4.5-c DEWATERING

BMP DESIGN APPROACH
■ Pollutant Source Control
☐ Hydrologic Source Control
☐ Stormwater Treatment
SCALE OF APPLICATION
■ All SFR and MFR < 1 acre
■ MFR 1-5 Acre and CICU < 5 acres
■ MFR and CICU > 5 acres and all WQIPs
TYPE OF APPLICATION
■ Temporary
☐ Permanent

DESCRIPTION

Dewatering techniques are methods of addressing extracted ground or surface water encountered during construction. This temporary BMP addresses the installation and maintenance of dewatering systems and the disposal of this excavated water. The water may be treated for sediment or other pollutants before discharge to suitable receiving areas.

A tank filtration and settling system set up to dewater groundwater for excavation work near the Upper Truckee River.

APPLICABILITY

- In SEZs, shorezones, and other areas where groundwater is seasonally shallow.
- Whenever sediment laden water is generated during construction.

Advantages

- Unpolluted excavated water that has been treated for sediment (e.g. decanted using a Baker tank) may be used for dust control at construction sites.

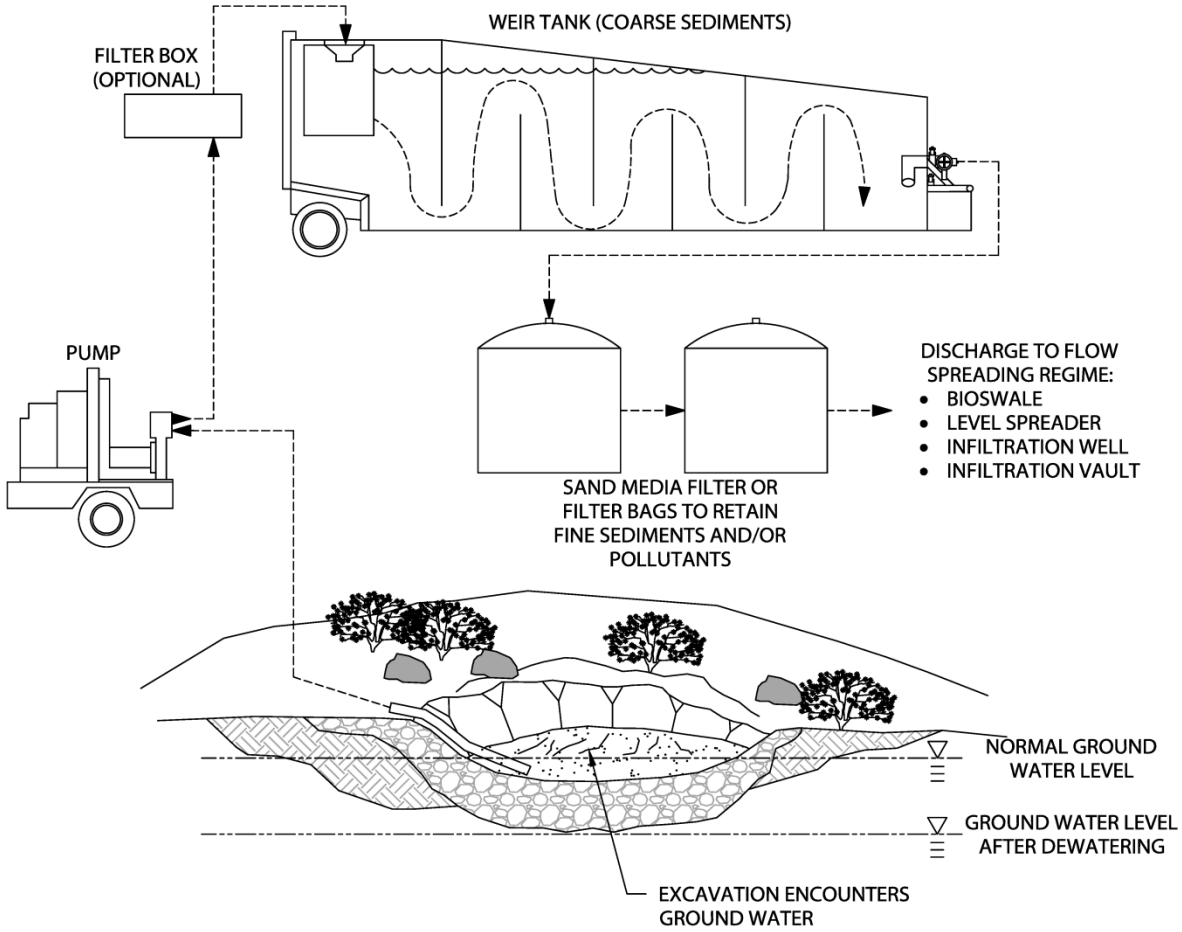
Disadvantages

- Dewatering can be difficult because of storage and discharge (e.g. water spreading) limitations.
- Stream diversion may interrupt continuity of fish and benthic habitat.

