

Bear Lake SAW Grant-Stormwater Management Plan
Scope of Work/Work Plan
July 29, 2017

This document supports the Bear Lake Saw Grant application

Scope of Project:

The project for Village of Bear Lake and Bear Lake Watershed will consist of the development of a Storm Water Management Plan (SWMP) which will assist in defining and mapping the existing MS4 system within the boundaries of the Bear Lake Watershed.

The Bear Lake Watershed wishes to protect the long-term health of Bear Lake by developing a storm water management plan that will address the issue of stormwater runoff and water quality of that runoff, by making residents and other stakeholders aware of the:

- Drainage patterns in the community.
- Lack of drainage outlets for development areas of the community.
- How stormwater BMPs impact water quality.
- How their behaviors affect stormwater runoff.
- How every day activities ultimately affect their lake where they enjoy water recreation activities.

Establish a Stormwater Management Plan

The Stormwater Plan has many purposes but is primarily intended to establish standards with respect to the use and operation of the Manistee County Road Commission and Village's storm water system; to mitigate flooding; reduce pollution and sedimentation of the system, adjacent properties and the environment; and to improve the water quality of Bear Lake.

The goal of this project is to provide:

- A comprehensive planning tool for use in reviewing and managing site development within the watershed.
- A description of the major components of the stormwater system draining to the lake.
- A description of publicly owned BMPs and private BMPs that significantly affect the stormwater system.
- A general maintenance plan for BMPs within rural, municipal, industrial, commercial, and residential areas.
- A storm water model of the stormwater conveyance system that will be used in predictive modeling for future stormwater related projects, capital improvements, pollutant loading decision strategies and overall strategies for lake management.
- A comprehensive stormwater conveyance system map (or series of maps) that identifies within the jurisdictional boundaries of Village of Bear Lake:
 - a. Drainage districts
 - b. Stormwater Structure locations
 - c. BMP locations (municipal, industrial, commercial and applicable residential)
 - d. Sources of stormwater
 - e. Priority areas to concentrate BMPs or maintenance activities

- f. Stormwater flow restrictions
- g. Surface flooding areas
- h. Floodplain and flood mitigation
- i. Receiving waters
- j. Erosion & sedimentation problem areas

This project will identify the community stakeholders and bring them together with the common goal of development of a plan to address the water quality of storm water being discharged into the Lake on a long term sustainable basis. To achieve that goal many tasks will need to be accomplished. This project will address the six (6) components identified in Appendix D under the topic of SAW Stormwater Management Plan. These components have been separated into tasks listed below with subtasks under each component.

Subconsultants

To expedite the process, we may use subconsultants for portions of the work. We have estimated the fees for this proposal assuming our staff and hourly rates, obtained preliminary quotes and/or have allotted time or budgetary costs for sub consultant work. We will coordinate with the Village regarding the use of sub consultants. All charges for subconsultants will be costs of the project covered by the Grant and paid for from Grant proceeds.

The following tasks will be completed during the course of the project:

Task 1:

Develop or enhance an existing map of jurisdictional boundaries and provide a description of the areas to be covered. This planning area will have a hydrological base and will include the entire stormwater collection / conveyance system within the boundaries of the Bear Lake Watershed (open & closed / private & public). The system within the Watershed will then be reviewed and divided into drainage districts.

Subtasks:

- a. Review existing maps and develop updated map
- b. Provide a description of areas
- c. Determine drainage districts
- d. Determine contributing area of drainage districts
- e. Label drainage districts per county standards

Outcome:

1. Basic Map of the Bear Lake Watershed storm water conveyance system with drainage districts.

Task 2:

Describe the major components of the stormwater conveyance system.

Subtasks:

- a. Find all structures on the closed public system (manholes, catch basins, inlets, outlets)
- b. Survey system to determine all pipe diameters, type of material, obtain rim elevations, inverts, etc. (when possible use existing survey or as built data in this task.
- c. Describe major components of the system or drainage districts, including sewershed, watershed boundaries, internal sub-boundaries (drainage sub-districts).
- d. Describe surface water hydrology
- e. Determine existing storage on municipal properties and on commercial, industrial and residential (subdivision or condo developments that have storage)
- f. Map floodplains, flood control facilities
- g. Document known stormwater treatment components
- h. Enter all data into GIS

Outcome:

1. Enhanced map with descriptive report of features and systems.

Task 3:

Describe and document Village owned BMPs and private BMPs that significantly affect the stormwater system.

Subtasks:

- a. Complete a comprehensive investigation of Village and privately owned BMPs, document condition and obtain relevant information on the BMPs.
- b. Determine if there is an applicable, economical monitoring method for quantitative measures.
- c. Implement a cost-effective monitoring system of Village owned BMPs.
- d. Determine if there is a cost-effective means to monitor private systems. Document feasibility and determine if there are funds from other sources to implement monitoring system of private BMPs. Must be a sustainable system.
- e. Perform limited wet weather monitoring on private system BMPs (if any) and document outcome of monitoring.
- f. From this data determine a general operating & maintenance procedure to enhance or optimize each BMP
- g. Provide this O&M to public and private BMPs to enhance maintenance plans
- h. From data above determine the effects of private and public BMPs on stormwater system.
- i. Develop a long-term strategy to determine a sustainable monitoring strategy that will be economically feasible for the Village to implement.

