

Water Resource Protection Plan

WDID#: 1B16412CHUM

TRC ID#: 180101020302TRC19

Submitted to:

Tyler Meenan

Prepared by:

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165 South Fortuna Blvd

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Purpose

This WRPP has been prepared on behalf of the property owner, Tyler Meenan, for APN 208-221-015, 208-221-016, and 208-221-008 by agreement and in response to the California Water Code Section 13260(a), which requires that any person discharging waste or proposing to discharge waste within any region that could affect the quality of the waters of the state, other than into a community sewer system, shall file with the appropriate regional water board a Report of Waste Discharge (ROWD) containing such information and data as may be required by the Regional Water Board. The Regional Water Board may waive the requirements of Water Code section 13260 for specific types of discharges if the waiver is consistent with the Basin Plan and in the public interest. Any waiver is conditional and may be terminated at any time. A waiver should include monitoring requirements to verify the adequacy and effectiveness of the waiver's conditions. Order R1-2015-0023 conditionally waives the requirement to file a ROWD for discharges and associated activities described in finding 4.

Scope of Report

Order No. R1-2015-0023 states that "Tier 2 Dischargers and Tier 3 Dischargers who intend to cultivate cannabis before, during, or following site cleanup activities shall develop and implement a water resource protection plan that contains the elements listed and addressed below. Dischargers must keep this plan on site, and produce it upon request by Regional Water Board staff. Management practices shall be properly designed and installed, and assessed periodically for effectiveness. If a management measure is found to be ineffective, the plan must be adapted and implemented to incorporate new or additional management practices to meet standard conditions. Dischargers shall certify annually to the Regional Water Board individually or through an approved third party program that the plan is being implemented and is effectively protecting water quality, and report on progress in implementing site improvements intended to bring the site into compliance with all conditions of this Order."

Methods

The methods used to develop this WRPP include both field and office components. The office component consisted of aerial photography review and interpretation, existing USGS quad map review, GIS mapping of field data, review of on-site photography points, streamflow calculations, and general planning. The field component included identifying and accurately mapping all watercourses, wet areas, and wetlands located downstream of the cultivation areas, associated facilities, and all appurtenant roads accessing such areas. An accurate location of the Waters of the State is necessary to make an assessment of whether potential and existing erosion sites/pollution sites have the potential to discharge waste to an area that could affect waters of the State (including groundwater). Next, all cultivation areas, associated facilities, and all appurtenant roads accessing such areas were assessed for discharges and related controllable water quality factors from the activities listed in Order R1-2015-0023, Finding 4a-j. The field assessment also included an evaluation and determination of compliance with the Standard Conditions per Provision I.B of Order No. R1-2015-0023. The water resource protection plans required under Tier 2 are meant to describe the specific measures a discharger implements to achieve compliance with standard conditions. Therefore, all required components of the water resource protection plan per Provision I.B of Order No. R1-2015-0023 were physically inspected and evaluated. A comprehensive summary of each Standard Condition as it relates to the subject property is appended.

Property Description

The site consists of three 40 acre parcels which make up a single 120 acre property composed of primarily oak woodland with intermittent stands of conifer. The slope of the property averages 27% with elevations ranging from 2,160 to 3,200 ft. The property is located within the NE ¼ of Section 28, Township 2N, Range 5E, Humboldt County.

This project currently consists of seven cultivation sites (CS) totaling 53,516 square feet.

