



223-044-010

On Site-Retirement, Remediation, and Relocation (RRR) Restoration Plan

Applicant: Bob Howard

Parcel Description:

APN: 223-044-010

County: Humboldt

Zoning: TPZ

Site Address: 000 Reed Mountain Rd

Lot Size: 210 Acres

WDID: State Pending Tier 1 Low Risk

Total Cultivation Area:

Proposed Canopy 10,000 ft²

Proposed Propagation Area 1,000 ft²

Areas to be remediated: 4,000 ft²

Prepared for
Bob Howard
777 Ranch LLC
PO Box 909
Garberville, Ca 95542
Prepared by
ETA Humboldt LLC
77 Ave of the Giants #7
Phillipsville, Ca 95559



Bob Howard
223-044-010 000 REED MOUNTAIN RD, GARBENVILLE, CA 95542



REED MOUNTAIN ROAD MEETS CATEGORY 4 STANDARD
ALL PARCELS BEYOND THIS PARCEL HAVE EASEMENT REED MTN RD ONLY
ALL INTERNAL ROADS ARE GRAVEL AND DIRT, AT LEAST 16-18 FT WIDE AND HAVE ADEQUATE TURNOUTS FOR PASSAGE
ROADS LESS THE 30% GRADE AND MOSTLY FLAT IN WORK AREAS

All Projects in Purple Southern Parcel on LSAA # for Bob Howard
NO KNOWN TRIBAL CEREMONIAL SITES, SCHOOLS OR BUS STOPS WITHIN 1000 FT
NO KNOWN HISTORICAL BUILDINGS OR ARCHAEOLOGICAL OR PALEONTOLOGICAL RESOURCES WITHIN 600 FT

PROJECT INFORMATION:

PERMIT APPLICATIONS:

COUNTY - 5221
WDR - Submitted pending approval letter
DNR - 1847861
SUBV APPR

PROPERTY OWNERS:

BOB HOWARD
HER REALTY - ERDINC DOGAN
HER REALTY - DIMITAR DIMITROV

CULTIVATION AREA = 9,360

Light Degradation Greenhouses
POU 1 - 6H1 20' X 96' = 1,920 SQFT
6H2 20' X 96' = 1,920 SQFT
6H3 20' X 96' = 1,920 SQFT
POU 2 - 6H4 20' X 96' = 1,920 SQFT
6H5 20' X 80' = 1,600 SQFT
WATER TANK STORAGE 2010- 13,000 GAL
PARCEL SIZE - APPROX 280 ACRES
ZONING - TPZ
HISTORICAL APN
223-044-003
223-045-008
223-045-001

LLA Record PLN-2019-15383 IS ALMOST COMPLETED



SOILS STORAGE/
COMPOST

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ALL PARCELS BEYOND THIS PARCEL HAVE EASEMENT REED MTN RD ONLY

ALL INTERNAL ROADS ARE GRAVEL AND DIRT, AT LEAST 16-18 FT WIDE AND HAVE ADEQUATE TURNOUTS FOR PASSAGE
ROADS LESS THE 30% GRADE AND MOSTLY FLAT IN WORK AREAS

The purpose of this report is to address the on-site relocation for Bob Howard. This restoration plan is to address the most upper pad in the cultivation area. Referred to as FS1 (Former Cultivation Site 1) On June 24th, 2019 ETA Humboldt LLC submitted documentation to relocate the canopy space from this upper pad and incorporate it into the pads below. This site change is a direct result of a site inspection conducted June 6, 2019 with Andrew Orahoske from CDFW and Adona White of SWRCB. During the inspection both agents expressed 3 major issues with the cultivation area.

The amount of disturbed area being utilized to cultivate a 10,000 ft² canopy. It became clear that we were slightly over the 1 acre disturb area limit to qualify for a Tier 1 Low risk discharger. Mr. Howard asks Mr. Orahoske and Ms. White which area they would prefer decommissioned. The upper pad was chosen for several reasons.

