



Water Conservation Plan

*[Entity], a Member of the
Chemical Manufacturing Sector*

Michigan Chamber of Commerce

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Submitted by Barr Engineering Company



Water Conservation Plan

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1.0 Introduction

Public Act 35 of 2006 (PA 35 of 06) requires that each water use sector develop voluntary guidelines for generally accepted water management practices or environmentally sound and economically feasible water conservation measures. The Act allows for such guidelines to be developed and adopted by an established statewide professional or trade association representing that sector.

In response to PA 35 of 06, the Michigan Chamber of Commerce (Chamber) has developed this template for a Water Conservation Plan (Plan) to serve as a guide for the Chemical Manufacturing sector.

The Chamber and its constituents recognize that the development of the voluntary guidelines as set forth in PA 35 of 2006, also meet the requirements of the Great Lakes Charter Annex Compact, and are consistent with the recommendations of the Groundwater Advisory Council. Specifically, Article 203 of the Proposed Compact (The Decision-Making Standard for Management of Withdrawals and Consumptive Uses within the Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement), states:

“The withdrawal or consumptive use shall be implemented so as to incorporate environmentally sound and economically feasible water conservation measures.”

The Groundwater Conservation Advisory Council’s February 6, 2006 Final Report to the Legislature provided several recommendations. Recommendation # 10 of the Report states:

“Each water-use sector should develop its own sector-specific water management practice. These should be reviewed and evaluated by a closely related professional or trade association. Water users within each sector should be encouraged to adopt and implement the water-management practices specific to their sector.”

The guidelines set forth in this Plan exemplify environmentally sound and economically feasible water conservation measures through generally accepted management practices (GAMPs).

2.0 Plan Objectives

The *[Entity]*, a member of the Chemical Manufacturing sector, has developed the following objectives to help define the strategy for considering and implementing voluntary GAMPs for water conservation and improving water efficiency as part of this Plan. The objectives for this Plan include the following:

- Establish an understanding of current water use at the facility.
- Consider sector specific GAMPs, and document GAMPs either considered or implemented at the facility, as indicated by cost-benefit considerations that could reduce water withdrawal or consumption from the levels that would exist without conservation efforts.
- Review and modify the Plan on a periodic basis. Maintain documentation related to implementation of the Plan.

Each of these objectives will be further discussed and outlined in the remainder of this document.

3.0 Characterization of Current Water Usage

An important component of a Water Conservation Plan is the characterization of a facility's current water usage. This includes characterizing how water flows through a facility or system, identifying what purpose the water plays within the system, identifying specific equipment that consumes and uses large quantities of water, identifying how water is discharged from the system, and identifying and quantifying, to the extent practicable, the cost considerations associated with the existing water usage.

3.1 Current Water Usage

The following elements provide a guideline for characterizing water usage as part of the Plan:

[Entity, in ADD sector provides information including, but not limited to:]

- Describe the source of water at the facility.
- Identify significant water use processes, operations and equipment and account for significant sources and losses.
- Describe water metering and water use tracking, if any.
- Describe leak detection and repair program, if any.
- Identify current reclamation and reuse of water, including how much water is consumed and not available for reuse.
- Identify how water is discharged.
- Identify and quantify, to the extent practicable, the cost parameters associated with water usage.

3.1.1 Description of Water Sources

[Entity adds description here]

3.1.2 Significant Water Use Processes

[Entity adds description here]

3.1.3 Water Metering and Tracking

[Entity adds description here]

3.1.4 Leak Detection and Repair Programs

[Entity adds description here]

3.1.5 Reclamation and Reuse

[Entity adds description here]

3.1.6 Means of Discharging Water

[Entity adds description here]

4.0 Implementation of GAMPs for Water Conservation

Implementation of GAMPs for water conservation and improving water use efficiency are an important component of this Plan. This section outlines what GAMPs the [entity] is currently utilizing to meet the Plan's overall water conservation objectives.

This section outlines GAMPs to consider for water conservation for the Chemical Manufacturing sector. In addition to the list below, the Entity should review Appendix A (Links to Websites) of the "Water Withdrawal and Conservation Practices" document in establishing GAMPs and conservation goals applicable to its specific business and location. The entity would evaluate options that are applicable to their site that they are implementing, or plan to evaluate for implementation, and list them below.

Communication

- Incorporate water conservation policies and procedures into employee training programs.
- Post water-conservation stickers, signs, and posters in bathrooms, kitchens, cafeterias, conference rooms, and other places where employees congregate, to help raise awareness.
- Participate in water conservation advisory groups or similar organizations.

Process

- Maintain a general water use inventory for the facility and update periodically.
- Consider the impact of future facility modifications or production changes on water usage. Changes to routine operations provide a good opportunity to evaluate current practices for possible water conservation opportunities.
- Shut off faucets and nozzles when not in use.
- Install flow restrictors, aerators, spring-loaded valves and timers on faucets and nozzles.
- Improve rinse cycles by using cascading or counter-current rinsing from processes that require highly pure water to rinse parts from other processes that do not require such high-quality water.
- Investigate potential chemical treatments to reduce the amount of make-up water required for cooling towers, steam boilers, etc.
- Consider retrofit applications that use once-through cooling water (chillers, compressors, condensers etc.) with closed-loop recirculation systems, while keeping in mind that a decrease in water withdrawal may increase water consumption.
- Consider replacing water-cooled equipment with air-cooled equipment.
- Incorporate water conservation into ISO or other existing QA/QC processes.

Washrooms

- Replace continuous- or timed-flush urinals in restrooms with low-flow manual flush or sensor-controlled equipment. This can be as simple as retrofitting the flush valve with a new spring and diaphragm.
- Replace older toilets that use as much as 22 litres per flush with ultra-low-flush toilets (6 litres per flush) or dual-flush toilets (6 litres for solid waste, 3 litres for liquid waste).
- In new installations consider waterless urinals, which do not consume any water (eliminating water supply lines and flush valves), are easy to install and meet public health standards.

Landscaping

- Install soil-moisture sensors and controllers.
- Install drip irrigation to reduce water use in landscaped areas.
- Use more drought-tolerant native vegetation.
- Install trigger-heads or nozzles on hoses and devices used for cleaning and watering.

These are examples of GAMPs that might be considered by a specific business at a specific location and should not be considered either a mandatory or complete listing. No one set of GAMPs would be appropriate for, or applicable to, all members of the Chemical Manufacturing Sector. Each business will need to review what GAMPs are applicable in its specific circumstance.

5.0 Evaluation and Modification of the Plan

Upon implementation of this Water Conservation Plan, the *[Entity]* will evaluate and update the Plan on a periodic basis. Modifications to the Plan will be based on an evaluation of the water conservation GAMPs previously implemented and upon any new relevant information. This section is intended to satisfy the requirements under the Great Lake Compact for new or increased water withdrawals by demonstrating progress towards achieving improvements in water conservation. Any water conservations measures for existing water uses is considered entirely voluntary.

The *[Entity]* will consider documenting the following information to evaluate the existing Plan:

- A list of dates and descriptions of conservation measures implemented

[Entity adds description here]

- Approximate amounts of water saved for each measure implemented

[Entity adds description here]

- Discussion about whether or not the goals of the plan have been met

[Entity adds description here]

- If objectives were not met, an explanation as to the reason why the objectives were not met and a discussion of the specific revisions to the Plan intended to help meet the objectives in the future.

[Entity adds description here]