NS-2 DEWATERING OPERATIONS

BMP Objectives

- ☒ **Perimeter Control**
- ☐ **Slope Protection**
- ☐ **Borrow and Stockpiles**
- ☒ **Drainage Areas**
- ☒ **Sediment Trapping**
- ☐ **Stream Protection**
- ☐ **Temporary Stabilizing**
- ☐ **Permanent Stabilizing**

Definition and Purpose

Practices that manage the discharge of pollutants when non-stormwater and stormwater must be removed from a work location so that construction work may be accomplished. Dewatering should be planned for whenever excavation work will occur in or near a water body.

Appropriate Applications

- Removing groundwater from excavated pits, trenches or drilled shafts
- Removing water from cofferdams
- Creating water diversions
- Waters used during construction activities that must be removed from a work area.

Practices identified in this section are also appropriate for implementation when managing the removal of accumulated stormwater from low lying areas or sediment traps.

Limitations

- Dewatering operations for non-stormwater will require, and must comply with applicable permits, local ordinances, and regulations.
- Project conditions will dictate a site specific design of dewatering operations.
- A dewatering plan shall be submitted as part of the SWPPP, detailing the location of dewatering activities and equipment, as well as discharge points.
- The controls discussed in this BMP address sediment only. If the presence of polluted water with hazardous substances is identified in the contract, the Contractor shall implement dewatering pollution controls as required by the contract documents. If the quality of water to be removed by dewatering is not identified as polluted in the contract

documents, but is later determined by observation or testing to be polluted, the Contractor shall notify the Engineer immediately.

- When possible, dewatering discharges may be avoided by using the water for dust control or by infiltrating it on the project site.

Design Parameters

- The discharge of non-stormwater to a water body or storm drain is subject to the requirements of the Construction General Permit.
- Discharges to surface water must comply with IDAPA 58.01.02, Water Quality Standards.
- Discharges infiltrated into ground water must comply with IDAPA 58.01.11, Ground Water Quality Rule.
- Sediment control and other appropriate BMPs must be employed when a site is discharging as a result of dewatering operations. Dewatering discharges must not cause erosion at the discharge point.
- A "Dewatering Plan" shall be developed and presented to the Engineer for review prior to beginning dewatering related work. This plan should address, at a minimum, the following:
    - Expected quantity of water to be discharged
    - Pump capacity
    - Site map with layout of pumps, hoses, and discharges locations
    - Any additional erosion and sediment control required at the point of discharge
    - Water quality sampling locations (if required)
- Dewatering records shall be maintained for a period of 3 years.

General Maintenance and Inspection Considerations

- Conduct inspections as required by the NPDES permit or contract specifications.
- Repair or replace to ensure the operation functions as designed.
- Accumulated sediment removed during the maintenance of a dewatering device may be either spread on-site and stabilized or disposed of at a disposal site as approved by the Engineer.
- Accumulated sediment that is commingled with other pollutants must be disposed of in accordance with all applicable laws and regulations and as approved by the Engineer.

Methods and Devices

A variety of methods can be used to treat water during dewatering operations from the construction site. This section presents several devices that provide options to achieve sediment removal. The size of particles present and receiving water limitations are key considerations for selecting sediment treatment options; in some cases, the use of multiple devices may be appropriate.

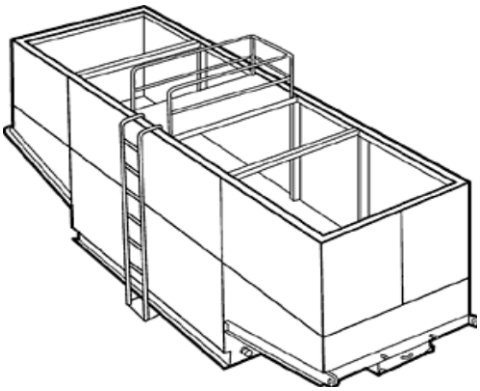
Sediment Treatment Categories

Category 1: On-site Constructed Features

- See SC-9, *Sediment Basin*
- See SC-10, *Sediment Trap*

Category 2: Mobile Settling Technologies

A variety of vendors supply these mobile technologies.



Weir Tank

Description

A weir tank separates water and waste by using a series of weirs that promote sedimentation and floatation. This over and under movement traps sediment on the bottom and oils and grease on the surface of the water.

Appropriate Applications

- Removal of settleable solids (gravel, sand, and silt)
- Removal of some visible oil and grease
- Removal of some metals (removed with sediment)
- Removal of trash

Implementation

- Tanks are delivered to the site by the vendor, who can provide assistance with setup and operation.
- To achieve high levels of flow, multiple tanks can be used in parallel. If additional treatment is desired, the tanks can be placed in series or as pre-treatment for other methods.
- Tank size will depend on flow volume, constituents of concern, and residency period required. An Engineer is required to properly size and design weir tanks.