DESIGN CONSIDERATIONS

- Shallow groundwater areas are common around the Lake Tahoe Region. Some of these are permanent, but others are seasonal (i.e. saturated after spring snow melt). To limit the need for dewatering, defer construction until conditions are drier whenever possible.
- Dewatering systems that include sediment removal include separation units, sediment retention basins, sediment traps, and other filtering methods as described below:
  - Sediment Trap and Sediment Basin. These are temporary structures consisting of enclosed embankments designed to detain sediment laden runoff. They include energy dissipaters, water spreading techniques, and outlet protection. These structures are effective for removing large and medium-sized sediment particles.
  - Portable Sediment Tank (e.g. Baker Tank). This is a large drum, commonly constructed of steel or non-reactive plastic material, containing a system of baffles designed to reduce hydraulic energy and promote sediment settling. When spreading of decanted water is possible, energy dissipaters, water spreading techniques, and outlet protection are used at the point of spreading.
  - Sand and/or Geotextile Bag. Used as a final sediment removal step at point of discharge spreading and is often necessary to achieve water quality discharge standards. Decanted water is discharged from a hose to a sand or geotextile filter bag to dissipate energy and provide final polishing before spreading.
  - Sand Media Particulate Filter, Pressurized Bag Filter, and Cartridge Filters. Advanced filtration technologies that provide a high degree of pollutant removal by utilizing one or more cartridges as part of a larger filtering unit. These devices are often used as a secondary treatment when a significant amount of sediment and other pollutants are identified by testing the intercepted water.

Dewatering Figure



NOTES:

1. ALL DEWATERING SYSTEMS REQUIRE SPECIAL PERMITTING. CONTACT TRPA AND LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD AND/OR NEVADA DIVISION OF ENVIRONMENTAL PROTECTION.
2. DEWATERING SYSTEMS ARE CUSTOM DESIGNED FOR UNIQUE SITE SPECIFIC CONDITIONS. CONTACT SYSTEM SUPPLIERS OR DESIGN ENGINEERING FOR ASSISTANCE.
3. A DEWATERING WELL MAY REDUCE OR ELIMINATE THE NEED OF PRETREATMENT PRIOR TO DISCHARGE.

- If groundwater is suspected to be contaminated, test and analyze before dewatering operations begin. If contamination is confirmed, dewatering pollution control measures must be used to meet regulatory discharge requirements.
- Design and maintain dewatering systems to have sufficient capacity to control and treat the estimated volume and rate of water.
- Obtain licensed professional engineer approval for locating wells, well points, or drain lines for purposes of dewatering.
- Obtain any water discharge permits that are required. Water quality standards for discharges to surface and ground water apply.
- Prepare a dewatering plan if there is a possibility that groundwater may be encountered during construction. Include emergency response, mitigation measures to protect site, structures, and adjacent public and private infrastructure, inspection schedule and maintenance protocols, staff training and communications.

INSTALLATION CONSIDERATIONS

- Dewatering for structures and pipelines should commence when groundwater is first encountered. Property owner should be notified before initiating dewatering and disposal.
- Divert surface runoff away from excavations by collecting in shallow ditches around perimeter of excavation and draining to sumps.
- Contractor should have on-site, at all times, sufficient pumping equipment and machinery in good working condition and competent workmen for operation of the dewatering equipment.
- Do not place concrete or masonry footings, foundations, or floors in water, nor allow water to rise over them until concrete or mortar has set at least 24 hours, or piping has been completed and tested.
- Do not allow water to rise unequally against walls before concrete in walls and connecting slabs and beams has attained specified strength.
- Provide standby power to ensure continuous dewatering in case of power failure.
- Control rate and effect of dewatering to avoid undesired settlement and subsidence.
- Conduct dewatering in a manner that protects adjacent structures and facilities, prevents flotation from occurring, and keeps water level below bottom of excavation in all excavated areas during construction.
- Maintain at least one spare pump and associated equipment available at the site to replace primary equipment, should failure occur.
- To dispose of water: Pump water into a settling tank with sufficient volume to allow sediment settling. Decant settled water from the settling tank.
    - Use this settled water to fill water trucks and use for construction related activities (e.g. cleaning, dust control, etc.),

- Use a pump to spray the settled water onto designated receiving (upland) areas (must be identified in the approved dewatering plan), or,
- Transport water off-site for proper treatment and disposal.

- Disposed water should not be allowed to cause erosion, pond, enter an SEZ, or otherwise cause damage or be a public nuisance.
- Dismantle and remove all dewatering facilities and equipment at the end of the project.
- Dewatering wells must be abandoned according to regulatory requirements.

INSPECTION AND MAINTENANCE

- Be diligent with inspections to ensure that systems function properly.
- Portable sediment tanks have limited volume capacities; if water nears the top of the tank, the tank should be drained. Frequent inspection and removal of sediment at the bottom of these devices is necessary to maintain effectiveness. Tanks need to be clearly marked to indicate the cleanout point.
- Replace clogged sand and geotextile bag(s).
- Monitor water just prior to discharge to determine if discharge limits for water-quality standards are being met. Suspend operations immediately if sediment or other pollutant levels are above discharge limits to be in compliance with discharge permit requirements.