

Bear Lake Stormwater Management Plan

Executive Summary

The Village of Bear Lake has taken on the responsibility to implement the Stormwater Management Plan (SWMP) and established a long-term relationship with the Greater Bear Watershed Alliance (GBWA) to partner in the development of the SWMP. This SWMP's primary goal is for protection of the water quality of Bear Lake, which is a valuable natural resource for the Village. This SWMP provides a sustainable plan for the Village to protect their surface water resources from stormwater pollution from their urban area by partnering with the Greater Bear Watershed Alliance.

Urban stormwater is a documented source of pollutants from impervious areas of a community's business and residential districts. With the proximity of Bear Lake to this urban area, both the Village and the GBWA determined a plan was needed to protect the water quality of the lake.

Stormwater Wet-Weather Monitoring

Storm drains within the Village of Bear Lake were monitored for a suite of water quality parameters during wet weather events. The intent of monitoring was to understand the chemical makeup of the Village's stormwater, how different land uses within the community may impact stormwater quality, and how effective an existing best management practice (BMP) is. Additionally, understanding stormwater quality may allow for strategic improvement practices to be implemented in order to protect one of the Village's largest assets, Bear Lake. A total of four sample events during wet weather were completed during the spring, summer and fall of 2019. **Error! Reference source not found.** Changes in intensity, volume, duration of storm runoff, and the buildup period before the rain event may all have an impact on the stormwater quality observed.

Overview of Operation & Maintenance Best Management Practices

The stormwater conveyance system collects and transports urban runoff which may contain certain pollutants from the urban setting. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance systems, restore catch basins' sediment trapping capacity, and ensure the system functions with the properly designed hydraulics to prevent flooding. To ensure proper maintenance and effectiveness of these drainage systems, standard maintenance protocols were provided in a manual, as part of the report. It also would be necessary to update these practices based on new construction on municipal, industrial or commercial property.

The Operation and Maintenance best management practices (O&M manual) was also developed as a stand-alone document which the Village can hand out to site development projects and site owners to assist them in maintaining their storm water best management practices on their sites. Also, this manual provides the Department of Public Works with a reference on maintaining many various types of stormwater BMPs with links to training videos related to the maintenance.

The consultants met with Department of Public Works staff and provided them with standard operating procedures (SOPs) for their daily tasks. These SOPs were reviewed with the DPW and the Village President for applicability to the Village and with concerns to their actual budget for task implementation to assure sustainability.

Stormwater Management Plan (SWMP)

The original stormwater management plan complete with all its documents is a section of the report. The documents were developed as part of the Stormwater, Asset Management, and Wastewater (SAW) grant received by the Village of Bear Lake. There are six minimum measures for a SWMP for the permit application process, which were all created for the Village, even though it is not within an urbanized area, and therefore is not required to have a National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer systems (MS4) permit. Each of the six minimum measures are described below. While the Village is not required to have a NPDES Phase 2 Stormwater discharge permit the same standards were used in the development of the SWMP. The six minimum measures are briefly described as follows:

Public Participation Plan (PPP)

There are five guiding principles for ongoing public involvement and participation:

1. Public participation is a dynamic activity which requires teamwork and commitment at all levels of the village and residents.
2. One size does not fit all — input from diverse perspectives enhances the process of involvement.
3. Effective public outreach and involvement requires relationship building between local governments, stakeholders and advisory groups.
4. Engaging interested persons in local environmental issues is challenging, but possible, by making it relevant, remove any barriers to participation, and communicating in clear, compelling language and visuals.
5. An open and transparent public participation process empowers village residents and stakeholders to participate in decision making which may affect them.

Effective public participation is both functional for planning and meaningful to the public and stakeholders in a community. Participation is functional when it helps to create better decisions and a more thoughtful community plan of action. Participation is meaningful when the public and community, has opportunities to influence decisions and feels a sense of ownership for a community plan for action. A Public Participation Plan (PPP), which establishes a model for effective public involvement, contains written procedures for including the public in a community's planning process.