- CS #1 consists of an approximately 1.2 acre landing that contains five greenhouses. Four of these greenhouses are 20' wide by 110' long while the fifth greenhouse is 20' wide by 135' long. Side slopes from the landing are a stable 50%.
- CS #2 consists of a 0.2 acre gravel landing that contains a single 20' wide by 95' long greenhouse. This site is primarily used as a nursery for CS #1 and #5. Side slopes at this site are approximately 45%.
- CS #3 consists of a southeastern slope modified into two terraces containing greenhouses. The dimensions of the greenhouses are 16' by 84' and 16' by 102'. The entire disturbed hillside is approximately 0.7 acres in size and has approximately 50% side slopes.
- CS #4 consists of a 20' by 50' greenhouse located next to a residence on the property. This cultivation site is located on a relatively flat slope developed previously for the residential structure that exists here. This greenhouse is a nursery site for CS #5, #6, and #7.
- CS #5 consists of an approximately 1.4 acre graded landing containing 10 varying sizes of greenhouse. The landing is located in a naturally flat location and thus has minimum side slopes at approximately 50%. The sizes of the greenhouses are: 20' by 96', two 25' by 108', 25' by 120', two 25' by 132', 25' by 144', and three 25' by 156'.
- CS #6 is a single 20' by 96' greenhouse located on a small flat within the switchback of a road segment. The natural slope is approximately 22%.
- CS #7 is a single 20' by 100' greenhouse located on a small flat within the switchback of a road segment. The natural slope is approximately 24%.

Agricultural water for this project is sourced from three locations. One is a 275,000 gallon rain catchment pond located at the top of the property. The Discharger plans to gravity feed from this pond to storage tanks below over winter. This will maximize the amount of water captured and stored from precipitation. Once the pond and storage facilities are used the Discharger will supplement stored rain water with groundwater diversions (well). There is currently one existing well on the property and the Discharger is awaiting a second to be drilled.

Monitoring Plan

Tier 2 Dischargers shall include a monitoring element in the water resource protection plan that at a minimum provides for periodic inspection of the site, checklist to confirm placement and efficacy of management measures, and document progress on any plan elements subject to a time schedule. Tier 2 Dischargers shall submit an annual report (Appendix C) by March 31 of each year that documents implementation and effectiveness of management measures during the previous year. Tier 2 annual reporting is a function that may be provided through an approved third party program.

Monitoring of the site includes visual inspection and photographic documentation of each feature of interest listed on the site map, with new photographic documentation recorded with any notable changes to the feature of interest. At a minimum, all site features must be monitored annually, to provide the basis for completion of the annual re-certification process. Additionally, sites shall be monitored at the following times to ensure timely identification of changed site conditions and to determine whether implementation of additional management measures is necessary to iteratively

prevent, minimize, and mitigate discharges of waste to surface water: 1) just prior to October 15 to evaluate site preparedness for storm events and storm water runoff, 2) following the accumulation of 3" total precipitation or by November 15, whichever is sooner, and 3) following any rainfall event with an intensity of 3" precipitation in 24 hours. Precipitation data can be obtained from the National Weather Service Forecast Office (e.g. by entering the zip code of the parcel location at <http://www.srh.noaa.gov/forecast>).

Monitoring Plan Reporting Requirements

Order No. R1-2015-0023, Appendix C must be submitted to the Regional Water Board or approved third party program upon initial enrollment in the Order (NOI) and annually thereafter by March 31. Forms submitted to the Regional Water Board shall be submitted electronically to northcoast@waterboards.ca.gov. If electronic submission is infeasible, hard copies can be submitted to: North Coast Regional Water Quality Control Board, 5550 Skylane Boulevard, Suite A, Santa Rosa, CA 95403.

Assessment of Standard Conditions

Assessment of Standard Conditions consisted of field examinations on 07/14/2016 and 08/03/2017. The examination evaluated areas near, and areas with the potential to directly impact, watercourses for sensitive conditions. This includes but is not limited to, existing and proposed roads, skid trails and landings, unstable and erodible watercourse banks, unstable upslope areas, debris, jam potential, inadequate flow capacity, changeable channels, overflow channels, flood prone areas, and riparian zones. Field examinations also evaluated all roads and trails on the property, developed areas, cultivation sites, and any structures and facilities appurtenant to cultivation on the property. Anywhere the Standard Conditions are not met on the property, descriptions of the assessments and the prescribed treatments are outlined following each associated section below.