- It is the furthestmost greenhouse pad in the cultivation area
- The Greenhouse that was formerly there would have to be downsized to meet the 50' setback from a Class III watercourse.
- The road to the cultivation pad would be utilized less as it would only access water tanks.
- Water tanks that needed to be moved from the nearby Class III watercourse could be moved to this pad and use gravity flow to the patches below

This change will bring the entire cultivation to the lower two pads. This will bring the disturbed area to approx. 30,000 sq. ft for this 10,000 sq. ft canopy thereby remaining a Tier 1 Low Risk Discharger

The 3-3,300g water tanks that provide water to the cultivation areas were in an area that Mr. Orahoske and Ms. White felt could have potential land slide problems in the future and were positioned in the SMA area. See map for location. These tanks were approx. 200 ft from the decommissioned greenhouse pad FS1. During the site visit it was agreed upon that the tanks could be relocated to near FS1, as the only reason for decommissioning the site is to reduce the footprint of the disturbed area. No other mitigation required for area of previous tank location. Water tanks were relocated 200ft southwest to a stable location.

Cultivation Areas

FS1- Former Site 1 is a 1,960 ft² cultivation site located at the uppermost portion of the cultivation area. The area has a legacy graded flat from the 1980's when Eel River sawmills owned the parcel. Some of the graded flat is within the setback requirements for a Class III watercourse.

Many restoration efforts have already been implanted

1. The removal of all greenhouse and infrastructure related materials in 2018 before the submission of the 2.0 application.
2. The water tanks have been relocated to FS1 as per recommendations from CDFW and NCRWQCB.
3. Grass seed and weed free hay has been applied to all slopes in the rates listed below.
4. Straw waddles were placed in 10'- 15' ft intervals along slopes to reduce run-off.
5. Winterization control measures have implemented following BMP's from Site Management Plan

The efforts will continue with erosion control measures, reseeding with native vegetation, and monitoring. Restoration measures requiring immediate action and locations of necessary sediment and erosion control measures are indicated on the attached map, with key points detailed below.

1. The fill slope shall be seeded with native annual and perennial grasses, followed by the application of straw mulch, per the attached specifications. The fill slope shall have a rolled erosion control product such as jute netting anchored on top of the seed and straw mulch, per the attached specifications. In addition, straw waddles shall be installed every 10 feet down the fill slope, for the entire length of the fill, per the attached specifications.
2. Any loose soil will be deposited into controlled soils storage area and used for outdoor cultivation. The entire garden area will be covered with straw and seeded with native grasses for erosion control and to return the site to its natural state

3. Silt fencing will be added to the bottom of the lower side of the slope if needed
4. The landowner shall apply erosion control per the attached specifications.

FS2- Former Site 2 was a 2,000 ft² cultivation site located off Reed Mountain road. See Site Map Area 2. The area has legacy graded flats from the 1980's when Eel River sawmills owned the parcel. During a site visit conducted with Dean Beck from the Building Division of HCPBD it was concluded that the sites would be environmental superior if they were consolidated. Consolidating the site's cultivation areas to only one (1) location will lessen the possibility of sediment transport into nearby watercourses and is environmentally superior, in general, if the site's being retired are properly re mediated. Further this site is accessed from a different set of roads than the main cultivation area. Decommissioning this cultivation site will reduce traffic volume, and thereby reduce sediment transport to watercourses. After remedial work and the installation of erosion and sediment control measures, this site will not be used for cannabis cultivation.

Many restoration efforts have already been implanted

1. The removal of all greenhouse and infrastructure related materials in 2018 before the submission of the 2.0 application.
2. Grass seed and weed free hay has been applied to all slopes in the rates listed below.
3. Winterization control measures have implemented following BMP's from Site Management Plan

The efforts will continue with erosion control measures, reseeding with native vegetation, and monitoring. Restoration measures requiring immediate action and locations of necessary sediment and erosion control measures are indicated on the attached map, with key points detailed below.

1. Additional fencing that was still located on site as of July 25, 2019 needs to be removed, along with fence posts and any other cultivation related waste or materials.
2. The fill slope shall be seeded with native annual and perennial grasses, followed by the application of straw

mulch, per the attached specifications. The fill slope shall have a rolled erosion control product such as jute netting anchored on top of the seed and straw mulch, per the attached specifications. In addition, straw waddles shall be installed every 10 feet down the fill slope, for the entire length of the fill, per the attached specifications.