The participation objective with residents and stakeholders will be to increase awareness that there are best management practices (BMPs) which protect our water quality in the community. Then provide the necessary education to enhance the awareness and recognition of best management practices within the Village. Seek input from the public and the commercial stakeholders and collect the ideas put forth for sensible, efficient action items to be implemented. The Village leadership can host and provide an

effective public forum for decision making based on the public's input. Then finally, implement the decisions on the Village level.

One of the tools which can be used for Public Involvement is the Village's own web presence. Websites can keep the public informed and provide a means to communicate back to village officials, planners, consultants, and technical advisors. Surveys can be placed online, and email or social media can be used to entice people to participate in presentation of feedback to the Village, planners, and other consultants. There are some GIS tools which are now available with user friendly format to help engage the public more intimately in planning and decision making for the Village.

Stakeholders

Stakeholders for the Village to approach in planning process may include but are not limited to the following:

- Road Commission/ Michigan Department of Transportation (MDOT)
- District 10 Health Department
- School District
- Village Council

Additionally, for the purposes of the stormwater management plan, the members of the Bear Lake Watershed Group should be added to that list to approach in the education process.

Education Outreach Materials

The Village of Bear Lake will be using materials provided by the local or regional organizations such as; Tip of the Mitt, NRCS, Soil Conservation District, MSU-Extension, watershed groups, regional planning groups, and other regional environmental groups. These materials will be edited with the Village's contact information as needed and distributed.

Public Education Plan (PEP)

The Village of Bear Lake is surrounded with groups working to educate and involve the communities they serve. The PEP outlines 11 public education topics that must be communicated, prioritizes them based on a procedure for assessing high-priority community-wide issues, and targets issues to reduce pollutants in stormwater runoff. The goal for the PEP is to promote, publicize, and facilitate a stormwater education program that encourages the public to reduce stormwater pollution to the greatest extent possible.

Illicit Discharge Elimination Plan (IDEP)

This Illicit Discharge Elimination Plan has been prepared like the requirements of the NPDES Permit for Stormwater Discharges from MS4s, however does not require Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval as the Village of Bear Lake is not a Phase II community. The

IDEP is intended to prohibit and effectively eliminate illicit discharges (including the discharge of sanitary wastewater) to the separate stormwater drainage system. Illicit discharges, illicit connections, illegal dumping and/or spills originating outside of the jurisdictional boundaries are not the responsibility of the Village of Bear Lake and will be reported to the Manistee County Health Department.

The IDEP includes plans for preventative measures and training to reduce the amount of illicit discharge, connections, dumping, and increase awareness of these behaviors. This plan includes the screening of outfalls and point sources of stormwater entering natural water bodies directly.

Post Construction Controls (PCC)

This program for decades was called a community's stormwater management program. It is the stormwater design standards and guidelines for site development. It provides the site development with the options available for development within the Village, if a development is not using a County Drain, MDOT, or a County Road Commission MS4. This design guideline document is available as an attachment to this report.

Stormwater Construction Controls (SWCC)

This is the policy / procedure developed for the Village of Bear Lake's staff and workers who may witness or receive a complaint about a construction site discharging sediment laden stormwater into a storm sewer system (MS4) or a county drain. The procedure advises to report any such activity immediately to the Manistee County Planning Department, which is the County Enforcement Agency. This document is available an attachment to this report.

Pollution Prevention / Good Housekeeping (PP/GH)

Attached are the Standard Operating Procedures (SOPs) developed for the Village's Public Works staff for performing tasks where their work will interact with stormwater, rain or a stormwater conveyance system. These are standard procedures which are used by other DPW workers around the state.

Communication with the Village of Bear Lake

The practical implementation tasks of this report, such as the six minimum measures listed above were all reviewed with the Village President, DPW, and the Greater Bear Watershed Alliance in three meetings. At these meetings the plans were reviewed, comments received and the opportunity to question applicability and implementation strategies discussed. The six measures were then revised and approved after a final meeting. This method was used to assure understanding of the measures and to assure the measures could be implemented. The consultant provided the Village with an opportunity for a long term relationship and the ability to call and seek advice as the plans were being implemented.