will serve as a platform to inform this task.

### 4 Partnerships & Collaborations

Identify opportunities for partnerships with local organizations, schools, and businesses to enhance outreach efforts including the formation of a Stormwater Advisory Group consisting of an accurate representation of the community and local stormwater and watershed professionals. Collaborate with the Stormwater Advisory Group, which is scheduled to meet virtually eight (8) times, to inform and amplify the message.

### 5 Educational Campaigns

Design and implement educational campaigns to raise awareness about stormwater issues, the importance of effective management, and individual actions that can contribute to solutions. The educational campaign will be developed in partnership with the City's communications staff. Create educational materials such as brochures, pamphlets, and videos. All materials will be approved by the City before distribution.

### 6 Public Meetings & Stakeholder Focus Groups

Plan and organize Eight (8) in-person public meetings and/or focus groups to present information about the comprehensive stormwater management plan, its goals, and potential impacts. Meeting and focus group content and dissemination would be developed in concert with the Stormwater Advisory Group and will allow the project

team to dive deeper into their perspectives, concerns, and potential solutions. Facilitate Q&A sessions to address concerns and gather feedback from attendees. Close the loop on questions raised at the meetings.

### 7 Surveys & Feedback Mechanisms

Develop surveys to gather input from the community regarding their concerns, priorities, and suggestions for stormwater management. Implement on-line and off-line feedback mechanisms to capture input from residents. Use focus groups to gather qualitative data that can complement quantitative survey results and formative focus groups can be held before survey development.

### 8 Multilingual Outreach (if desired)

Ensure that outreach materials and activities are accessible to diverse language groups within the community. If the community desires multilingual outreach, translation services in multiple languages would need to be contracted.

### 9 Feedback Analysis & Public Reporting

Analyze the feedback received from the community to identify common themes, concerns, and suggestions that inform the comprehensive stormwater master plan. Prepare and disseminate regular reports and ArcGIS Storymaps summarizing the outreach activities, feedback received, and any adjustments made to the comprehensive stormwater master plan based on stakeholder and community input. Team proposes two (2) public presentations of findings in the final quarter of the project.

### 10 Adaptation & Continuous Improvement

Continuously evaluate the effectiveness of outreach efforts and adjust as needed. Implement lessons learned from each phase of outreach to improve future engagement strategies.

### 11 Documentation & Archive

Maintain a comprehensive record of all outreach activities, feedback, and communication materials for future reference and transparency.

**Deliverables:** Final Community Engagement and Communications Plan, list of Stormwater Advisory Group members, and comprehensive record of all outreach activities, feedback, and communication materials, brochures, pamphlets, videos, presentations, etc.



**TASK 5: Policy Evaluation – Joint Effort by City & Tetra Tech**

**We propose to accomplish this task with significant input from city personnel.** Initially, we propose to take the framework information from Task 1 and organize a draft document around policy themes listing programs within each theme, refer to example policy themes and programs in the adjacent figure. Existing policies will be identified within each program and policy theme.

The first part of the document will identify and organize the policies within each program. For instance, existing policies/practices such as the street tree canopy, Ann Arbor A2Zero, MS4 permit, and others need to be inventoried and recorded how they contribute (or distract) from each theme. The second part of the document will serve to evaluate the effectiveness of the programs.

We suggest evaluating the effectiveness of the programs by considering:

- What are the program goals and objectives?
- Which program actions drive results?
- Where are the biggest areas of concern, and do the current actions move the needle to solve them?
- What data are available to ascertain effectiveness?

This evaluation needs to include participation by a cross-section of city departments and staff. After gaining clarity as a team, **we will join the city in engaging stakeholders to solicit input.** An initial list of questions that may be asked at these meetings include:


- Are the outcome goals and objectives being achieved?
- Does the intervention have beneficial effects on the recipients?
- Are some recipients affected more by the intervention than others?
- Is the problem or situation the program is intended to address improved?
- Are there unintended consequences?

We will use the information from the document review, stakeholder input, and city staff’s observations to prepare the overall evaluations. The evaluation will include recommending policy and program improvement actions.

**Deliverables:** Technical memorandum #3 – Policy Evaluation

**Lessons Learned.** Our experience in Boulder highlighted a crucial lesson in effective public engagement activities. Initially, under the direction of another consultant, the approach relied heavily on stakeholders to drive the process, resulting in a scattered and unproductive year. Recognizing the need for a more directed approach, we shifted the focus of stakeholder engagement to respond proactively to our prepared technical information, avoiding open-ended processes. This adjustment proved instrumental in turning the project around, underscoring the importance of strategic and informed public engagement to achieve project success in a timely manner.

**Example Policy Themes**



**Flood Management Program Themes**

- Floodplain Preservation and Restoration
- Flood Mitigation



**Stormwater Quality Program Themes**

- Water Quality Protection
- Groundwater Dewatering
- Wetland Preservation and Restoration



**Overarching Utility Themes**

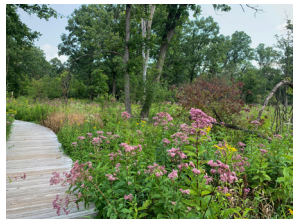
- Integrated Planning
- Multi-Objective Planning, Design, and Operation
- Provision of Services
- Public Engagement and Outreach

## TASK 6: Policy Analysis & Discussion

This task will look at the programs and policies in more detail and will offer ideas for improvement. Task 5 identifies a set of goals and objectives that may be used to evaluate the existing programs. As part of the analysis, these goals and objectives will be reviewed and refined where necessary to meet the current and future needs of the City. Our experts will review the programs based on current best practices from across the country and anticipate future trends and policies from the state and federal government. Information will be summarized around each program in technical memorandums. We will consider topics such as standards, climate change, resiliency, and operation and maintenance.

The TMs are envisioned as brief targeted policy and analysis discussion documents. Each TM will be no more than 10 to 15 pages in length. The focus is on the recommendations which will then be rolled into the comprehensive management plan.

The following technical memorandum (TM) are planned as deliverables:



### TM 4 – Stormwater Quality Issues

Water quality issues include the MS4 permit program, green stormwater infrastructure, and protection and restoration of natural features. Road salt is a topic of concern that will be addressed.

The City's Green Streets Policy (2014) sets infiltration standards (water quality focus) for public streets. Stormwater quality issues (infiltration) are further discussed in the *Ann Arbor Downtown Street Design Manual* (2022). Value 4: Resilient and Energy Responsible Downtown, of the design manual, identifies a desired outcome to infiltration or retain stormwater more than the required targets.