3. Any loose soil will be deposited into controlled soils storage area and used for outdoor cultivation. The entire garden area will be covered with straw and seeded with native grasses for erosion control and to return the site to its natural state
4. The landowner shall apply erosion control per the attached specifications.

Erosion Control Measures

Restoration efforts occurring at all cultivation sites will undoubtedly disturb the topsoil resulting in exposure of bare mineral soil that could lead to erosion. This restoration plan requires the treatment of all bare mineral soil as described in the attached specifications "Erosion Control Methods".

Restoration Plan Timing

Restoration operations may occur during the Winter Period (May 1 - October 15) when soils are not saturated, and the associated appurtenant access roads have a stable operating surface. No heavy equipment shall be used within the Class III buffer zone in association with restoration efforts occurring at Cultivation Areas FS1 and FS2.

Performance standards

1. To revegetate bare soil areas to 80% coverage through grass seeding and mulch cover and
2. To reduce concentrated runoff from developed surfaced by discontinuing channelized flow of storm water outside of natural stream channels.

Road Maintenance Guidelines

Roads on the property shall be inspected and maintained to ensure concentrated runoff and surface erosion are avoided. All access roads shall have drainage features installed in accordance with the recommendations in the following chart.

Soil Erodibility	Road gradient(%) and drainage features spacing (feet)				
	0-3	4-6	7-9	10-12	>12
High	250	160	130	115	100
Low	400	3,00	250	200	160

Based on Keller and Sherar, 2003

All access roads on the property shall be maintained to the standards specified in the Handbook for Forest, Ranch & Rural Roads, prepared by Pacific Watershed Associates (2014).

Monitor and Maintain

Required work shall be carried out as described in the guideline's sections above. Once restoration work has been completed, an implementation report will be completed and submitted to Humboldt County showing the execution of each key point listed above. The goal of this work is to limit the impact of development features on this parcel on riparian health and impact on natural resources.

Monitoring will be carried out via visual inspection by the landowner once per season, with special care to monitor that heavy rains during the winter season to not degrade or otherwise undo restoration areas and the erosion control measures installed there. In addition to the four inspections per year, monitoring shall take place after major storm events to ensure the integrity of restoration areas.

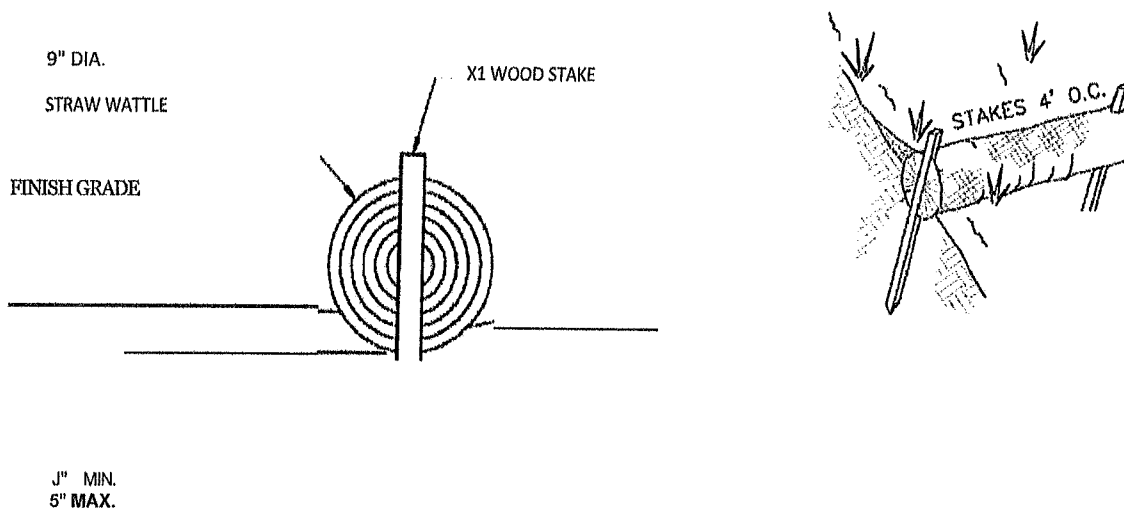
Reseeded areas shall be inspected each season with re-seeding and re-mulching each spring

until the goal of 80% vegetative cover is met. Road surfaces and the edges of graded flats shall be inspected for signs of scouring to ensure that channelized flow and sediment transport are absent from developed features. The following Adaptive Management Measures will be implemented as needed.