Summary of Standard Conditions Compliance

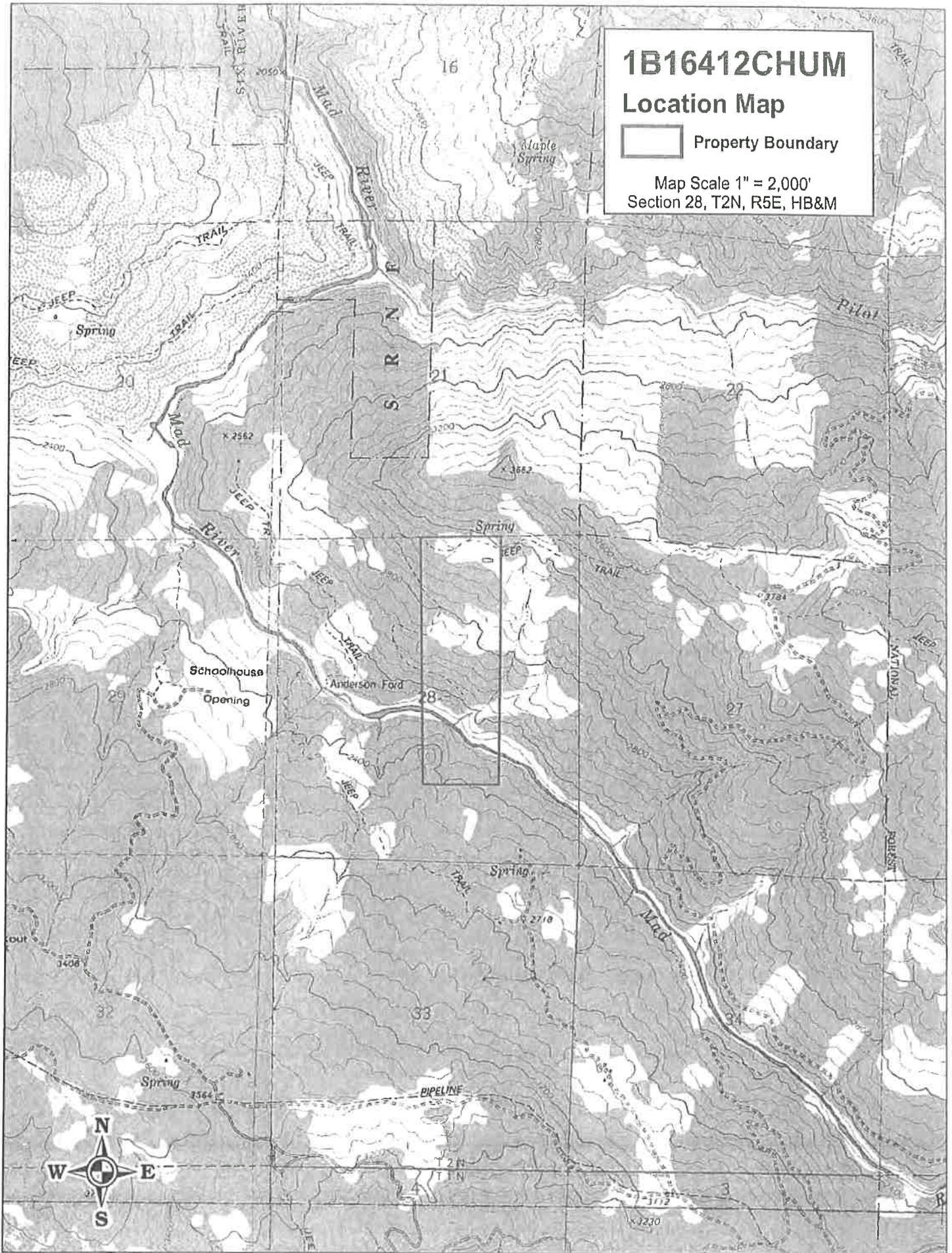
1. Site maintenance, erosion control, and drainage features Y/N
2. Stream crossing maintenance Y/N
3. Riparian and wetland protection and management Y/N
4. Spoils management Y/N
5. Water storage and use Y/N
6. Irrigation runoff Y/N
7. Fertilizers and soil amendments Y/N
8. Pesticides and herbicides? Y/N
9. Petroleum products and other chemicals Y/N
10. Cultivation-related wastes Y/N
11. Refuse and human waste Y/N

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Location Map

 Property Boundary

Map Scale 1" = 2,000'
Section 28, T2N, R5E, HB&M



Mitigation Report (Identified Sites Requiring Remediation)

*Time schedule for treatment accounts for appropriate permit approvals and allowed seasons of operation.