The City's A<sup>2</sup>Zero program, discussed in the Living Carbon Neutrality Plan (2020), lays out a community-wide path to carbon neutrality. Carbon neutrality and stormwater management share the goal of creating sustainable, resilient, and environmentally friendly communities. Implementing strategies that address both carbon emissions and stormwater challenges contributes to holistic and integrated approaches for building a more sustainable future. These shared initiatives will be discussed in several TMs including topics for water quality, drainage, and watershed management. TM 4 will address RFP Deliverable B (resiliency planning into stormwater management) as it applies to stormwater quality issues and ensures alignment with the A<sup>2</sup>ZERO plan.

### TM 5 – Stormwater Drainage Issues

Drainage issues focus on the master plan and subsequent implementation steps taken. City Council unanimously adopted a Climate Emergency Declaration (November 4, 2019) stating that climate change is one of the most important issues of our time. One focus of drainage is the changing rainfall amounts and patterns and how this impacts design efforts.

Our approach discussed in Task 3 considers the impact on the drainage system from climate change projections. The lessons learned will be incorporated into the drainage TM along with policy considerations to improve and enhance system resiliency.

The Green Streets Policy Statement (2014) and the Downtown Street Design Manual (2022) are solely focused on water quality issues (infiltration) and do not address urban drainage issues, requirements, or planning for large storm events other than a brief discussion of inlets in the design manual.

The design of urban drainage systems is specified in Division II: Design Standards of the Standard Specifications manual. Storm sewer design is based on a 10-year recurrence frequency with a specified intensity equation. The following figure compares the current design standard with data from NOAA Atlas 14, future projections from a research project funded by the Strategic Environmental Research and Development Program (SERDP/DoD),



and future rainfall projections developed by Tetra Tech for SEMCOG. The point is to emphasize the importance of considering rainfall changes with collection system design. For example, a 15-minute time of concentration has an intensity of 4.5 inches per hour based on the City standard and goes up to 5 inches per hour (11% increase) based on SERDP and 6.5 inches per hour (44% increase) based on the SEMCOG data. Since the Rational Equation is a linear relationship between flow and rainfall intensity, the percent increases would be reflected in the flow calculation.

It's not realistic to think that an existing collection will be entirely rebuilt based on larger rainfall events. Rather a good strategy is to plan and allow some surface ponding during intense rains but control the extent of flooding to not negatively impact buildings. Hence one of the objectives of TM 5 is to develop long-term policy strategies to improve resilience and accommodate increased rainfall intensities in a cost-effective and equitable manner.

TM 5 will address RFP Deliverable B (resiliency planning into stormwater management) and D (incorporate localized drainage studies/analysis) as they apply to urban drainage issues such as information regarding updated rainfall projections, vulnerable assets, improved adaptive capacity, and local drainage studies.

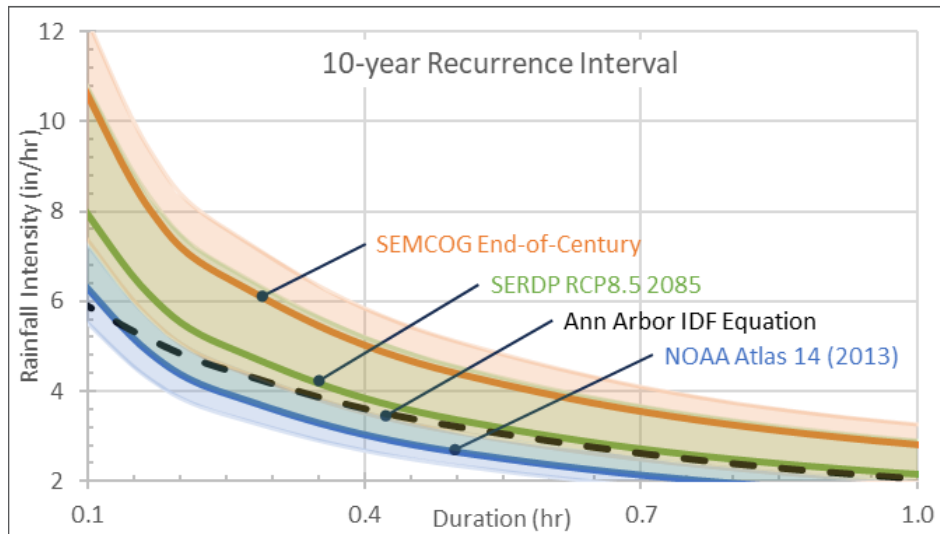


Figure 3 Rainfall Intensity Comparison



**Lessons Learned.** Our work in Boulder unveiled crucial insights that the previously planned \$60 million capital improvement projects were based on an uncalibrated stormwater model that ignored the impacts from large storms and pluvial flooding. Our recommendations emphasized the importance of calibrated models, expanded service targets, and a risk-centric design approach. These lessons ensure the effectiveness and resilience of capital improvement projects.

### TM 6 – Floodplain and Hazard Mapping

Floodplain and fluvial hazard mapping efforts focus on assessing and delineating areas prone to flooding and river-related risks, providing crucial information for effective disaster preparedness and land-use planning.

An updated Hazard Mitigation Plan was completed in 2022. This plan discusses several stormwater-related hazards such as flooding and extreme precipitation. Fluvial floodplains are based on the FEMA FIS and FIRMs, last updated in 2012. The 2012 FIS was a remapping exercise based on updated surface contour maps. Flow rates in the Huron River through the City are based on USGS gaging information through 1992 (page 14 of the FIS). The hydraulic model of the Huron River also has not been updated since the early 1990s.

One of the policy issues we would like to discuss with the City is the idea of updating the hydrologic and hydraulic analysis of the creeks and rivers to account for current conditions. Note, that we are not suggesting updating the analysis as a part of this project but instead merely discussing the issues and significance of accurate river models and how this fits in with proactive resilience planning policies. Updating the models based on current



**Optional Service.** An optional service (not in fee proposal) is to use a higher 100-year Huron River flood flow to represent climate change and run FEMA's computer model to estimate Ann Arbor's floodplain impact resulting from climate change.

conditions and remapping the floodplain extents is an approach we are seeing with some of our clients in Texas.

Taking this one step further is the concept of updating the flood flows to account for climate change and looking at the impact on the floodplains. The increasing intensity and frequency of thunderstorms has a larger impact on pluvial flooding (urban drainage) than it does on fluvial flooding in large rivers however flow rates in rivers has been shown to be impacted by climate change as well.

TM 6 will address RFP Deliverable B (resiliency planning into stormwater management) as it applies to floodplain management and hazard mapping.

### TM 7 – Flood Preparedness, Warning, Response, and Recovery

We want to minimize the impact of floods on communities and infrastructure by proactively planning and preparing for potential flood events, providing timely and accurate warnings to at-risk populations, implementing effective emergency responses to protect lives and property during floods, and facilitating swift recovery efforts to restore affected areas to a resilient and sustainable state after a flood event.

