

Appendix B

Sediment Treatment Options

B. SEDIMENT TREATMENT OPTIONS

This appendix provides Caltrans Resident Engineers with guidance to ensure that the contractor implements proper sediment treatment practices for dewatering operations.

- The first section summarizes sediment treatment requirements.
- The second section considers questions that should be answered prior to selecting appropriate treatment options and compares the key features of various methods and technologies.
- The final section presents additional information about various technologies, including advantages/disadvantages, construction/implementation considerations, estimated costs, and maintenance requirements.

B.1 SEDIMENT TREATMENT REQUIREMENTS

When is Sediment Treatment Required for Dewatering Operations?

Sediment is the most common pollutant associated with dewatering operations on construction sites. When water is not visibly clear of sediment or when the dewatering operation may re-suspend sediments, one or more sediment treatment options may need to be implemented.

How Much Sediment Removal is Required?

Sediment treatment requirements depend on how the contractor manages the effluent and the requirements of any NPDES permits and Regional Basin Plan requirements that regulate the dewatering discharge.

- If effluent is being retained on site (for infiltration, evaporation, dust control, irrigation, etc.), sediment treatment is not required, but may be necessary for protection/proper functioning of water trucks, etc.
- If effluent is being discharged to a storm drain or water of the U.S., the water must be treated for sediment in compliance with the authorizing NPDES permit.

What are NPDES Permit Requirements for Sediment Removal?

Sediment treatment requirements are specific to the NPDES permit that authorizes the dewatering operation.

- For dewatering operations under the NPDES Statewide Permit for Caltrans, sediment treatment requirements are specified in the *Construction Site Best Management Practices (BMPs) Manual, NS-2, Dewatering Operations*. If water is not visibly clear, it must be treated using BMPs so that the discharge does not impact receiving water quality.
- For dewatering authorized under a separate NPDES permit issued by RWQCB, refer to the requirements specified in the permit. Maximum levels for turbidity, total suspended solids (TSS) or other related parameters for both the dewatering discharge and for the receiving water may be defined in the permit. For example, the permit may specify that the dewatering discharge cannot exceed a turbidity level of 50 Nephelometric Turbidity Units (NTUs) and may not cause the background turbidity of the receiving water to be elevated by more than 10 percent.

B.2 SELECTING APPROPRIATE SEDIMENT TREATMENT OPTIONS

This section contains a series of questions that should be considered by the contractor prior to selecting the sediment treatment options for dewatering operations on the construction site.

What Type of Sediment is Present in the Water?

The size of particles present in the sediment is a key consideration for selecting the appropriate sediment treatment option(s).

- If the sediment consists primarily of gravel or sand, which are relatively large particles, a single treatment using a more basic technology, such as a weir tank, may be adequate.
- If the sediment consists of silt and/or clay, which are relatively small particles, the effluent will most likely need a more advanced technology, such as a sand media particulate filter or cartridge filter.
- If the sediment consists of a large spectrum of particle sizes, the water may need primary treatment to remove larger particles, followed by secondary treatment to remove finer particles.

Figure B-1 shows the estimated removal efficiencies for various sediment treatment technologies.

What Site Conditions May Limit Sediment Treatment Selection?

The slope and accessibility of the treatment area may impose limitations on the selection of an appropriate system. The site should be evaluated to determine the most effective system layout, access, dewatering storage, pumping requirements (flow, pressure, duration), ancillary piping, backwash tanks, a low impact discharge system, and any other site-specific requirements.

The applicability and use of dewatering devices on a construction project are specific to the individual job and treatment needs. The vendors who rent and sell these products can provide assistance to engineer a dewatering management program to meet the specific job conditions. It is possible that multiple devices and treatment techniques may be necessary to meet the treatment criteria.

In order to treat the water to be discharged, the contractor will necessarily have to pump from a collection or storage area to the treatment unit(s); therefore, storage tanks may be required as part of the system. It is important that the pumps be matched to fit the project needs and the dewatering equipment operation parameters. Pumps are selected depending on total dynamic head (how far and high the water is to be pumped), flow, availability of electrical power, amount of storage volume, and time constraints. Some pumps have a diesel or gasoline engine directly coupled to the pump on the skid/trailer, as well as a fuel tank. However, pumps with electric motors will require power (3 phase) from an electrical power supply or a portable generator.