Outcome:

1. List of Village and privately owned BMPs for stormwater quality
2. Wet weather monitoring data

3. Sustainable monitoring plan
4. Determination of effects of BMPs on stormwater system

Task 4:

A description of all stormwater sources and all known stormwater related water quality problems within the project area.

Subtasks:

- a. Determine all sources of stormwater to the system
- b. Determine all known stormwater quality problems in project area
- c. Hold a public meeting or send out survey to determine stormwater quality problems
- d. Develop a storm water model of the key drainage districts identified as problem areas
- e. Identify surface flooding areas (hold public meeting or survey residential, commercial, educational and industrial areas to find)
- f. Identify hydraulic restrictions
- g. Identify areas of persistent erosion or sedimentation (if any)
- h. Compile all data obtained at this point and determine water quality issue(s)
- i. Develop a drainage district map for site development strategies and set a discharge rate and a water quality standard or recommended treatment BMPs for any development or re-development in the drainage district

Outcome:

1. A stormwater quality statement for the receiving waters from the Village's storm conveyance system within the project.
2. Stormwater model of stormwater conveyance system for future decisions.
3. Drainage District map identifying allowable discharge rates (cfs/acre) and BMPs.
4. Understanding of water quality issues for the project area.

Task 5:

Compile the data gathered at this point into a comprehensive Storm Water Management Plan for water quality. Analyze projects and collected data into a concept to move forward with a water quality program.

Subtasks:

- a. Develop a time table and plan to address surface flooding and water quality issues.
- b. Develop a time table and plan to address flow restrictions in the system that contribute to surface flooding or other conditions such as erosive forces, etc.
- c. Develop a long-term capital improvement plan that will address issues, be cost effective and use municipal resources effectively (such program would address elimination of constrictions, installation of structural BMPs, etc.
- d. Recommendations for changes to inspection procedures for Village owned BMPs.
- e. Recommendations for O&M plans for the private sector.
- f. Informational sessions for private sector to improve their stormwater BMP function and effectiveness (detention basin inspections, maintenance activities).
- g. Address any floodplain or flood encroachment issues in planning process.
- h. Provide cost estimates for all operation & maintenance plans / implementation.

- i. Provide cost estimates for any stormwater conveyance system upgrades, restriction removal, retrofits, BMP upgrades.

Outcome:

1. A comprehensive plan for implementation by Village of Bear Lake that will assist in growth as it relates to stormwater planning in development and redevelopment of educational institution properties, commercial, industrial and subdivision / condo / multi- unit residential development.

Task 6:

Development of an implementation timeline for the Storm Water Management Plan

Subtasks:

- a. Meet with Watershed. The DPW staff, and Village officials and determine a timeline for implementation of the plan
- b. Meet with the Watershed and Village management and determine timeline for any capital improvements to the stormwater conveyance system for development areas

Outcome:

1. Project timeline for the Watershed and Village to use in planning and budgeting for future.

Task 7:

Implement a Public Participation / Involvement Plan to implement for the Storm Water Management Plan to reflect portions of the previous tasks.

Subtasks:

- a. Identify stakeholders relative to this project
- b. Meet with the Watershed, Village staff and Village DDA officials and determine problem areas within jurisdictional boundaries
- c. Meet with stakeholders of the Village to obtain their input on water quality issues, drainage issues and BMP effectiveness
- d. Hold a minimum of two stakeholder meetings relative to this project
- e. Identify educational materials for outreach
- f. Develop educational materials for residents for awareness
- g. Identify methods of outreach
- h. Develop measurable goals for the BMPs to be implemented
- i. Revise PPP and PEP to reflect project changes in the community's NPDES SWMP
- j. Review and revise the municipal IDEP, SWPPI & PCC for any possible changes or updates based on this project.
- k. Inform stakeholders of results of E. Coli sampling on Bear Lake.
- l. Assemble and distribute existing information on Best Management Practices (BMP's) applicable to agricultural operations.
- m. Assemble and distribute existing educational materials on BMP's that can be used by homeowners to retain and filter runoff.
- n. Distribute results of water quality monitoring of Bear Lake.
- o. Assemble and distribute existing information on the important functions of wetlands.
- p. Assemble and distribute existing information on low-impact design to reduce runoff.

Outcome:

1. Development of educational materials
2. Identification of stakeholders
3. Public meetings
4. Measurable goals for BMPs
5. Education and Outreach materials

Project deliverables to the Watershed and Village of Bear Lake:

- Map(s) of Stormwater Conveyance system
- Map of Stormwater Conveyance system for Planning and site development
- Storm water model of stormwater conveyance system.
- Maintenance Plans for BMPs
- Educational Material (as decided upon during meetings)
- Timeline for implementation
- Budget information for implementation
- Lake Management Plan
- Revised PPP, PEP; revised as needed, IDEP, PCC and SWPPP