The Hazard Mitigation Plan (2022) lists one of the mitigation action items to “develop a comprehensive stormwater master plan to address localized flooding with structural and non-structural recommendations” (scheduled for 2024). Examples of other relevant mitigation actions that we suggest incorporating in the TM include changes to the floodplain overlay districts



and substantial damage management plans, which link to the urban drainage analysis.

Updating the river analysis, as discussed with TM 6, also fits in with improving flood preparedness because it provides more up-to-date floodplain delineation. The hydraulic model can also be used in conjunction with an early warning system (we're working on something like this for Madison WI).

TM 7 will address RFP Deliverable B (resiliency planning into stormwater management) as it applies to preparing and recovering from floods and will incorporate recommendations from the Hazard Mitigation Plan (2022).

### TM 8 – Watershed Management

Watershed management seeks to balance the ecological, social, and economic aspects of a watershed, aiming to optimize water resources, enhance biodiversity, promote community resilience, and support overall ecosystem health sustainability and holistically for the long-term benefit of both human and natural systems.

The Natural Features Master Plan (2004) states that “it is City policy to promote sound stewardship of the City's natural features.” The master plan identifies nine types of natural features, most of which are directly related to managing stormwater (e.g., watersheds, wetlands, floodplains, and groundwater recharge). Other resources for this task include watershed plans for the Huron River and the impoundment, along with plans for the tributary creeks.

**Capital Funding.** Tetra Tech already has a standing contract to assist in identifying capital funding options for Ann Arbor stormwater projects.

Stormwater is one component of watershed management. Watershed planning tends to be on a larger holistic scale. The policies, goals, and objectives of the watersheds may drive stormwater policies for water quality, drainage, and flood control. TM 8 will review and summarize the watershed scale issues. Coordination with the Huron River Watershed Council will be important for this task.

TM 8 will address RFP Deliverable B (resiliency planning into stormwater management) and C (incorporate watershed planning efforts by 3rd party initiatives).

### TM 9 – Regulatory Discussions

The objective is to summarize the core regulations that govern stormwater management and identify potential conflicts and opportunities for improvement. Many of the pertinent regulations have been mentioned in the other TM discussions. This TM is the opportunity to summarize all the current regulations in one place. This includes State regulations such as the MS4 permit, soil erosion control rules, Washtenaw County rules applicable to the City, wetlands, invasive species, local ordinances, and many more. The regulatory discussion will consider common trends and anticipated changes in the industry along with strategies for alignment with the to-be-established philosophy. TM 9 will address RFP Deliverable F for the analysis of existing policies, ordinances, standards, and strategies for alignment with to-be-established philosophy.

### TM 10 – Financial Considerations

Many factors may either facilitate or limit the City's ability to adequately manage stormwater runoff and mitigate the effects of floods. TM 10 will discuss financial considerations including the types of costs likely to be incurred. We understand that the City completed a Stormwater Utility Rate in 2018 which considered revenue requirements, cost allocations, and rate structures. We also understand that various levels of service were considered as it applies to overall program costs and implementation.

The intent of TM 10 is to build off the 2018 rate study and not duplicate efforts. Our analysis will include recommendations, or validation, for the level of service principles from the rate study.

The overall policy analysis and planning efforts may identify issues that impact City operating expenditures which would then be discussed in TM 10.

TM 10 will address RFP Deliverable E regarding the validation or recommendations for update of level of service principles from the 2017 rate study. This analysis will rely on the recommendations from the previous technical areas as well.

### TM 11 – Prioritization Framework

To guide project prioritization, we will work with City staff to develop a framework. The purpose of a Project Prioritization Framework is to aid in good decision-making, build projects that align with community values, and meet the City's goals and objectives. Goals for the prioritization framework come from the policy review process along with community engagement.

Typical prioritization goals include:

- Protect people from harm
- Preserve, protect, and restore the natural resources associated with creeks and wetlands
- Provide resilient infrastructure that addresses uncertainty, including climate change considerations
- Provide access for emergency response and recovery efforts
- Minimize property damage
- Provide efficient and cost-effective solutions

Characteristics of an effective framework include:

- A clear and defensible framework
- Incorporation of community values identified through stakeholder engagement and constructive dialog
- Ability to rank major capital projects that have been developed from multiple studies, CEAP, and master plan outcomes

We will work with the city and stakeholders to develop a list of prioritization criteria along with quantifiable attributes for each criterion (refer to the example shown in Table 1). We will incorporate the appropriate criteria from the City's Carbon Neutrality Prioritization Framework (May 4, 2020) for consistency and integration. Through community engagement activities, we will develop weights applied to each criterion. Up to ten (10) existing projects will be selected and we will quantify the attributes and demonstrate prioritization methodology. A review of the example projects may lead to adjusting the weighting criteria.

**Table 1: Example Prioritization Criteria**

ATTRIBUTES PLACED IN MODEL FOR ASSESSMENT	ASSOCIATED UNITS (Quantitative, Qualitative or Semi-Quantitative)
<b>LIFE SAFETY</b>	
Protect Critical Facilities	
Critical Facilities removed from HHZ	# of Structures removed
Critical Facilities removed from 500-yr floodplain	# of Structures removed
Remove Residential Units from HHZ	# of Structures removed
Road Level of Service	Average Annual Daily Traffic (AADT)
<b>COST</b>	
Capital Costs	\$
O&M Costs	\$
<b>EFFECTIVENESS</b>	
Protect Property	
Reduction in Physical Damage Potential	# of Structures removed from 100-yr floodplain
Reduction in Damage to Structures	\$
Level of Service	% Increase
<b>ENVIRONMENTAL/CULTURAL RESOURCES</b>	
Protection/Restoration of Environmental Resources	
Protect Existing Natural Features & Habitat	Acres
Restore/Reclaim Natural Features	Acres
<b>SOCIAL IMPACT, EQUITY &amp; FAIRNESS</b>	
Social Vulnerability	0 to 1 ranking (1 is vulnerable)
<b>ABILITY TO IMPLEMENT</b>	
Constraints	Easy / Neutral / Difficult
Community Acceptance & Support	1 to 5 ranking (5 is full support)
<b>MULTIPLE BENEFITS</b>	
Protect Critical Facilities	1 to 5 ranking (5 is important)

A technical memorandum will be prepared documenting the project prioritization framework. Quantification of the attributes for each project along with the calculated ranking may be stored in a database (both spreadsheets and GIS work well). A spreadsheet will be created with the example data to demonstrate the methodology.

TM 11 will address RFP Deliverable B (resiliency planning into stormwater management) as it pertains to the criteria for decision making and infrastructure management investments.