Pressurized bag, cartridge, and sand media filters require a power supply for operation. Specifics regarding the power requirements should be coordinated with the vendor.

How Does Flow Rate Affect Sediment Treatment Selection?

Manufacturers' specifications identify the maximum flow rate that can be treated for sediment removal. For higher flows, it may be necessary to operate multiple treatment systems in parallel to treat the volume of effluent. Table B-1 shows the range of flow rates available for individual sediment treatment options.

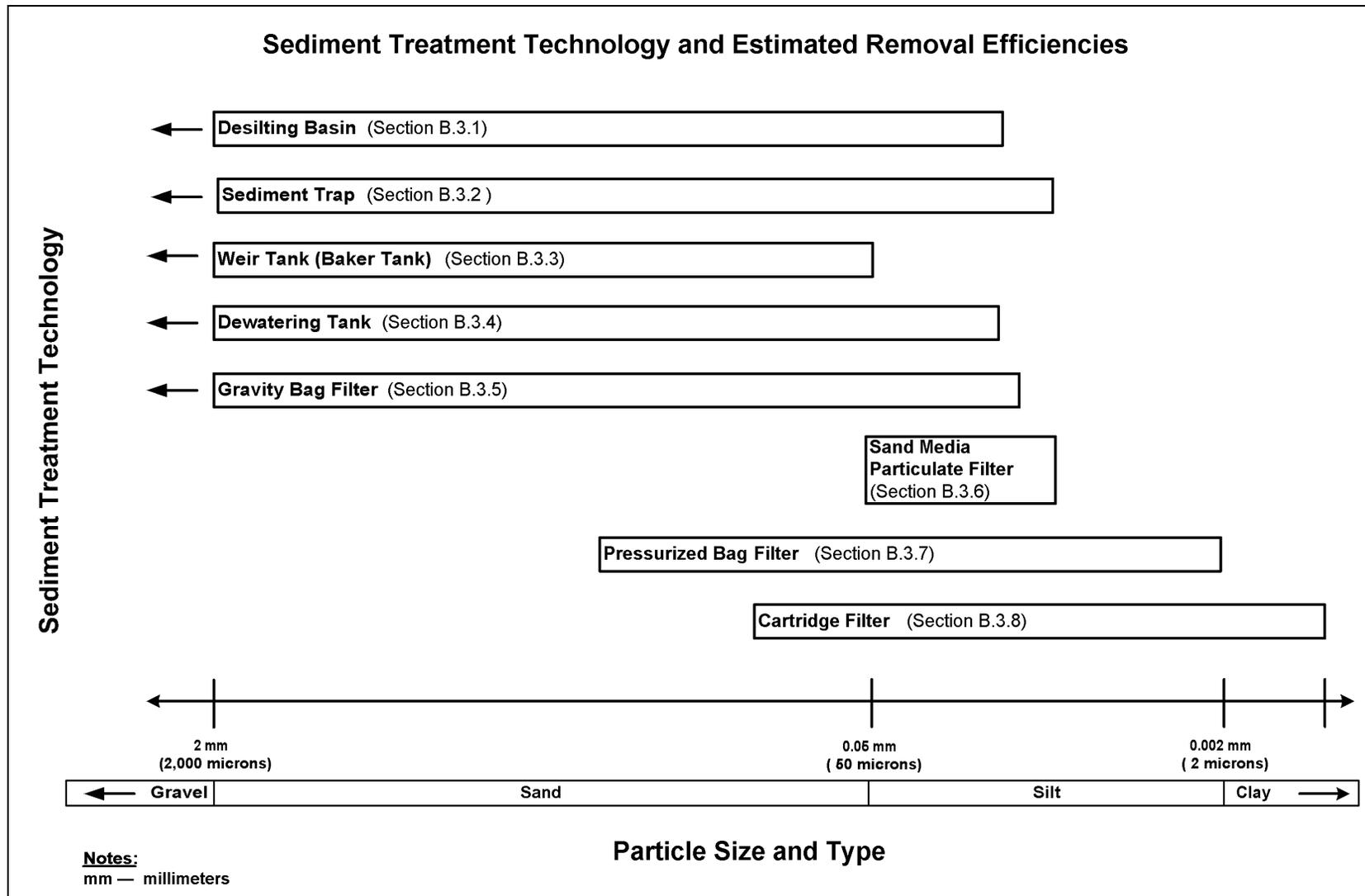


Figure B-1 Sediment Treatment Technology and Estimated Removal Efficiencies*

*Caltrans has not validated these performance expectations. This information is based on general manufacturer’s information.