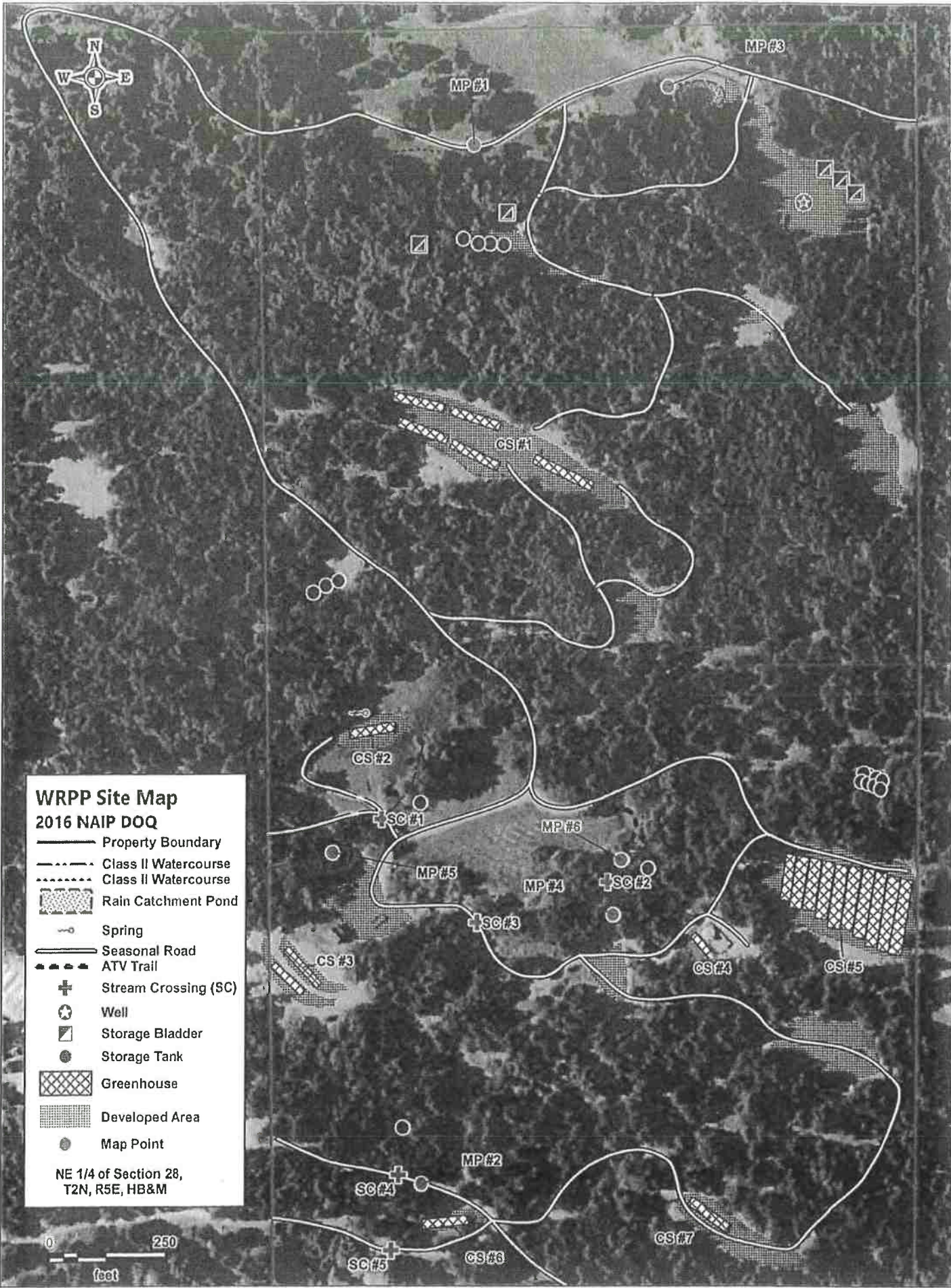
Unique Map Point(s)	Map Point Description	Associated Standard Condition	Temporary BMP	Permanent BMP	Priority for Action	Time Schedule for completion of Permanent BMP	Completion Date
MP #1	Storm runoff is concentrating along road axis and eroding the road surface resulting in sediment delivery to a watercourse	A(1)a.	N/A	Install drainage feature at this location.	1	10/15/18	
MP #2	Storm runoff is concentrating along road axis and eroding the road surface	A(1)b.	N/A	Install drainage feature at this location	3	10/15/19	
MP #3	Pond spillway lacks ability to dissipate energy from overflow	A(1)e.	Apply erosion control measures to exposed soil	Install rock armor capable of mitigating potential erosion	1	10/15/17	
MP #4	ATV trail is hydrologically connected to watercourse	A(1)e	Apply erosion control to road surface per attached specifications	Decommission road per attached specifications	3	10/15/19	
SC #1	10" diameter CPP is too small to accommodate the expected 100 year peak flow	A(2)a. A(2)b.	N/A	Upgrade crossing to a minimum 42" diameter culvert per attached specifications	2	10/15/18	