**Deliverables:** TM 4 through TM 11 discussed above, and the prioritization spreadsheet populated with the 10 example projects



**TASKS 7 & 8: Tell the Story – Management Plan Development & Acceptance**

We will incorporate the documentation and feedback from the previous tasks to prepare a draft Management Plan. This is the opportunity to roll all the recommendations, policies, and reviews from the individual technical evaluations into one cohesive comprehensive stormwater management plan. The overall aim is to manage stormwater in a way that protects water quality, reduces flooding, and promotes sustainable development while concurrently enhancing the community’s ability to withstand and adapt to the changing climate.

We understand that significant consultant support may be required for public engagement to solicit and incorporate the feedback from city staff, the public, and the Stormwater Advisory Board in the final Management Plan. We understand the role we play in the Management Plan acceptance and commit to assisting with preparations and attendance at Board meetings, Council meetings, and public hearings as needed. For budgeting purposes, we are assuming up to three (3) meetings to solicit feedback and will assist in presenting the plan to City Council.

**Deliverables:** Comprehensive Stormwater Management Plan

**Lessons Learned.** Our successful leadership in the Comprehensive Flood and Stormwater Master Plan for Boulder CO established the policy framework guiding programs and projects within the city. Our initiative aimed to enhance the management of stormwater and drainageways, prioritizing the protection of people, places, property, and ecosystems while fostering resilience and aligning with community values. This triumph was achieved through an informed approach that integrated community input, insights from recent floods, Boulder’s Racial Equity Plan, and a recognition of the growing impact of climate change, among other key considerations.

## Compatibility with City's Standards, Goals, & Objectives

As an Ann Arbor-based company, we follow the standards and goals of our hometown. A few City initiatives and how we may assist are described below.

### Environmental Commitment

Tetra Tech has long focused on helping its clients address water, environment, infrastructure, resource management, energy, and international development needs. We lead and support programs that minimize our collective impacts on the environment—through the solutions we provide for our clients; through our procurement and subcontracting practices; by the processes we use within the Company to promote sustainable practices, reduce costs, and minimize environmental impacts; and through employee-supported activities such as volunteer work and fundraising campaigns.

Our vision of the future is to incorporate the concepts of sustainability more fully into our daily operations and to follow the United Nations World Commission on Environment and Development goal to “meet the needs of the present without compromising the ability of future generations to meet their own needs.” Tetra Tech is in a unique position to further this vision and has the ability to provide innovative solutions to meet pressing global challenges. On a daily basis and on a global scale, our work plays a direct role in helping to achieve the balance that will allow future generations to

access the necessary resources to meet all of their needs. The focus of Tetra Tech’s Sustainability Program is to sustain the growth of its business, reduce greenhouse gas emissions, and provide an exceptional employee work environment, while providing better solutions for its clients.

### Ann Arbor Vision Zero

This vision is to eliminate deaths and serious injuries on City streets by 2025. As one of MDOT’s most widely used consultants, Tetra Tech is familiar with all safety design standards, including speed management tools. We also believe this design consideration extends to such practices as green stormwater infrastructure which can impact vehicular safety if not properly completed.

### Ann Arbor Zero Carbon-Neutrality Goal

Tetra Tech is excited about a 2030 Ann Arbor that is carbon neutral. Brian Rubel, an Ann Arbor resident, voted for the millage assisting in funding this program. As one of the largest solar and wind consultants, Tetra Tech is ideally suited to assist Ann Arbor reach this goal. On our current project for the Midtown Booster Station, Tetra Tech recommended the building use electric heat, a renewable energy source and thus comply with Ann Arbor’s electrification ordinance.



### Commitment to Sustainability

On the 40th anniversary of Earth Day in 2010, Tetra Tech formalized our Sustainability Program to advance our environmental, social, and governance (ESG) goals through our projects, operations, and employee-supported charitable activities and volunteer work. Tetra Tech has long focused on providing our clients with industry-leading sustainable solutions that support development of safe water supplies, net zero energy programs, and biodiversity protection through habitat preservation and restoration

Tetra Tech established a Sustainability Council to help coordinate and track our Sustainability Program, oversee development of an annual corporate Sustainability Report, and support communication of best practices across the Company. Our Sustainability Program focuses on supporting Tetra Tech’s mission to be a premier worldwide consulting and engineering firm, focusing on water, environment, sustainable infrastructure, renewable energy, and international development.



## 1 BILLION PEOPLE CHALLENGE

Our goal is to improve the lives of 1 billion people by 2030. Because our biggest impact on the world is through the projects we perform for our client, we are tracking the total number of lives improved from our projects. We align our project impact analysis with the Global Reporting Initiative (GRI) standards and the UN Sustainable Development Goals (SDGs), which measure social benefit and aim to reduce poverty in communities around the world.

MEASURE	2021 BASELINE
Lives Improved	411 million people
PROJECT METRICS / SDG	
Water/SDG 6	328,000 mL/year of water treated, saved, or reused
Renewable Energy/SDG 7	16,800 MW/year of renewable energy identified, planned, or generated
Ecosystems/SDG 14 and 15	178 million ha/year of land and water protected, managed, or restored
GHG Emission Reduction/SDG 13	20.6 million CO <sub>2</sub> e MT/year avoided or captured
Social and Governance/SDG 3, 4, 5, 16	35 million lives improved/year from social and governance programs

“ Tetra Tech received six Environmental Business International awards for excellent performance, innovation, and industry leadership in 2022. The annual awards from the Climate Change Business Journal and Environmental Business Journal were presented at the Environmental Industry Summit XXI on March 22, 2023, in San Diego, California. ”



## Working Relationship with City Staff

Tetra Tech envisions a working relationship where we are an extension of the City of Ann Arbor's staff. This relationship will be especially crucial for the staff supplementation roles identified in the RFP. Our consistent team members will lead to a working understanding of the City's expectations and technical practices. The relationship we enjoy with communities like Brighton and Northfield Township allow us to coordinate project execution within multiple departments/units of each community, thereby reducing the burden of the staff of clients we serve.

Tetra Tech's Ann Arbor office is located two miles from the Wheeler Center next to the Ann Arbor Airport. Tetra Tech and Drummond Carpenter's Ann Arbor offices and the proximity to all City buildings make our team ideally suited to schedule a needed meeting with any City employee. We invite our clients to review our performance, so we can make the necessary adjustments to improve and exceed our clients' expectations.

We can make numerous staff members available to work from City offices. We have identified Daniel Warren in the organization chart, but many others can be made available at least part-time.

### Commitment to 24/7 Availability

Tetra Tech is committed to being available 24/7 to the City. We will serve the City from our office in Ann Arbor. Our Project Manager, Brian Rubel, PE, is an Ann Arbor resident. He can generally be mobilized to any Ann Arbor site within 10 minutes. He is a dedicated employee who monitors his cell phone and e-mail in the evenings and weekends.