What are Maintenance Requirements?

Sediment removal effectiveness depends on proper maintenance of the treatment structure or system. For example, sediment has to be removed and disposed of from desilting basins. Filtering systems may need frequent cleaning and/or replacement of filters, cartridges, and/or media. Maintenance requirements should be considered for projecting the total cost of implementing specific technologies. Table B-1 compares maintenance requirements for various technologies.

How Much do Sediment Treatment Systems Cost?

Table B-1 compares estimated costs associated with various sediment treatment methods and technologies. The estimates are based on vendor quotes for the year 2001. Transportation costs depend on site location relative to product distributors and are estimated to be approximately \$75 per hour. When projecting costs for sediment treatment, consider the need for implementing multiple systems for handling high flow rates or the cost of secondary treatment to remove fine particles.

What Sediment Treatment Options are Available?

Table B-1 summarizes the features associated with some available sediment treatment methods and technologies. Each method/technology is described in more detail in Section B.3. The methods described in this appendix do not include all those available, but are representative of typical methods.

Table B-1 Comparison of Sediment Treatment Technologies*

Sediment Treatment Technology	Pollutants Removed	Flow Range (gpm)	Footprint Area (ft ²)	Product Availability	Equipment Required	Construction/Rental Cost	Maintenance Cost	Other
Desilting Basin	Trash Sediment	Varies by design	Varies by design	Time to construct	Excavation	\$108/m ² (\$10/ft ²)	--	Requires design
Sediment Trap	Trash Sediment	Varies by design	Varies by design	Time to construct	Excavation	\$108/m ² (\$10/ft ²)	--	Requires design
Weir Tank (Baker Tank)	Trash Sediment Some oil	60 – 100	1,800	2 – 3 days; 1 week modified	Transport by truck	\$35 - \$45/day	\$1,000/ disposal	May require tank modifications
Dewatering Tank	Sediment	Varies	1,200 – 1,500	1 – 3 days	Transport by truck	\$45-\$60/day	\$125 - \$425 fabric replacement	
Gravity Bag Filter	Sediment	300, 800	100 - 400	1 day	Backhoe or other for removal	\$100 - \$200/bag purchase; \$500 - \$2,000/ barrier	Bag replacement	
Sand Media Filter	Sediment Metals	80 – 1,000 (varies by model)	17 - 450	1 – 2 days	Forklift	\$1,100 - \$4,000/mo.; \$500 - \$1,500 setup	\$50 - \$100/mo.	
Pressurized Bag Filter	Sediment Metals Hydro-carbons	50 – 100 (varies by model)	200 - 320	1 – 2 days	Forklift, or truck for trailer	\$850 - \$3,400/mo.; \$150 - \$500 setup	\$300 - \$1,250/mo.	
Cartridge Filter	Sediment Metals Hydro-carbons	50 - 1,000	200	1 – 2 days	Forklift, or truck for trailer	\$800 - \$3,000/mo.; \$1,500 setup	\$1,000 - \$5,000/mo.	Requires pre-treatment

*Caltrans has not validated these performance expectations. This information is based on general manufacturer's information.

Legend: m² = square meters ft² = square feet gpm = gallons per minute

B.3 SEDIMENT TREATMENT METHODS AND TECHNOLOGIES

B.3.1 Desilting Basin

Description: A desilting basin is a temporary basin with a controlled release structure formed by excavation and/or construction of an embankment to detain sediment-laden runoff and allow sediment to settle out before discharging.

Specifications: Desilting basin design requirements are outlined in the *Construction Site Best Management Practices (BMPs) Manual (SC-2)* and should be used to design and construct the basin. The required desilting basin size is based on the size of the contributing drainage area and intended for areas less than 30 hectares. For dewatering discharges, flow rate is used to determine the proper basin size. If a desilting basin is to be used for treating dewatering discharges, it must be designated only for that specific use and cannot be used for storm water runoff treatment.