SC #2	Lack of crossing structure on watercourse	A(2)d.	N/A	Seed and mulch dirt ford with native mix. Monitor to assure vegetation establishes	1	10/15/18	
SC #3	24" diameter CPP is too small to accommodate the expected 100 year peak flow	A(2)a. A(2)b.	N/A	Upgrade crossing to a minimum 42" diameter culvert per attached specifications	2	10/15/18	
SC #4	24" diameter CPP is too small to accommodate the expected 100 year peak flow	A(2)a. A(2)b.	N/A	Upgrade crossing to a minimum 42" diameter culvert per attached specifications	2	10/15/18	
SC #5	Lack of crossing structure on watercourse	A(2)d.	N/A	Upgrade crossing to a rock ford per attached specifications	1	10/15/18	
CS #2	Cultivation site encroaching on Class II riparian buffer	A(3)a. A(3)b. A(3)c.	Cease all cultivation at this site and remove all cultivation materials	Remove greenhouse from site and establish riparian vegetation using seed and mulch. Monitor to assure vegetation establishes	2	10/15/18	
MP #5	Rain catchment pond constructed atop a Class II watercourse. Watercourse is bypassed under pond using 8" diameter flex pipe	A(2)a.-f. A(3)a.-c.	N/A	- Remove pond liner - Excavate bypass pipe - Contour site to native conditions - Plant and monitor native riparian vegetation	2	10/15/18	