Mr. Rubel is an Operations Manager for Tetra Tech's Michigan services and thus has the authority to assign Tetra Tech resources to best meet the

needs of the City both during regular office hours and beyond. We invite you to contact him at any time to confirm his commitment at 734.649.4546 or brian.rubel@tetrattech.com. Daniel Warren will be Mr. Rubel's deputy and has the same level of commitment monitoring his correspondence.

## Consultant Capabilities

Tetra Tech's approach for this contract includes:

- ◆ Developing a thorough scope of work and schedule at the beginning of each assignment for mutual agreement to avoid conflicts regarding the project definition.
- ◆ A project start meeting at the beginning of each assignment to further refine the problem statement and to understand our clients' goal and objectives.
- ◆ A Tetra Tech internal kickoff meeting where the specific project technical standards are discussed (i.e., review of drawing standards and client specifications).
- ◆ In-person progress meetings (monthly or more) to discuss the project and adjust Tetra Tech's execution to arrive at our clients' goals. These periodic workshops allow clients to give their technical input to ensure satisfaction with the work.
- ◆ To the extent practical and acceptable to the City, Tetra Tech will assign the same staff to subsequent projects so that we consistently understand and meet the expectations and standards of the City.

## Project Execution

Tetra Tech's approach to managing projects is depicted in the graphic on the following page that shows our QA/QC procedures used to produce a technically sound product. Since each project we complete is customized to our clients' needs,

client input is clearly defined to ensure a successful project outcome.

## Quality Assurance/Quality Control

Tetra Tech's QA/QC program is exercised on all projects to ensure our deliverables are technically sound, high-quality, cost-effective, and tailored to project objectives. The QA/QC program includes several milestones prior to submittal of deliverables. We will review each document in accordance with the program and document each review to verify implementation of the procedures. The QA/QC program consists of two distinct but interdependent components:

**Quality Assurance (QA):** The QA process is used to understand the project from the client's perspective, and that their goals and objectives have been met. QA representatives consist of individuals not directly involved in the project who provide an independent perspective. Each reviewer will document their results on a checklist or questionnaire, which is then shared with the project team for possible implementation. This provides a means to continually identify opportunities for improvement. The QA process consists of:

- ◆ **Client Satisfaction Process Interview:** A Tetra Tech representative, not associated with the project, meets with the client at the beginning of the project to establish measurable and periodic milestones to evaluate our performance. We also perform a follow-up evaluation with the client upon completion of the project to confirm that we met or exceeded their expectations. Our clients consistently tell us few consulting firms have such a process and these interviews do deliver projects with a higher level of satisfaction.

## PROJECT MANAGEMENT APPROACH

- |  |   |   |  |  |
|--|---|---|--|--|
| <p><b>1</b> <b>Project Workshop Initiative</b></p> <ul style="list-style-type: none"> <li>» Proposal/Scope of Services</li> <li>» Project Budget</li> <li>» Project Schedule</li> </ul>                        | <p><b>4</b> <b>Project Start Meeting</b></p> <ul style="list-style-type: none"> <li>» Present Work Plan Items</li> <li>» Budget/Hours/Schedule</li> <li>» Confirm Commitments/Schedule Meetings</li> <li>» Client Priorities</li> </ul>                                   | <p><b>7</b> <b>Preliminary Drawings/Reports</b></p> <ul style="list-style-type: none"> <li>» Land Survey</li> <li>» Develop Contractor Pre-qual</li> <li>» Ongoing Team Workshops</li> </ul>                      | <p><b>10</b> <b>Project Audit (50 to 60% Complete)</b></p> <ul style="list-style-type: none"> <li>» Same as #6</li> </ul>  | <p><b>14</b> <b>Construction Bidding</b></p> <ul style="list-style-type: none"> <li>» Consider Contractor Pre-qual</li> </ul>  |
| <p><b>2</b> <b>Client Satisfaction Interview</b></p>   | <p><b>5</b> <b>Key Concept Review</b></p> <ul style="list-style-type: none"> <li>» Project Team Review</li> <li>» Concurrence from Clients on Basis of Design</li> <li>» Cost Est. Review/Validation</li> <li>» Ongoing Project Status Communication to Client</li> </ul> | <p><b>8</b> <b>QA/QC Reviews</b></p> <ul style="list-style-type: none"> <li>» Technical Checks</li> <li>» Constructability Review</li> <li>» Report Enhancement</li> <li>» Cost Est. Review/Validating</li> </ul> | <p><b>11</b> <b>Final Design/Report</b></p> <ul style="list-style-type: none"> <li>» Ongoing Team Workshops</li> </ul>   | <p><b>15</b> <b>Construction Services</b></p> <ul style="list-style-type: none"> <li>» Resident Services</li> <li>» Bidding</li> <li>» Shop Drawing Reviews</li> <li>» O&amp;M Manuals/Operator Training</li> </ul>        |
| <p><b>3</b> <b>Work Plan</b></p> <ul style="list-style-type: none"> <li>» Basis of Design (Prelim.)</li> <li>» QA/QC Plan/Deliverables</li> <li>» Project Tracking</li> <li>» Budget/Hours/Schedule</li> </ul> | <p><b>6</b> <b>Project Initiation Audit</b></p> <ul style="list-style-type: none"> <li>» Internal Auditor</li> <li>» Make Work Plan Adjustments</li> </ul>  | <p><b>9</b> <b>Preliminary Document Distribution to Client/Outside Agencies</b></p> <ul style="list-style-type: none"> <li>» Confirm Meeting Scope of Services</li> <li>» Permit Application</li> </ul>           | <p><b>12</b> <b>QA/QC Reviews</b></p> <ul style="list-style-type: none"> <li>» Technical Checks</li> <li>» Report Enhancement</li> <li>» Cost Estimating Validation</li> </ul> | <p><b>16</b> <b>Project Closeout</b></p> <ul style="list-style-type: none"> <li>» Prepare Final Project Summary</li> <li>» File Design Notes and File Drawings/Reports</li> <li>» Client Satisfaction Interview</li> </ul> |

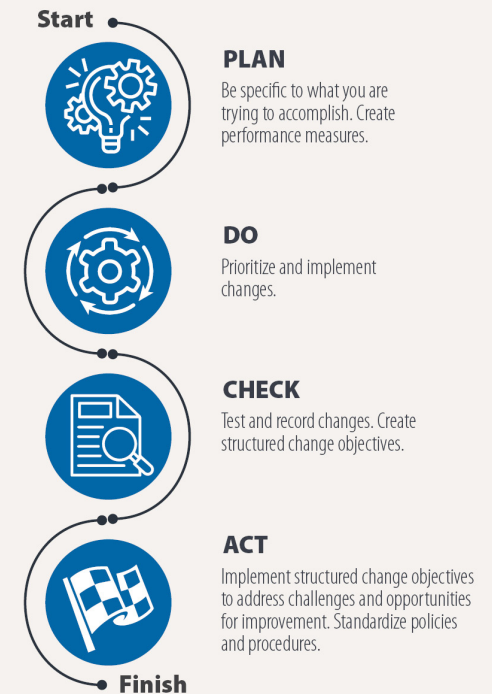
- Report Enhancement Process:** A representative reviews the report outline and draft report and compares the client’s objectives with our approach to ensure clarity and thoroughness.
- Key Concept Review:** A team of discipline experts review project concepts, looking for design ideas and alternatives that may not have been considered or potential innovative solutions to enhance the project.
- Constructability Review:** Reviewers look specifically for cost-avoidance opportunities to make sure that the design promotes the most cost-effective construction operations.