The following table provides general guidance in sizing a basin for a range of discharge flow rates. The calculations used to determine the required surface area are based on a given target particle size to be removed (with an associated settling velocity). Certain design criteria were assumed: 0.015 mm target particle size, a continuous flow rate through the basin (flow in equals flow out), and full basin storage (including a 65 m³ sediment storage zone).

Flow Rate		Required Surface Area As (m ²)	Length/Width = 2:1	
Q (gpm)	Q (m ³ /s)		L (m)	W (m)
25	0.0016	12.25	4.95	2.48
50	0.0032	24.51	7.00	3.50
100	0.0063	49.01	9.90	4.95
150	0.0095	73.52	12.13	6.06
200	0.0126	98.03	14.00	7.00
250	0.0158	122.53	15.65	7.83
300	0.0189	147.04	17.15	8.57
350	0.0221	171.54	18.52	9.26
400	0.0252	196.05	19.80	9.90
450	0.0284	220.56	21.00	10.50
500	0.0315	245.06	22.14	11.07

Legend: gpm = gallons per minute s = second m = meters

Pollutant Removal:	Effective for removal of trash, large to some fine-sized particles (gravel to silt), and some metals that settle out with the sediment.
Advantages:	Desilting basins achieve sediment removal to a level of 0.01 - 0.02 mm (20 microns) Holds large volumes of sediment
Set Up/ Installation:	Length to width ratio = 2:1 Depth of basin between 1 m and 1.5 m
Limitations:	Desilting basins require a large surface area in order to meet flow and detention times to achieve the desired sediment removal. Construction of a basin in-line with a live watercourse is not permitted. Ineffective in removing colloidal particles. Should not be used to treat groundwater during the rainy season.
Maintenance:	Maintenance is required for safety fencing, vegetation, embankment, inlet and outfall structures, as well as other features. Remove sediment when storage volume is reduced by 1/3.
Cost:	Construction costs approximately \$108/m ² (\$10/ft ²)

B.3.2 Sediment Trap

Description: A sediment trap is a temporary basin with a controlled release structure formed by excavation and/or construction of an earthen embankment across a waterway or low drainage area. The trap is installed where sediment-laden storm water would discharge to a storm drain or watercourse and is generally located at the low point of the drainage area.

Specifications : Design features include a settling zone and sediment storage zone as defined in the *Construction Site Best Management Practices (BMPs) Manual (SC-3)*, which should be used to design and construct the basin. The sediment trap size in the BMP is based on the size of the contributing drainage area and intended for areas less than two hectares. For dewatering discharges, flow rate is used to determine the proper size. If a sediment trap is to be used for treating dewatering discharges, it must be designated for that specific use only and cannot be used for storm water runoff treatment.

The following table provides general guidance in sizing a sediment trap for a range of discharge flow rates. The calculations used to determine the required surface area are based on a given target particle size to be removed (with an associated settling velocity). Certain design criteria were assumed: 0.01 mm target particle size, a continuous flow rate through the basin (flow in equals flow out), and full basin storage (including both zones).

Flow Rate		Required Surface Area As (m ²)	Length/Width = 2:1	
Q (gpm)	Q (m ³ /s)		L (m)	W (m)
25	0.0016	27.57	9.09	3.03
50	0.0032	55.14	12.86	4.29
100	0.0063	110.28	18.19	6.06
150	0.0095	165.42	22.28	7.43
200	0.0126	220.56	25.72	8.57
250	0.0158	275.70	28.76	9.59
300	0.0189	330.83	31.50	10.50
350	0.0221	385.97	34.03	11.34

Legend: gpm = gallons per minute s = second m = meters

Pollutant Removal:	Effective for the removal of large and medium sized particles (sand and gravel), and some metals that settle out with the sediment.
Advantages:	Can be designed to fit in confined areas (such as a low point on the site)
Set Up/ Installation:	Length to width ratio = 3:1 Depth of basin between 1m and 1.5 m
Limitations:	Sediment traps require a large surface area to permit settling of sediment. They are only effective for the removal of large and medium sized particles and are intended to supplement other BMPs, including upstream erosion control. Multiple traps or additional volume may be required to accommodate site conditions. Construction of a basin in-line with a live watercourse is not permitted.
Maintenance:	Maintenance is required for safety fencing, vegetation, embankment, inlet and outfall structures, as well as other features. Remove sediment when storage volume is reduced by 1/3.
Cost:	Construction costs approximately \$108/m ² (\$10/ft ²)

