**Objective**: **Update existing information on pretreatment settling practices and provide pretreatment case studies**

Update existing information and provide new information on pretreatment for incorporation into the Minnesota Stormwater Manual. The information includes design, construction, and maintenance of pretreatment settling practices and case studies for pretreatment practices.

**Task A: Convene a meeting with MPCA and a technical advisory team**

Convene a 2 hour meeting with the MPCA Project Manager (PM), MPCA staff, and a technical team selected by the PM. The purpose of the meeting is to go through the scope of work, identify additional information and data that can be used to meet the tasks, and develop a framework for communication.

**Task B**: **Provide information on design, construction, and maintenance of pretreatment settling practices**

Provide information on design criteria and design considerations, construction guidelines, and maintenance recommendations for pretreatment settling practices. This includes proprietary and non-proprietary practices, including forebays. Include photos, schematics, details or CAD drawings, and other images as necessary or appropriate.

**Subtask 1**

Provide information on design criteria and design considerations for pretreatment settling practices. This information is likely to differ for different categories of pretreatment settling practices. Provide a recommendation to the MPCA Project Manager (PM) for categories of settling practices (e.g. water quality inlets, flow-through devices, hydrodynamic separators, grit chambers, forebays, sump manholes) that warrant individual information on design. Considering the different categories of practices, the design information may include specific recommendations, guidelines, or references to example designs. Examples of design criteria to consider include but are not limited to the following.

* Acceptable or recommended contributing drainage area to the practice
* Recommended or required entrance and discharge velocities
* Recommended or required settling velocities
* Recommended or required detention times
* Sizing criteria adequate to protect downstream BMP(s); consider drainage area, land use, downstream BMP, and ability to enhance the practice to achieve the desired level of pretreatment. Include example sizing calculations if appropriate.
* Considering forebays, information on earthen berms; gabions, concrete, or riprap walls along the outlet side of the forebay; designed overflow sections; aquatic benches with emergent vegetation; appropriate slopes; or other features.
* Dimensions of the system, such as depth (e.g. for sump catch basins)
* Design of inlets, outlets, openings, piping, flow diversion structures, etc., including materials, dimensions, and other considerations
* Guidelines for hoods
* Recommended materials
* Recommended layout, including physical location and off-line placement

**Subtask 2**

Considering the applicability to the category of pretreatment practice being considered, provide information on construction specifications and construction considerations for pretreatment settling practices, including but not limited to the following.

* Necessary or recommended grading at the site
* Methods or precautions necessary for protecting the practice during construction
* Methods for stabilizing the site during construction
* Requirements or recommendations for ensuring site access, such as an easement
* Ensuring compaction does not occur or is alleviated following construction
* For forebays, vegetation establishment, including soil/media, seeding/planting, and initial care and stabilization

**Subtask 3**

Provide information on recommendations and requirements for maintenance of pretreatment settling practices, including but not limited to the following.

* Frequency of inspections
* Develop a maintenance checklist for the practice, including recommended frequency of different maintenance activities
* Necessary or recommended maintenance agreements, easements, and/or deed restrictions. If appropriate, include examples or links to examples.
* Practices for minimizing and removing sediment buildup
* Practices for preventing or minimizing washout
* Practices for preventing and mitigating erosion of the practice
* For forebays, maintaining vegetation, including maintaining necessary coverage, watering, mowing, pruning, fertilization, mulch addition/replacement, and re-establishment.
* Removal of trash and debris

**Task C: Pretreatment case studies**

Provide a technical memorandum with 5 to 7 case studies summarizing the use of pretreatment practices, including at least one case study for each of the following practices.

* Vegetated filter strip
* Forebay
* Proprietary settling device
* Screen

The case studies shall include the following information.

* An overview of the project, including location
* Pretreatment practice(s) employed
* Post-construction BMP(s) downstream of the pretreatment practice(s)
* Reason for selecting the pretreatment practice
* Expected performance of the practice
* Year of implementation
* Description and size of impervious surface discharging to the pretreatment practice
* Sizing criteria and/or anticipated pollutant removal
* If applicable, summary of design and construction details
* Maintenance practices and schedules
* Photos and if appropriate, schematics