**Quality Control (QC):** The QC process consists of detailed checking procedures and is performed by experienced professionals who are familiar with the client’s standards and practices. It consists of:

- Technical Reviews:** Each discipline is represented by a Lead Engineer who is responsible for developing, updating, and maintaining our document and design standards.

- Calculations:** We review all calculations to ensure proper application of design criteria and technical standards and to verify the mathematical correctness of the results.
- Checklists:** We use checklists during the review of calculations and report/construction documents to ensure proper application of city, state, and federal design criteria and standards.
- Report Consistency:** All report documents developed by Tetra Tech are reviewed for consistency of format and standards.
- Construction Documents:** We check construction plans and supplemental specifications for accuracy, consistency, constructability, and conformance with the standards of our clients.
- Conforming to Construction Record Drawings:** Our construction inspectors, design engineers, and independent CAD staff review final record drawings to confirm accuracy, consistency, and conformance with client standards.

## PLAN-DO-CHECK-ACT MODEL



Tetra Tech’s Quality Assurance Plan Model



CITY OF

# ANN ARBOR



FEE PROPOSAL FOR

## Comprehensive Stormwater Management Plan RFP # 23-63



**TETRA TECH**

November 2023

*Printed on recycled stock*



NOVEMBER 29, 2023

City of Ann Arbor  
c/o Customer Service  
301 E. Huron Street  
Ann Arbor, MI 48104

**RE: RFP #23-63 – Comprehensive Stormwater Management Plan**

Dear Ms. Lawson and Selection Committee:

Please find enclosed Tetra Tech's fee proposal for the professional staff assigned to work on the above referenced project. While we are confident you will find our fee competitive, we believe Tetra Tech provides value beyond an hourly fee such as:

- ◆ A public engagement team who specializes in communicating the concerns of stormwater
- ◆ National experts in stormwater management to bring leading-edge ideas to formulate the best plan for Ann Arbor
- ◆ Local stormwater modeling experts to revise the City's SWMM
- ◆ Past experience developing an identical project for another university community
- ◆ A passion to protect Ann Arbor's most valuable natural resource

The attached spreadsheets derive our fee. The rates reflected for Tetra Tech are for calendar year 2023. The derivation assumes modest increases in hourly rates for work in calendar years 2024 and 2025. Tetra Tech's overhead is approximately 164% of raw salaries. A mark-up on subconsultants of 10% has been assumed.

We are eager to further discuss our successful vision for this important project!

Sincerely,

A handwritten signature in blue ink, appearing to read 'Daniel P. Christian'.

Daniel P. Christian, PE | Project Manager

A handwritten signature in blue ink, appearing to read 'Brian M. Rubel'.

Brian M. Rubel, PE, PMP | Senior Vice President

*Each person signing the proposal certifies that they are a person in Tetra Tech responsible for the decisions regarding the fees being offered in the Proposal and has not and will not participate in any action contrary to the terms of this provision.*

*We acknowledge receipt of Addendum No. 1.*

**TE Price Proposal**

**Labor Plan**

**AA Comp SW Mgmt Plan**

Ann Arbor Comprehensive Stormwater Management Plan  
Submitted to: City of Ann Arbor, MI (Attn: Jennifer Lawson)