B.3.3 Weir Tank

Description: A weir tank separates water and waste by using weirs rather than a filter cloth or media. 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. The configuration of the weirs (over and under weirs) maximizes the residence time in the tank and determines the waste to be removed from the water such as oil, grease, and sediments.

Modifications to weir tanks can be made by some vendors to enhance the removal of suspended sediment by installing “tube settlers” in the final chamber of the tank. The tube settlers enable the water to be channeled through a matrix of tubes that rise from the bottom to the top of the tank. The tubes (or rectangular channels) are pre-formed from plastic or other resin material in 2 to 3 foot modules with a 60° angle that allows the sediment to collect at the surface of the tube and gravitate to the bottom.

Specifications:

Parameter	Specification	
	(Metric)	(English)
Capacity	68 – 80 m ³	18,000 – 21,000 gallons
Flow Rate	0.22 – 0.38 m ³ /minute	60 – 100 gpm
Optimal Flow Rate	0.25 m ³ /minute	65 gpm
Footprint Dimensions*	10.7 m L x 3.8 m W x 2.4 – 4.6 m H + 3 m perimeter	35 ft L x 12.5 ft W x 8 – 15 ft H + 10 ft perimeter
Footprint Area	167.3 m ²	1,800 ft ²

*Varies by manufacturer

Pollutant Removal:

Trash, some settleable solids, some visible oil and grease, and some metals (removed with sediment).

Typical particle size removed: Can be designed to remove down to 0.05 mm (50 micron) for fine sand.

Removal is highly dependent on flow rate (i.e., residence time) through the tank. At a reduced flow rate, a weir tank can achieve improved results similar to a desilting basin or sediment trap. The range of flow rates given are based on vendor recommendations and calculations to achieve equivalent removal characteristic of a basin or trap.

Product Availability:

2 - 3 days notice, 1 week for special tank modifications
Delivery time: 1 day

Advantages:

Simplicity; no filter cloth or media required
Portable units
Inexpensive

Set Up/ Installation:

Weirs are installed per customer's specifications
Level, compacted ground preferable

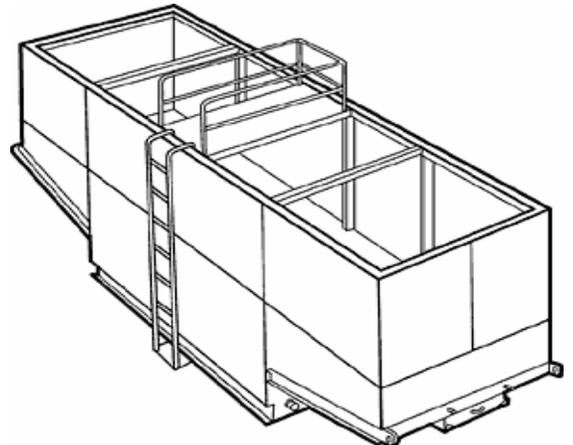
Transported by truck and unloaded on site
 Time: 30 minutes

Limitations: Sediment removal depends on particle size and settling velocity and flow/velocity through tank. Requires a level surface and sufficient space.
 Best used in conjunction with additional methods for additional sediment/pollutant removal.

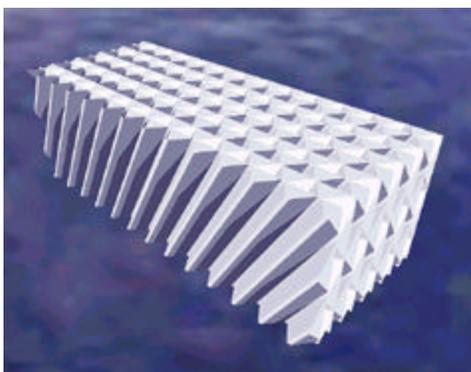
Maintenance: Periodic cleaning based on visual inspection or when flow is reduced.
 Open valve, drain, and remove sediment, clean with high-pressure hose as necessary.
 Oil and grease disposal must be by licensed waste disposal company.