Mitigation Report (Continued)

*Time schedule for treatment accounts for appropriate permit approvals and allowed seasons of operation.

Unique Map Point(s)	Map Point Description	Associated Standard Condition	Temporary BMP	Permanent BMP	Priority for Action	Time Schedule for completion of Permanent BMP	Completion Date
MP #6	Developed flat site directly adjacent to a Class II watercourse	A(3)b. A(3)c.	Seed and mulch site per attached specifications	Monitor site and assure that riparian vegetation becomes established	1	10/15/21	
No Unique Map Point Given	Storage is adequate to forebear from surface diversions for 150 days	A(5)a. A(5)b. A(5)c.	N/A	Meter water use and annually assess if storage capacity is adequate	Annually	05/15/Every Year	

Treat Priority: Treatment Priority (1) indicates a very high priority with treatment being planned to occur immediately, (2) indicates a high priority site with treatment to occur prior to the start of the winter period (Oct. 15), (3) indicates a moderate priority with treatment being planned to occur within one year, or prior to the winter period (Oct. 15) of the 2nd season of operations, and (4) indicates a low priority with treatment being planned to occur in the shortest time possible, but no later than the expiration of this Order (five years).

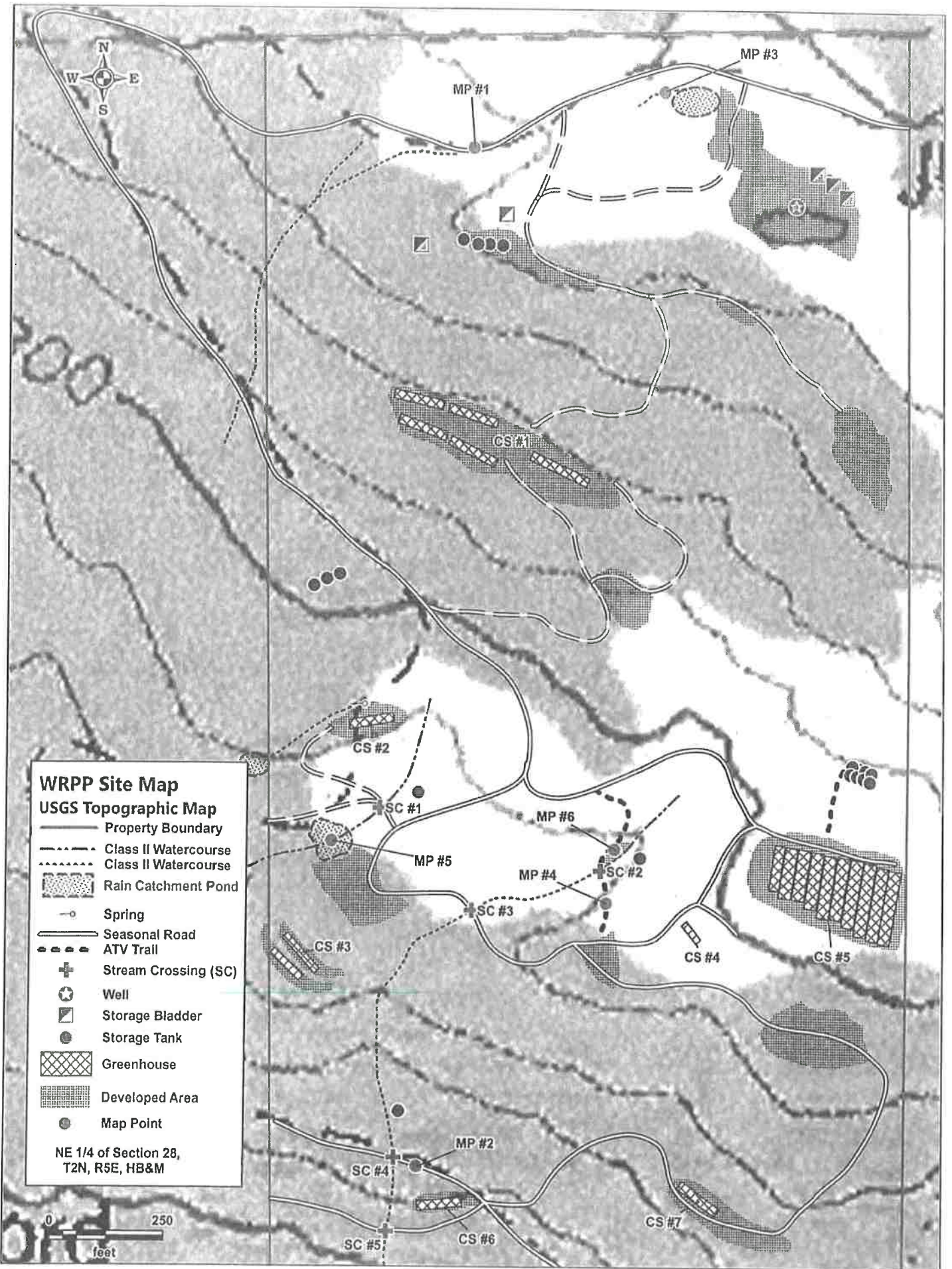


WRPP Site Map
2016 NAIP DOQ

- Property Boundary
- Class II Watercourse
- Class II Watercourse
- Rain Catchment Pond
- Spring
- Seasonal Road
- ATV Trail
- Stream Crossing (SC)
- Well
- Storage Bladder
- Storage Tank
- Greenhouse
- Developed Area
- Map Point