Contract Type: T&M

**Project Phases / Tasks**

Bill Rate >	275.00	265.00	275.00	190.00	130.00	195.00	225.00	130.00	265.00	195.00	265.00	275.00	265.00	110.00	110.00					
Proj Area >	Principal in Charge	PM	Engagement, Funding	Floodplain	Floodplain	Floodplain	Drainage	Drainage	Drainage	Quality, Watershed	Quality, Watershed	Quality, Watershed	Funding	Funding	General	Graphics				
	Rubel, Brian (Rubel, Brian)	Christian, Dan (Christian, Dan)	Scharnhorst, Vicki (Scharnhorst, Vicki)	Matteo, Zach (Matteo, Zach)	Hinson, Danny (Hinson, Danny)	Addonizio-Blanco, Cynthia (Addonizio-Blanco, Cynthia)	Voss, Justin (Voss, Justin)	Troppman, Jenna (Troppman, Jenna)	Odenburger, Jake (Odenburger, Jake)	Cornier, Elise (Cornier, Elise)	Walker, Richard (Walker, Richard)	Krant, Kevin (Krant, Kevin)	Woodcock, Andy (Woodcock, Andy)	Cooperwasser, Vic (Cooperwasser, Vic)	Christian, Pat (Christian, Pat)	Collingsma, Melissa (Collingsma, Melissa)	Labor	Subs	Travel	Task Pricing Totals
Total Labor Hrs	70	410	36	80	100	20	26	628	40	20	10	10	20	10	52	140	326,453	166,500	2,200	495,154
<b>1. Project Planning</b>	16	4	6	-	-	-	-	-	4	-	-	-	-	-	2	-	3,584	2,405	220	6,209
Project Initiation	4	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1,129	671	-	1,800
Kickoff Meeting	12	2	4	-	-	-	-	4	-	-	-	-	-	-	2	-	2,456	1,734	220	4,409
<b>2. Foundational Framework</b>	104	-	30	-	-	-	-	60	-	-	-	-	-	-	4	10	18,068	7,445	-	25,513
Background data compilation/review	30	-	10	-	-	-	-	20	-	-	-	-	-	-	-	-	5,485	3,722	-	9,207
TM 1 - Foundational Framework	74	-	20	-	-	-	-	40	-	-	-	-	-	-	4	10	12,582	3,722	-	16,304
<b>3. Drainage Model Update</b>	178	-	14	-	-	-	26	124	-	-	-	-	-	-	4	10	28,445	1,676	-	30,121
Model updates from CIP and Priv Dev	70	-	2	-	-	-	8	60	-	-	-	-	-	-	-	-	10,586	-	-	10,586
Future design storm input	6	-	2	-	-	-	-	4	-	-	-	-	-	-	-	-	1,097	-	-	1,097
Model solutions	32	-	2	-	-	-	10	20	-	-	-	-	-	-	-	-	5,622	-	-	5,622
TM 2 - Model Updates	70	-	8	-	-	-	8	40	-	-	-	-	-	-	4	10	11,140	1,676	-	12,816
<b>4. Public Engagement</b>	100	-	88	12	-	-	-	-	-	-	-	-	-	-	-	-	28,353	71,504	1,980	101,838
Community Engagement Toolkit	8	-	4	4	-	-	-	-	-	-	-	-	-	-	-	-	2,257	1,734	-	3,991
Organize Stormwater Advisory Group (SAG)	8	-	4	4	-	-	-	-	-	-	-	-	-	-	-	-	2,257	994	-	3,252
Engagement Communication Plan (memo)	8	-	4	4	-	-	-	-	-	-	-	-	-	-	-	-	2,257	9,891	-	12,148
Education campaigns, surveys, feedback	6	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	1,699	22,634	-	24,333
SAG Meetings (8 video conference)	20	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	5,663	12,166	-	17,829
Stakeholder Meetings (8 in-person)	40	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	11,326	19,017	1,760	32,103
Public Meetings (2 in-person)	10	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	2,894	5,069	220	8,183
<b>5. Policy Evaluation</b>	134	8	32	-	-	-	-	80	-	-	-	-	-	-	4	10	23,638	1,989	-	25,627
TM 3 - Policy Evaluation	134	8	32	-	-	-	-	80	-	-	-	-	-	-	4	10	23,638	1,989	-	25,627
<b>6. Policy Analysis</b>	768	30	64	20	80	100	20	240	40	20	10	10	20	10	24	80	142,431	40,674	-	183,105
TM 4 - Stormwater Quality	38	-	8	-	-	-	-	-	-	10	10	-	-	-	-	10	8,356	18,809	-	27,165
TM 5 - Stormwater Drainage	112	10	8	-	-	-	-	40	40	-	-	-	-	-	4	10	23,731	509	-	24,241
TM 6 - Floodplain Hazards	112	-	8	-	80	-	10	-	-	-	-	-	-	-	4	10	22,235	509	-	22,745
TM 7 - Flood Preparedness	137	-	8	-	100	10	-	-	-	-	-	-	-	-	4	10	19,885	509	-	20,394
TM 8 - Watershed Management	38	-	8	-	-	-	-	-	-	10	-	10	-	-	-	10	8,463	18,809	-	27,271
TM 9 - Regulatory Discussions	112	10	8	-	-	-	-	80	-	-	-	-	-	-	4	10	17,961	509	-	18,471
TM 10 - Financial Considerations	112	10	8	10	-	-	-	40	-	-	-	-	20	10	4	10	23,838	509	-	24,348
TM 11 - Prioritization Framework	112	-	8	10	-	-	-	80	-	-	-	-	-	-	4	10	17,961	509	-	18,471
<b>7. Stormwater Management Plan</b>	212	4	40	4	-	-	-	120	-	-	-	-	-	-	14	30	36,298	7,154	-	43,452
Draft	168	4	30	4	-	-	-	100	-	-	-	-	-	-	10	20	28,883	6,112	-	34,995
Final	44	-	10	-	-	-	-	20	-	-	-	-	-	-	4	10	7,415	1,043	-	8,457
<b>8. Plan Acceptance</b>	12	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	3,473	7,603	-	11,076
General Assistance	12	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	3,473	7,603	-	11,076
<b>Meetings and Administration</b>	148	24	124	-	-	-	-	-	-	-	-	-	-	-	-	-	42,163	26,050	-	68,213
Monthly Admin	48	24	24	-	-	-	-	-	-	-	-	-	-	-	-	-	13,848	7,715	-	21,563
Biweekly Team Meetings (36, video conf)	100	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	28,315	18,335	-	46,650
<b>Totals</b>	<b>1,672</b>	<b>70</b>	<b>410</b>	<b>36</b>	<b>80</b>	<b>100</b>	<b>20</b>	<b>26</b>	<b>628</b>	<b>40</b>	<b>20</b>	<b>10</b>	<b>10</b>	<b>20</b>	<b>10</b>	<b>52</b>	<b>326,453</b>	<b>166,500</b>	<b>2,200</b>	<b>495,154</b>