Cost: \$35 - 45 per day per 80 m³ (21,000 gallon) tank rental
 \$900 - \$3,000 one time fee for tank modifications (per tank)
 Maintenance costs
 Waste Removal: Disposal fees for sediment and liquid of Approximately \$1,000 per disposal; can be higher, depending on pollutants
 Transportation costs

Schematic Diagrams



Weir Tanks



Tube Settlers

B.3.4 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 separates the solids from the liquids.

Specifications:

Parameter	Specification	
	(Metric)	(English)
Capacity	15 m ³ , 19 m ³ , and 23 m ³	20 yd ³ , 25 yd ³ , and 30 yd ³
Flow Rate	Varies depending on the amount of water pumped into the tank, the fabric type used, fabric condition, and amount of sediment built up.	
Footprint Dimensions	6.7 m L x 2.4 m W x 1.8 m H (avg.) + 3 m perimeter	22 ft L x 8 ft W x 6 ft H (avg.) + 10 ft perimeter
Footprint Area	111.5 – 140 m ²	1,200 – 1,500 ft ²

Pollutant Removal: Depends on filter fabric, > 0.025 mm (25 microns)
Trash, sediments and some metals and oil removed with the sediment

Product Availability: 1 - 3 days notice

Advantages: Portable, simple in design and function
Inexpensive
Various mesh filter cloths available

Set Up/Installation: Level ground preferable
Roll off truck and install fabric
Time: 30 minutes

Limitations: Requires equipment for on-site emptying (or hauling container offsite)
Amount and type of contaminant removal limited to filter material

Maintenance: Based on visual inspection or when flow is reduced
Every 151 m³ to 227 m³ (40,000 to 60,000 gallons): Allow to drain, tip tank over, remove sediment and replace fabric

Cost: \$45 - \$60 per day per tank rental
Operation & Maintenance: Cost of filter cloth liner: \$125 for 0.15 mm (150 micron) or \$425 for 0.025 mm (25 micron)
Transportation Costs

Schematic Diagram



B.3.5 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. Water to be treated is pumped into one side of the bag and seeps through the bottom and sides of the bag. A secondary barrier, such as a rock filter bed or straw bale barrier, is placed beneath and beyond the edges of the bag to capture sediments that escape the bag.

Specifications:

Parameter		Specification	
		(Metric)	(English)
Capacity (approx.)	Bag Size: 1.2 m x 1.8 m (4 ft x 6 ft)	1.1 – 1.5 m ³ /minute	300 – 400 gpm
	Bag Size: 3.0 m x 4.6 m (10 ft x 15 ft)	3.0 – 4.2 m ³ /minute	800 – 1,100 gpm
	Effluent Collection Trailer*	up to 1.5 m ³ /minute	400 gpm
Footprint Dimensions (per bag)		Bag size + 1.4 m perimeter	Bag size + 5 ft perimeter
Footprint Area (per bag)		9.3 – 37 m ²	100 – 400 ft ²

* Has outlet for controlled draining

Pollutant Removal: Sediments and some metals removed with sediment.
The bag can last in time from 3 days to 3 weeks, depending on quality of water and flow conditions.

Product Availability: Readily available

Advantages: Once soil filter is established, fairly efficient removal of sediments.
Inexpensive.
Easy to install and transport to site.
Disposable, no cleaning required.
Fabrics vary to meet engineering specifications for flow rates, strength, and permeability.
Can place in a vendor-provided trailer/container to reclaim filtered water for further treatment.

Set Up/ Installation: Level ground surface preferable
Secondary barrier of rock filter bed or straw bales
Initial installation: 1 day
Bag disposal and replacement: 2 hours

Limitations: Difficult to guarantee sediment removal efficiencies; variability of treatment depends on total suspended solids and particle size.
Bag has to build up solids to create soil filter. Time to do so varies depending on amount of sediments present in the water. Initial solids removal is minimal.

Continuous monitoring required to determine the need to replace bag, adjust flow rate, keep bag from exploding/tearing. Must inspect secondary barrier to prevent overflowing due to high flow rates.