Erosion Control Methods

FS1 and FS2 will be stabilized by applying mulch and seed. First, seed shall be spread via broadcast dispersal of local/native, non-invasive and weed free erosion control grass seeds (e.g. American Meadows Western Grass Seed or Larner Seeds Golden State Native Grass Erosion Control Mix). Seeding shall be applied at a rate of 15-20 pounds per acre of bare soil. Locally native wildflower and/or shrub seeds may also be included in the seed mix. Following this, restored areas shall be mulched using two to four inches of weed-free clean straw or similar biodegradable mulch over the seeded area. Alternately, seeding may be covered with jute netting, coconut fiber blanket, or similar non-synthetic monofilament netting or erosion control blanketing.

Steep slopes, such as areas identified as unstable fill, shall have straw waddles placed along the entire length of the fill at 10-foot increments. Waddle installation shall follow the best management practices indicated by the following diagram.



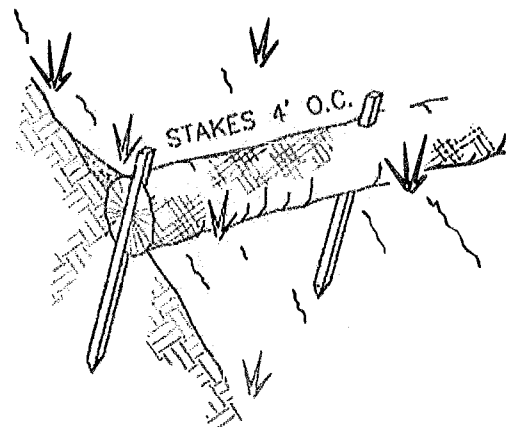
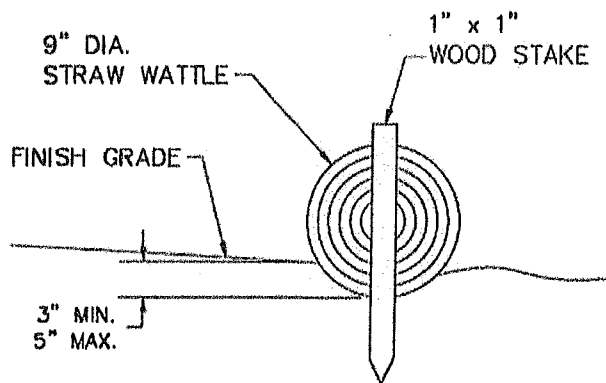
Adaptive Management Plan for Erosion Control

MANAGEMENT ELEMENT	PROJECT OBJECTIVE	MONITORING METHODS	MONITORING FREQUENCY	MANAGEMENT TRIGGER POTENTIAL	MANAGEMENT ACTIONS
Erosion and/or Sediment Deposition Monitoring	Minimize areas of sediment deposition Minimize bank erosion	Cross-section and longitudinal profile surveys of slope above and below FS1	Daily during project activities and regularly during restoration	Development of conditions (e.g., log jams, tree falls, bar formation) that block the entire channel and threatens channel and floodplain structure or hydraulic function. Excessive erosion or sediment deposition at the confluence of tributary channels.	More detailed assessment of rate/causes of erosion or sedimentation and evaluation of effects relating to slope below the FS1 Implement site specific erosion control BMPs such as soil bioengineering and vegetative revetments as needed Increase monitoring to locate sediment source(s) Remove obstructions if deemed necessary (based on results of annual monitoring and channel surveys) to maintain habitat and hydrologic function of nearby Class III watercourse.
Sediment Management Areas	Integrate sediment management actions to help sustain hydraulic conveyance and ecological function	Inspect nearby Class III channel and floodplain design components used to maintain the function and efficiency of sediment capture and retention in sediment management areas Monitor vegetation growth in and around sediment management	Check FS1 slope for riling and scouring Inspect nearby Class III watercourse downstream and channels for sediment accumulation or erosion	Sediment management areas are not collecting sediment Vegetation establishment that hinders function of the sediment management areas and/or adjacent river channels	Install silt fencing as base of slope to FS1. Add waddles at a rate of 5' per roll on slopes greater than 15%. Re-visit sediment management area design and re-design individual feature as needed to adequately collect sediment Trim or remove undesirable vegetation Implement site specific erosion control BMPs such as soil bioengineering and

		areas. Riparian vegetation will be used to control desired channel morphology and hydraulics to establish and maintain SMA function			vegetative revetments as need to reduce streambank mass wasting while maintaining channel function and riparian habitat value.