NE 1/4 of Section 28,
 T2N, R5E, HB&M





A. Standard Conditions, Applicable to All Dischargers

1. Site maintenance, erosion control and drainage features (Compliance: Y / N)

- a. Roads shall be maintained as appropriate (with adequate surfacing and drainage features) to avoid developing surface ruts, gullies, or surface erosion that results in sediment delivery to surface waters.
 - **Map Point (MP) #1 is where storm runoff is concentrating along a road resulting in sediment delivery to a Class III watercourse. The Discharger shall install a drainage structure at this location. A lead out along the inboard edge of the road at this location is recommended.**
- b. Roads, driveways, trails, and other defined corridors for foot or vehicle traffic of any kind shall have adequate ditch relief drains or rolling dips and/or other measures to prevent or minimize erosion along the flow paths and at their respective outlets.
 - **MP #2 is where storm runoff is concentrating along the outboard edge of the road and has eroded the road surface. It is possible that a poorly installed stream crossing, SC #4, is allowing surface flows from a Class III watercourse to divert onto the road surface and exacerbate the problem. The Discharger shall install a drainage feature at this site, a water break per attached specifications is recommended.**
- c. Roads and other features shall be maintained so that surface runoff drains away from potentially unstable slopes or earthen fills. Where road runoff cannot be drained away from an unstable feature, an engineered structure or system shall be installed to ensure that surface flows will not cause slope failure.

Physical reconnaissance of the property revealed no unstable areas per 14CCR 895.1.

- d. Roads, clearings, fill prisms, and terraced areas (cleared/developed areas with the potential for sediment erosion and transport) shall be maintained so that they are not hydrologically connected¹, as feasible, from surface waters, including wetlands, ephemeral, intermittent and perennial streams.

There are three locations where a development may potentially be hydrologically connected with surface waters.

- **CS #2 is located on a graveled landing that, at its closet, is approximately 30' away from a Class II watercourse. Although the cultivation site encroaches on the Class II riparian buffer there are no signs of run-off flowing towards the watercourse. The landing is set at a slight grade that drains run-off west, away from the Class II.**
- **There is a rain catchment pond near CS #3 that collects run-off directly from a 0.4 acre developed flat and releases it directly into a Class II watercourse. Mitigation of this site is addressed in Standard Condition A(3)b.**

¹ Connected roads are road segments that deliver road surface runoff, via the ditch or road surface, to a stream crossing or to a connected drain that occurs within the high delivery potential portion of the active road network. A connected drain is defined as any cross-drain culvert, water bar, rolling dip, or ditch-out that appears to deliver runoff to a defined channel. A drain is considered connected if there is evidence of surface flow connection from the road to a defined channel or if the outlet has eroded a channel that extends from the road to a defined channel. (http://www.forestsandfish.com/documents/Road_Mgmt_Survey.pdf)

- e. Ditch relief drains, rolling dip outlets, and road pad or terrace surfaces shall be maintained to promote infiltration/dispersal of outflows and have no apparent erosion or evidence of soil transport to receiving waters.
- **MP #3 consists of a lined spillway leading from a rain catchment pond with no rock armor or other form of energy dissipation. The Discharger shall install adequate rock armor at this location to prevent erosion from occurring.**
- **MP #4 is the ATV trail that crosses SC #2 and access the small developed site located at MP #6. Although there are no signs of surface erosion the road is hydrologically connected to the Class III watercourse. The Discharger shall decommission this road per attached BMP specifications.**
- f. Stockpiled construction materials are stored in a location and manner so as to prevent their transport to receiving waters.

This condition is not applicable as the Discharger has no construction materials stored on the property.