Free discharge is difficult to contain for secondary treatment; have to use container/trailer.

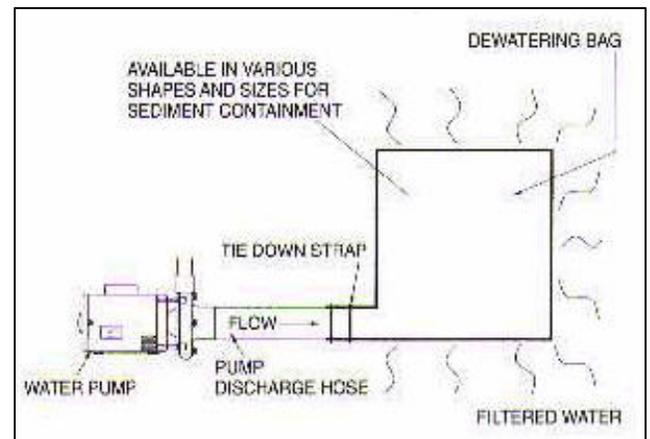
May cause erosion, unless appropriate measures are established.

Hose connection can fail.

Maintenance: Inspect flow, bag condition, bag capacity, and secondary barrier.
Replace bag when it no longer filters sediment or passes water at a reasonable rate.
Bag to be disposed offsite or onsite as directed by Resident Engineer.

Cost: 1.2 m x 18 m (4 ft x 6 ft) bag - \$100 each
3 m x 46 m (10 ft x 15 ft) bag - \$200 each
Cost of secondary barrier: \$500 - \$2,000, varies by size and site

Schematic Diagrams



B.3.6 Sand Media Particulate Filter

Description: 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 sediments and other pollutants are removed. Can be used as a standalone treatment or in conjunction with bag and cartridge filtration, if further treatment is required.

Specifications:

Parameter		Specification	
		(Metric)	(English)
Flow Rate*		0.19 – 3.8 m ³ /minute	80 - 1,000 gpm
Footprint Dimensions	Minimum	1.2 m L x 0.6 m W + 1.5 m perimeter	4 ft L x 2 ft W + 5 ft perimeter
	Maximum	1.5 m L x 6.1 m W + 1.5 m perimeter	5 ft L x 20 ft W + 5 ft perimeter
Footprint Area	Minimum	15.8 m ²	170 ft ²
	Maximum	41.8 m ²	450 ft ²

*Depending on model selection

Pollutant Removal: Trash, sediment, metals, biological oxygen demand (BOD), turbidity
 Typical particle size removed: down to 0.01 mm (10 microns) with 95 percent removal efficiency. Recirculation through a second unit can reduce particle size to 0.005 mm (5 microns) or less.

Product Availability: 1 - 2 days notice

Advantages: Portable, compact
 Particle size removal and efficiency
 Self-cleaning; back-washing makes this system cost-effective
 Reduction of metals and other pollutants attached to soil particles

Set Up/ Installation: Requires level, compacted surface
 Forklift required for off-loading from truck
 Time: 2 hours

Limitations: Backwash controller requires power
 Backwash tanks with clean water are required
 Does not effectively remove colloidal particles

Maintenance: Once set up, requires monthly service to check level of (and add) sand media.

Cost: \$1,100 - 4,000/month rental per unit, depending on flow rate and project location
 \$500 - \$1,500 set up charge
 Media: \$50-\$100/month
 Transportation Costs

Schematic Diagrams



B.3.7 Pressurized Bag Filter

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 of flow in series to an additional treatment unit. Vendors provide pressurized bag filters in a variety of configurations. Some units include a combination of bag filters and cartridge filters for enhanced pollutant removal.