BMP: Erosion Control

- Erosion control and sediment detention devices and materials shall be incorporated into the cleanup/restoration work design and installed prior to the end of project work and before the beginning of the rainy season. Any continuing, approved project work conducted after October 15 shall have erosion control works completed up-to-date and daily.
- Erosion control materials shall be, at minimum, stored on-site at all times during approved project work between May 1 and October 15.
- Approved project work within the 5-year flood plain shall not begin until all temporary erosion controls (straw bales or silt fences that are effectively keyed-in) are installed downslope of cleanup/restoration activities.
- Non-invasive, non-persistent grass species (e.g., barley grass) may be used for their temporary erosion control benefits to stabilize disturbed slopes and prevent exposure of disturbed soils to rainfall.
- Upon work completion, all exposed soil present in and around the cleanup/restoration sites shall be stabilized within 7 days.
- Soils exposed by cleanup/restoration operations shall be seeded and mulched to prevent sediment runoff and transport.
- Straw Wattles (if used) shall be installed with 18 or 24-inch wood stakes at four feet on center. The ends of adjacent straw wattles shall be abutted to each other snugly or overlapped by six inches. Wattles shall be installed so that the wattle is in firm contact with the ground surface.



STRAW MULCHING

What is it?

The application of straw as a protective cover over seeded areas to reduce erosion and aid in revegetation or over bare soils that will be landscaped later to reduce erosion.

When is it used?

This method is used on slopes which have been seeded and have high potential for erosion. It requires some type of anchoring by matting, crimping or other methods to prevent blowing or washing away.

Straw mulch forms a loose layer when applied over a loose soil surface. To protect the mulch from wind drifting and being moved by water, it must be covered with a netting such as plastic or punched into the soil with a spade or roller, or by spraying it with a tacking agent. The mulch should cover the entire seed or bare area. The mulch should extend into existing vegetation or be stabilized on all sides to prevent wind or water damage which may start at the edges.

Methods and Materials:

On gentle to moderate slopes, straw mulch can be applied by hand broadcasting to a uniform depth of 2 - 3 inches. On steep slopes, the straw should be blown onto the slope to achieve the same degree of cover. When applied properly, approximately 20-40 percent of the original ground surface can be seen. The application rate per acre should be about 2 tons (or one 74 pound bale per 800 square feet). Straw should be clean rice, barley, or wheat straw.

Anchoring of straw mulch can be accomplished using the following methods:

Hand Punching:

A spade or shovel is used to punch straw into the slope until all areas have straw standing perpendicularly to the slope and embedded at least 4 inches into the slope. It should be punched about 12 inches apart.

Roller Punching:

A roller equipped with straight studs not less than 6 inches long, from 4 - 6 inches wide and approximately one inch thick is rolled over the slope.

Crimper Punching:

Like roller punching, the crimper has serrated disk blades about 4 - 8 inches apart which force straw mulch into the soil. Crimping should be done in two directions with the final pass across the slope.

Matting:

Matting is used on large, steep areas which cannot be punched with a roller or by hand. Jute, wood excelsior or plastic netting is applied over unpunched straw.

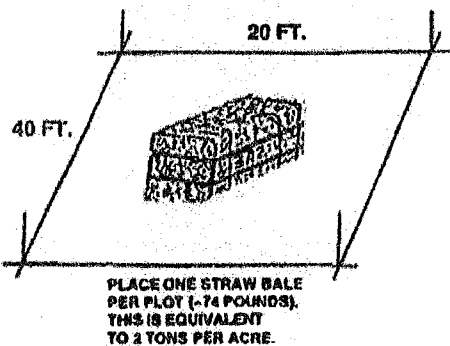
Where to Get Help:

Technical Assistance is available from your local USDA Natural Resources Conservation Service office or your local Resource Conservation District regarding this practice and other treatments.