Maintenance

- Periodic cleaning is required based on visual inspection or reduced flow.
- Oil and grease disposal must be by a licensed waste disposal company.

Dewatering Tank

Description

Flow enters the tank through the top, passes through a fabric filter, and is discharged through the bottom of the tank. The filter retains the solids and passes the liquids.

Appropriate Applications

- Removal of settleable solids (gravel, sand, and silt)
- Removal of some visible oil and grease
- Removal of some metals (removed with sediment)
- Removal of trash

Implementation

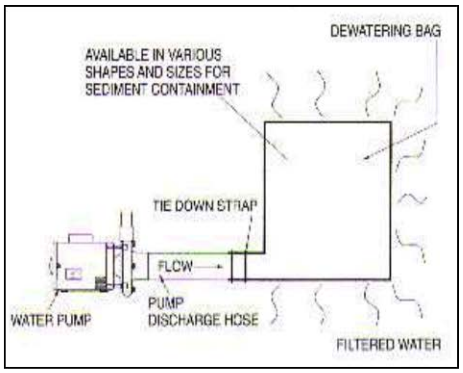
- Tanks are delivered to the site by the vendor, who can provide assistance with setup and operation.
- To achieve high levels of flow, multiple tanks can be used in parallel. If additional treatment is desired, the tanks can be placed in series or as pre-treatment for other methods.
- Tank size will depend on flow volume, constituents of concern, and residency period required. An Engineer is required to appropriately size tank.
- The tank must be placed in a stabilized location to prevent erosion from the flow through water.

Maintenance

- Periodic cleaning is required based on visual inspection or reduced flow.
- Oil and grease disposal must be by licensed waste disposal company.

Category 3: Basic Filtration Technologies

Gravity Bag Filter



Description

A gravity bag filter, also referred to as a dewatering bag, is a square or rectangular bag made of non-woven geotextile fabric that collects sand, silt, and fines.

Appropriate Applications

- Removal of sediments (gravel, sand, and silt).
- Some metals are removed with the sediment.

Implementation

- Water is pumped into one side of the bag and seeps through the bottom and sides of the bag.
- The bag must be placed in a stabilized location to prevent erosion from the flow through water.

Maintenance

- Replacement of the bag is required when it no longer filters sediment or passes water at a reasonable rate.

Category 4: Advanced Filtration Technologies

Sand Media Particulate Filter

Description

Water is treated by passing it through canisters filled with sand media. Generally, sand filters provide a final level of treatment. They are often used as a secondary or higher level of treatment after a significant amount of sediment and other pollutants have been removed.

Appropriate Applications

- Effective for the removal of sand, silt and some metals, as well as the reduction of biochemical oxygen demand (BOD).
- Can be used as a standalone treatment or in conjunction with bag and cartridge filtration or basic filtration.

Implementation

- The filters require delivery to the site and initial setup. The vendor can provide assistance with installation and operation.

Maintenance

- Daily monitoring is required to ensure proper function of the system.
- The filters require monthly service to monitor and maintain the level of the sand media.

<u>Pressurized Bag Filter</u>

Description

A pressurized bag filter is a unit composed of single filter bags made from polyester felt material. The water filters through the unit and is discharged through a header, allowing for the discharge to flow in series to additional treatment units. Vendors provide pressurized bag filters in a variety of configurations. Some units include a combination of bag filters and cartridge filters for enhanced contaminant removal.

Appropriate Applications

- Removal of sediment (sand and silt) and some metals
- Reduction of BOD, turbidity, and hydrocarbons. Oil-absorbent bags are available for hydrocarbon removal.
- Can be used to provide secondary treatment to water treated via settling or basic filtration.

Implementation

- The filters require delivery to the site and initial setup. The vendor can provide assistance with installation and operation.

Maintenance

- The filter bags require replacement when the pressure differential exceeds the manufacturer's recommendation.

Cartridge Filter

Description

Cartridge filters provide a high degree of pollutant removal by utilizing a number of individual cartridges as part of a larger filtering unit. They are often used as a secondary or higher (polishing) level of treatment after a significant amount of sediment and other pollutants are removed. Units come with various cartridge configurations (for use in series with pressurized bag filters) or with a larger single cartridge filtration unit (with multiple filters within).

Appropriate Applications

- Removal of sediment (sand, silt, and some clays) and metals
- Reduction of BOD, turbidity, and hydrocarbons. Hydrocarbons can effectively be removed with special resin cartridges.
- Filters can be used to provide secondary treatment to water treated via settling or basic filtration

Implementation

- The filters require delivery to the site and initial setup. The vendor can provide assistance.

Maintenance

- The cartridges require replacement when the pressure differential exceeds the manufacturer's recommendation.