Specifications:

Parameter	Specification	
	(Metric)	(English)
Bag Filter:		
Flow Rate	1.5 m ³ /minute	400 gpm
Footprint Dimensions	1.5 m L x 1 m W + 1.5 m perimeter	5 ft L x 3 ft W + 5 ft perimeter
Footprint Area	18.6 m ²	200 ft ²
Bag/Cartridge Filter Combination*:		
Flow Rate	0.19 – 1.5 m ³ /minute	50 - 400 gpm
Footprint (50 gpm)	1.5 m L x 1 m W	5 ft L x 3 ft W
Footprint (400 gpm)	3 m L x 1.8 m W	10 ft L x 6 ft W

*Varies by model

Pollutant Removal: Trash, sediment, metals, biological oxygen demand (BOD), turbidity, hydrocarbons
 Typical particle size removed: down to 0.002 mm (2 micron) with up to 99 percent removal efficiency depending on filter selected
 Oil absorbent bags available for hydrocarbon removal

Product Availability: 1-2 days

Advantages: High solids holding capacity.
 Bag filters have range of 0.002 mm to 0.1 mm (1 to 100 microns) rating.
 Bag/cartridge filter combination units can increase particle removal down to 0.0005 mm (0.5 microns).
 Skid mounted or trailer mounted.
 Individual bags placed in parallel can accommodate higher flow rates.
 Portable, compact.

Set Up/Installation: Level, compacted surface
 Forklift required for skid units
 Time: 1 - 2 hours

Limitations: Expensive
 Does not effectively remove colloidal particles

Maintenance: Change filter bags when pressure differential exceeds manufacturer's recommendation

Cost: Bag Filter Unit: \$1,800/month rental + \$150 setup and fill charge

Bag/Cartridge Filter Combination Unit:

0.19 m³/minute (50 gpm) = \$850/month rental + \$150 set up charge

1.5 m³/minute (400 gpm) = \$3,400/month rental + \$500 set up charge

Maintenance: 0.19 m³/minute (50 gpm) = \$300/month

1.5 m³/minute (400 gpm) = \$1,250/month

Transportation Costs

Schematic Diagrams



B.3.8 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).

Specifications:

Parameter	Specification	
	(Metric)	(English)
Flow Rate*	0.19 – 3.8 m ³ /minute	50 – 1,000 gpm
Footprint Dimensions	1.2 m L x 1 m W + 1.5 m perimeter	4 ft L x 3.5 ft W + 5 ft perimeter
Footprint Area	18.6 m ²	200 ft ²

*Single Cartridge Unit

Pollutant Removal: Trash, sediment, metals, biological oxygen demand (BOD), turbidity, hydrocarbons
Hydrocarbons can effectively be removed with special resin cartridges.
Typical particle size removed: to less than 0.002 mm (2 micron) with up to 99.9 percent removal efficiency depending on filter selected

Product Availability: 1 – 2 days

Advantages: Filtration through various types of cartridge media (paper, polypropylene, nylon, and cellulose).
Multi-cartridge filters provide a large surface area for a longer service life.
Particle size removal rating of 0.0005 to 0.100 mm (0.5 to 100 micron).
Skid mounted or trailer mounted.

Set Up/ Installation: Requires level, compacted surface
Skid mounted or trailer mounted
Forklift required for skid units
Time: 2 hours

Limitations: Expensive
Requires preliminary treatment
Will not remove colloidal particles

Maintenance: Change cartridges when pressure differential exceeds manufacturer’s recommendation.

Cost: Single Cartridge Unit (90 individual cartridges) = \$800 - \$3,000/month rental
\$1,500 setup charge
Maintenance: \$1,000 - 5,000/month, depending on sediment loading
Transportation Costs

Schematic Diagram



B.4 SEDIMENT TREATMENT EQUIPMENT VENDORS - SALES/RENTAL

Table B-2 provides a partial list of vendors and suppliers for rental or purchase of sediment treatment equipment for dewatering. It is not representative of all available vendors.

Table B-2 Sediment Treatment Equipment Vendors

Vendor/Supplier	Products Available
Rain for Rent 1-661-387-6111 Mike Chase www.rainforrent.com	Weir tank Dewatering tank Pressurized bag filter Sand media filter Cartridge filter
Clear Creek Systems, Inc. 1-661-324-9634 Joe Gannon www.clearcreeksystems.com	Dewatering tank (“mud buggy”) Pressurized bag filter Sand media filter Cartridge filter
Baker Tanks 1-800-BAKER 12 www.bakertanks.com	Weir tank Dewatering tank
Dandy Products 1-800-591-2284 www.acfenvironmental.com	Gravity (dewatering) bag filter