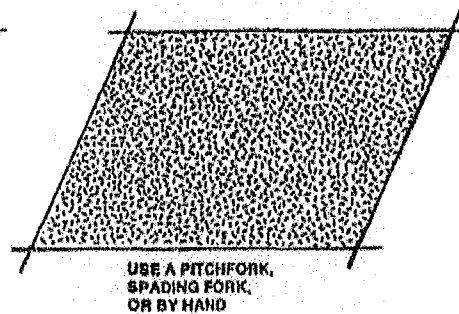
July 2002 Arizona

Straw Mulching

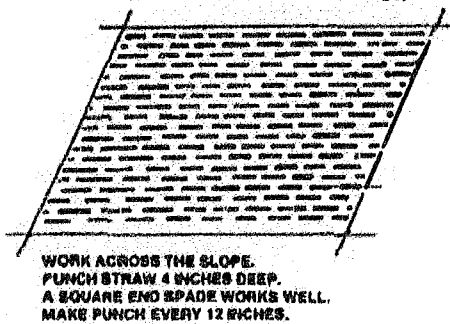
SPREAD THE STRAW MARK OFF 800 SQ FT. PLOTS



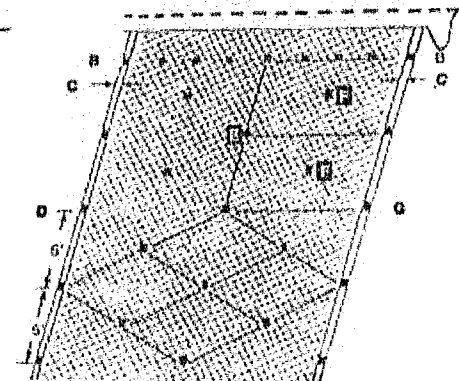
SPREAD EVENLY



ANCHOR THE STRAW CRIMP BY HAND OR .

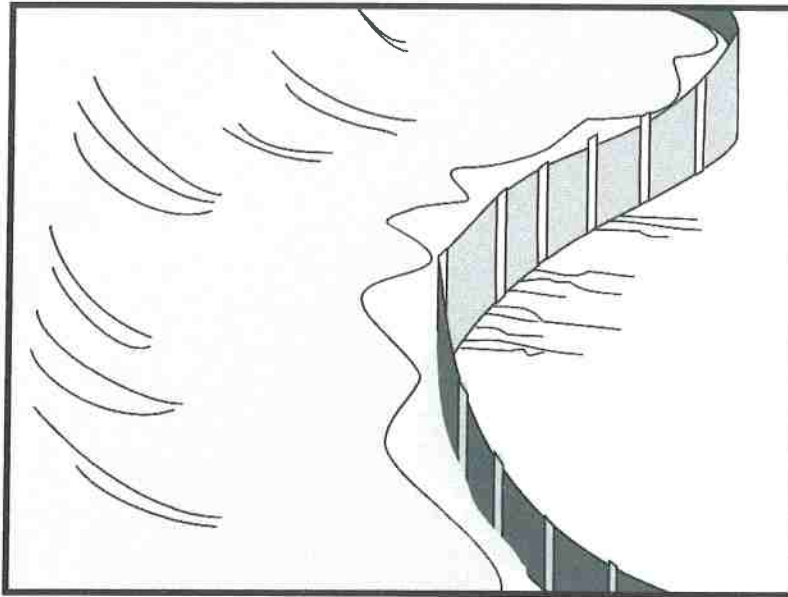


USE PLASTIC NETTING



Construction Notes

1. Lay matting in strips down the slope over the straw. Bury upper end in 6-8 inch deep and wide trench. Most netting comes in 14-17 foot wide rolls.
2. Secure the upper end with stakes every 2 feet.
3. Overlap seams on each side 4-5 inches.
4. Secure seams with stakes every 5 feet.
5. Stake down the center every 5 feet.
6. Stake middles to create diamond pattern that provides stakes spaced 4-5 feet apart.
7. Use pointed 1x2 inch stakes 8-9 inches long. Leave 1-2 inch top above netting or use "U" shaped metal pins at least 9 inches long.
8. When joining 2 strips, overlap upper strip 3 feet over lower strip and secure with stakes every 2 feet like in "B" above.



Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (SE-10). Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.

Categories

EC	Erosion Control
SE	Sediment Control
TC	Tracking Control
WE	Wind Erosion Control
NS	Non-Stormwater Management Control
WM	Waste Management and Materials Pollution Control

Legend:

- ☐ Primary Category
- ☒ Secondary Category

Targeted Constituents

Sediment
Nutrients
Trash
Metals
Bacteria
Oil and Grease
Organics

Potential Alternatives

SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-10 Storm Drain Inlet Protection
SE-14 Biofilter Bags



Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Do not use in locations where ponded water may cause a flooding hazard. Runoff typically ponds temporarily on the upstream side of silt fence.
- Do not use silt fence to divert water flows or place across any contour line. Fences not constructed on a level contour, or fences used to divert flow will concentrate flows resulting in additional erosion and possibly overtopping or failure of the silt fence.
- Improperly installed fences are subject to failure from undercutting, overtopping, or collapsing.
- Not effective unless trenched and keyed in.
- Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
- Do not use on slopes subject to creeping, slumping, or landslides.

Implementation

General

A silt fence is a temporary sediment barrier consisting of woven geotextile stretched across and attached to supporting posts, trenched-in, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

The following layout and installation guidance can improve performance and should be followed:

- Use principally in areas where sheet flow occurs.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- The maximum slope perpendicular to the fence line should be 1:1.
- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft² of ponding area should be provided for every acre draining to the fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.

- Silt fences should remain in place until the disturbed area is permanently stabilized, after which, the silt fence should be removed and properly disposed.
- Silt fence should be used in combination with erosion source controls up slope in order to provide the most effective sediment control.
- Be aware of local regulations regarding the type and installation requirements of silt fence, which may differ from those presented in this fact sheet.

Design and Layout

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Woven geotextile material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Standard vs. Heavy Duty Silt Fence

Standard Silt Fence

- Generally applicable in cases where the slope of area draining to the silt fence is 4:1 (H:V) or less.
- Used for shorter durations, typically 5 months or less
- Area draining to fence produces moderate sediment loads.

Heavy Duty Silt Fence

- Use is generally limited to 8 months or less.
- Area draining to fence produces moderate sediment loads.
- Heavy duty silt fence usually has 1 or more of the following characteristics, not possessed by standard silt fence.
 - Fence fabric has higher tensile strength.
 - Fabric is reinforced with wire backing or additional support.
 - Posts are spaced closer than pre-manufactured, standard silt fence products.
 - Posts are metal (steel or aluminum)

Materials

Standard Silt Fence

- Silt fence material should be woven geotextile with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The

reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.

- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.
- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

Heavy-Duty Silt Fence

- Some silt fence has a wire backing to provide additional support, and there are products that may use prefabricated plastic holders for the silt fence and use metal posts or bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement for health and safety purposes.

Installation Guidelines – Traditional Method

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line of the proposed silt fence (trenches should not be excavated wider or deeper than necessary for proper silt fence installation).
- Bottom of the silt fence should be keyed-in a minimum of 12 in.
- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.
- When standard strength geotextile is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy-duty wire staples at least 1 in. long. The mesh should extend into the trench.
- When extra-strength geotextile and closer post spacing are used, the mesh support fence may be eliminated.
- Woven geotextile should be purchased in a long roll, then cut to the length of the barrier. When joints are necessary, geotextile should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.
- The trench should be backfilled with native material and compacted.
- Construct silt fences with a setback of at least 3 ft from the toe of a slope. Where, due to specific site conditions, a 3 ft setback is not available, the silt fence may be constructed at the

toe of the slope, but should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and more difficult to maintain.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed $\frac{1}{3}$ the height of the barrier; in no case should the reach exceed 500 ft.
- Cross barriers should be a minimum of $\frac{1}{3}$ and a maximum of $\frac{1}{2}$ the height of the linear barrier.
- See typical installation details at the end of this fact sheet.