Drummond-Carpenter Fee Derivation

				Carpenter, Don	Pieschek, Rachael	Bailey, Kate	Graphical Artist	Clerical/					
				Principal	Prof Engineer	Sr. Staff Engineer							
				\$226	\$168	\$155	\$115	\$79					
				2024 Rate	2025 Rate								
				\$237	\$176	\$163	\$120	\$83					
	Start Date	End Date	% in 2024	% in 2025					Total Hours	Labor	Expenses	Total	
<b>1. Project Planning</b>					6	4	0	0	2	12	\$2,186.00	\$0.00	\$2,186.00
Project initiation	01/01/24	12/31/24	100%	0%	2				2	4	\$610.00		\$610.00
Kickoff Meeting	01/01/24	12/31/24	100%	0%	4	4				8	\$1,576.00		\$1,576.00
<b>2. Foundational Framework</b>					8	0	32	0	0	40	\$6,768.00	\$0.00	\$6,768.00
Background data compilation/review	01/01/24	12/31/24	100%	0%	4		16			20	\$3,384.00		\$3,384.00
TM 1 - Foundational Framework	01/01/24	12/31/24	100%	0%	4		16			20	\$3,384.00		\$3,384.00
<b>3. Drainage Model Update</b>					4	0	4	0	0	8	\$1,524.00	\$0.00	\$1,524.00
Model updates from CIP and Priv Dev	01/01/24	12/31/24	100%	0%						0	\$0.00		\$0.00
Future design storm input	01/01/24	12/31/24	100%	0%						0	\$0.00		\$0.00
Model solutions	01/01/24	12/31/24	100%	0%						0	\$0.00		\$0.00
TM 2 - Model Updates	01/01/24	12/31/24	100%	0%	4		4			8	\$1,524.00		\$1,524.00
<b>4. Public Engagement</b>					112	180	0	40	0	332	\$61,404.00	\$3,600.00	\$65,004.00
Community Engagement Toolkit	01/01/24	12/31/24	100%	0%	4	4				8	\$1,576.00		\$1,576.00
Organize Stormwater Advisory Group (SAG)	01/01/24	12/31/24	100%	0%	4					4	\$904.00		\$904.00
Engagement Communication Plan (Initial & Rev)	01/01/24	12/31/24	100%	0%	16		32			48	\$8,992.00		\$8,992.00
Education campaigns, surveys, feedback	01/01/24	12/31/25	50%	50%	24		60	40		124	\$20,576.00		\$20,576.00
SAG Meetings (8 video conference)	01/01/24	12/31/25	50%	50%	24		32			56	\$11,060.00		\$11,060.00
Stakeholder Meetings (8 in-person)	01/01/24	12/31/25	50%	50%	32		40			72	\$14,288.00	\$3,000.00	\$17,288.00
Public Meetings (2 in-person)	01/01/25	12/31/25	0%	100%	8		12			20	\$4,008.00	\$600.00	\$4,608.00
<b>5. Policy Evaluation</b>					8	0	0	0	0	8	\$1,808.00	\$0.00	\$1,808.00
TM 3 - Policy Evaluation	01/01/24	12/31/24	100%	0%	8					8	\$1,808.00		\$1,808.00
<b>6. Policy Analysis</b>					32	24	160	0	0	216	\$36,976.00	\$0.00	\$36,976.00
TM 4 - Stormwater Quality	01/01/24	12/31/25	50%	50%	10	12	80			102	\$17,099.00		\$17,099.00
TM 5 - Stormwater Drainage	01/01/24	12/31/25	50%	50%	2					2	\$463.00		\$463.00
TM 6 - Floodplain Hazards	01/01/24	12/31/25	50%	50%	2					2	\$463.00		\$463.00
TM 7 - Flood Preparedness	01/01/24	12/31/25	50%	50%	2					2	\$463.00		\$463.00
TM 8 - Watershed Management	01/01/24	12/31/25	50%	50%	10	12	80			102	\$17,099.00		\$17,099.00
TM 9 - Regulatory Discussions	01/01/24	12/31/25	50%	50%	2					2	\$463.00		\$463.00
TM 10 - Financial Considerations	01/01/24	12/31/25	50%	50%	2					2	\$463.00		\$463.00
TM 11 - Prioritization Framework	01/01/24	12/31/25	50%	50%	2					2	\$463.00		\$463.00
<b>7. Stormwater Management Plan</b>					16	8	8	0	0	32	\$6,504.00	\$0.00	\$6,504.00
Draft	01/01/25	12/31/25	0%	100%	12	8	8			28	\$5,556.00		\$5,556.00
Final	01/01/25	12/31/25	0%	100%	4					4	\$948.00		\$948.00
<b>8. Plan Acceptance</b>					12	12	12	0	0	36	\$6,912.00	\$0.00	\$6,912.00
General Assistance	01/01/25	12/31/25	0%	100%	12	12	12			36	\$6,912.00		\$6,912.00
<b>Meetings and Administration</b>					96	0	0	0	18	114	\$23,682.00	\$0.00	\$23,682.00
Monthly Admin	01/01/24	12/31/25	50%	50%	24				18	42	\$7,014.00		\$7,014.00
Biweekly Team Meetings (36, video conf)	01/01/24	12/31/25	50%	50%	72					72	\$16,668.00		\$16,668.00
<b>TOTAL</b>					<b>294</b>	<b>228</b>	<b>216</b>	<b>40</b>	<b>20</b>	<b>798</b>	<b>\$147,764.00</b>	<b>\$3,600.00</b>	<b>\$151,364.00</b>

CITY OF  
**ANN ARBOR**

FEE PROPOSAL FOR  
**Comprehensive Stormwater  
Management Plan RFP #23-63**



1136 Oak Valley Drive, Suite 100  
Ann Arbor, MI 48108  
734.665.6000  
[www.tetrattech.com](http://www.tetrattech.com)



# Hydraulic Model Conversion

This document identifies a draft approach to convert the City of Ann Arbor's current stormwater hydraulic model from InfoSWMM to InfoWorks. Based on a preliminary review of the model and conversion trials we are not anticipating any major problems with the model conversion. Our budgeted level of effort to convert the model reflects our preliminary review. If significant problems arise, we will discuss this with the City.

## Project Objective

Ensure compatibility and seamless transition to the new software platform. Maintain or enhance the accuracy and reliability of the stormwater hydraulic model.

## Approach

### Current Model Familiarity

- Conduct a comprehensive review and documentation of the existing InfoSWMM model to gain familiarity with the model and modeling approach used.
- Identify and document key parameters, input data, and model configurations.

### Data Migration

- In a meeting, discuss with the City to identify which scenarios will be converted. We recommend converting scenarios representing current conditions and proposed scenarios representing near-term capital improvements. Converting hypothetical scenarios that are not likely to be used in the future can be done but may not provide value.
- Convert the hydraulic model to the selected software. Document conversion warnings or errors.
- Solve the model to identify simulation warnings or errors. Correct errors and document warnings or correct if critical to the simulation. Document changes made to the model to correct the errors.
- Verify the integrity of migrated data by solving pre- and post-conversion models and comparing the results to available output data for the existing conditions scenario for one design storm. The following results will be compared if the data are available.
  - Tabular data such as peak runoff rate, total runoff volume, peak flow rate, maximum depth, and maximum storage volume at all model elements.
  - Hydrograph comparison at up to 10 critical locations (outfalls, storage areas, etc.) to be defined by the City staff if the data can be provided from the InfoSWMM model.
  - Identify areas that have significant differences (deviations of +/-10%)

### Testing and Quality Assurance

- Conduct a thorough quality assurance review to identify and resolve issues.
- Document and address discrepancies or anomalies in the model outputs.
- Confirm if proposed facilities in the City's current CIP are sized appropriately using the post-conversion model and identify differences. For budgeting purposes, we are assuming that the proposed conditions are already included in the model.

## Training

- Provide a half-day training session for City staff on the new software platform.

## Documentation:

- Document the conversion in a hydraulic model report. Document significant deviations or modifications made during the conversion process.



# Price Proposal

## Labor Plan

### Comp SW Mgmt Plan - SWMM

Ann Arbor Comprehensive Stormwater Management Plan - SWMM Model Update

Submitted to: City of Ann Arbor, MI (Attn: Jennifer L

Contract Type: T&M

Bill Rate >

275.00    265.00    225.00    130.00

Proj Area >

Principal-in-Charge    PM    Drainage    Drainage

**Total Labor Hrs**

**238**

Rubel, Brian (Rubel, Brian)

Christian, Dan (Christian, Dan)

Voss, Justin (Voss, Justin)

Troppman, Jenna (Troppman, Jenna)

Labor

Travel

**Task Pricing Totals**

**Project Phases / Tasks**

**Hydraulic Model Conversion**

Model Familiarity  
Data Migration  
Testing and QA  
Training  
Documentation

**Totals**

**238**

**10**

**34**

**60**

**134**

**42,680**

**220**

**42,900**