Installation Guidelines - Static Slicing Method

- Static Slicing is defined as insertion of a narrow blade pulled behind a tractor, similar to a plow blade, at least 10 inches into the soil while at the same time pulling silt geotextile fabric into the ground through the opening created by the blade to the depth of the blade. Once the geotextile is installed, the soil is compacted using tractor tires.
- This method will not work with pre-fabricated, wire backed silt fence.
- Benefits:
 - Ease of installation (most often done with a 2 person crew). In addition, installation using static slicing has been found to be more efficient on slopes, in rocky soils, and in saturated soils.
 - Minimal soil disturbance.
 - Greater level of compaction along fence, leading to higher performance (i.e. greater sediment retention).
 - Uniform installation.
 - Less susceptible to undercutting/undermining.

Costs

- It should be noted that costs vary greatly across regions due to available supplies and labor costs.
- Average annual cost for installation using the traditional silt fence installation method (assumes 6 month useful life) is \$7 per linear foot based on vendor research. Range of cost is \$3.50 - \$9.10 per linear foot.
- In tests, the slicing method required 0.33 man hours per 100 linear feet, while the trenched based systems required as much as 1.01 man hours per linear foot.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair undercut silt fences.

- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence should be inspected and maintained regularly.
- Remove silt fence when upgradient areas are stabilized. Fill and compact post holes and anchor trench, remove sediment accumulation, grade fence alignment to blend with adjacent ground, and stabilize disturbed area.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

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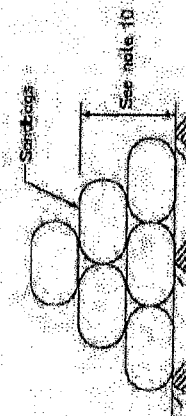
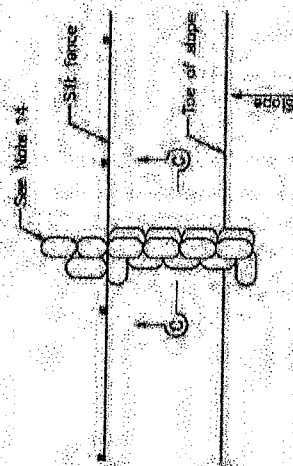
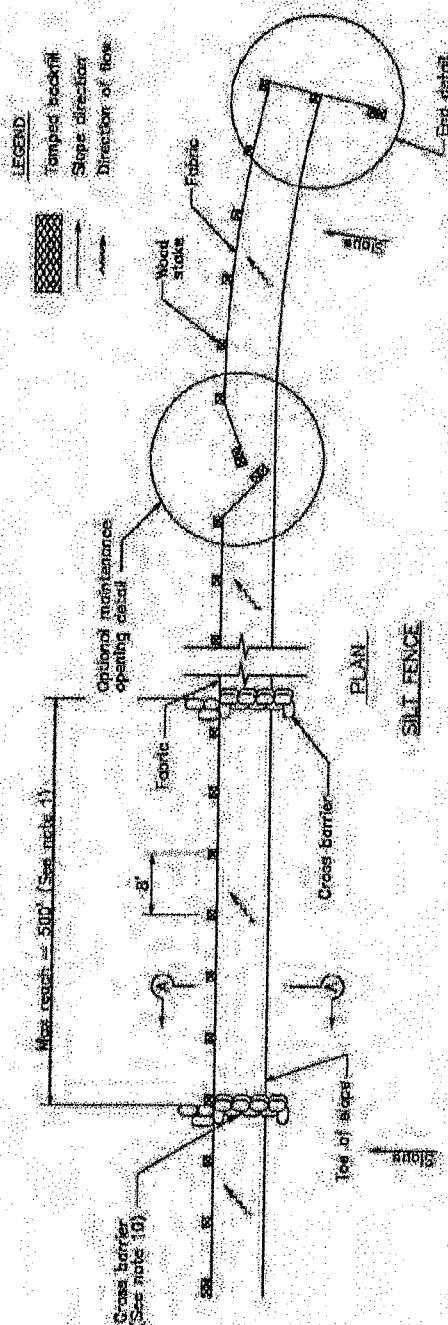
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NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier. In no case shall the reach length exceed 500'.
2. The last 3'-0" of fences shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'-0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake are full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential fish-through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stakes, fence fabric shall be folded around two stakes are full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Jointing sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.
14. Add 3-4 bags to cross barrier on downstream side of silt fence as needed to prevent bypass or undermining and as allowable based on site limits of disturbance.

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