2. Stream Crossing Maintenance (Compliance: Y / N)

- a. Culverts and stream crossings shall be sized to pass the expected 100-year peak streamflow.
- b. Culverts and stream crossings shall be designed and maintained to address debris associated with the expected 100-year peak streamflow.
- c. Culverts and stream crossings shall allow passage of all life stages of fish on fish-bearing or restorable streams, and allow passage of aquatic organisms on perennial or intermittent streams.
- d. Stream crossings shall be maintained so as to prevent or minimize erosion from exposed surfaces adjacent to, and in the channel and on the banks.
- e. Culverts shall align with the stream grade and natural stream channel at the inlet and outlet where feasible.²
- f. Stream crossings shall be maintained so as to prevent stream diversion in the event that the culvert/crossing is plugged, and critical dips shall be employed with all crossing installations where feasible.³

There are five stream crossings (SC) within the property boundaries. All of these crossings are either undersized to accommodate the 100 year peak flow event or contributing to sediment delivery within the watercourse.

- **SC #1 is a 10" diameter CPP located on an unnamed Class II watercourse. This culvert shall be upgraded to a minimum 42" diameter culvert per attached specifications.**
- **SC #2 consists of a dirt ford located on a Class III watercourse. The Discharger shall decommission and abandon this site by seeding and mulching the site with a native**

² At a minimum, the culvert shall be aligned at the inlet. If infeasible to align the culvert outlet with the stream grade or channel, outlet armoring or equivalently effective means may be applied.

³ If infeasible to install a critical dip, an alternative solution may be chosen.

riparian seed mix attached with this document. No earthwork will be necessary to restore the watercourse.

- SC #3 is a 24" diameter CPP located on an unnamed Class III watercourse. This culvert shall be upgraded to a minimum 42" diameter culvert per attached specifications.
- SC #4 is a 24" diameter CPP located on an unnamed Class III watercourse. This culvert shall be upgraded to a minimum 42" diameter culvert per attached specifications.
- SC #5 is a dirt ford located on an unnamed Class III watercourse. The Discharger shall install a rocked ford crossing per attached specifications.

All stream crossing locations have been sized and designed to accommodate the 100-year peak flow event, allow passage of organisms, and to prevent or minimize erosion within the watercourse. All crossings will be monitored and maintained to assure culverts function. Sizing rational has been attached to this document.

3. Riparian and Wetland Protection and Management (Compliance: Y□ / N☒)

- a. For Tier 1 Dischargers, cultivation areas or associated facilities shall not be located within 200 feet of surface waters. While 200 foot buffers are preferred for Tier 2 sites, at a minimum, cultivation areas and associated facilities shall not be located or occur within 100 feet of any Class I or II watercourse or within 50 feet of any Class III watercourse or wetlands. The Regional Water Board or its or its Executive Officer may apply additional or alternative⁴ conditions on enrollment, including site-specific riparian buffers and other BMPs beyond those identified in water resource protection plans to ensure water quality protection.

There is one location where a cultivation site is located within the minimum setback to a watercourse.

- Cultivation located at CS #2 is approximately 67' away from a Class II watercourse while the edge of the landing is approximately 30' away. The Discharger shall remove all cultivation and infrastructure from this location.
- b. Buffers shall be maintained at natural slope with native vegetation.

There are three locations where riparian buffers have been altered.

- CS #2 consists of a gravel landing that has encroached within the 100' Class II riparian buffer. Historic photographs reveal this site was historically a grass meadow that gently drains into the Class II watercourse. The Discharger shall remove all gravel from this location as well as seed and mulch this site with a native riparian seed mix.
- MP #5 consists of an 80' wide by 95' long by 10' deep rain catchment pond. This pond was constructed atop a Class II watercourse. The Discharger designed a bypass system where the watercourse enters an 8" diameter flex pipe above the pond and is piped approximately 180' under the pond and into the native watercourse. The Discharger shall remove the pond liner, contour the site back to

⁴ Alternative site-specific riparian buffers that are equally protective of water quality may be necessary to accommodate existing permanent structures or other types of structures that cannot be relocated.

native conditions, and plant native riparian species to restore the riparian buffer per attached specifications.

- MP #6 consists of a graded flat location directly adjacent to a Class II watercourse. This location was prepared as a site for storage tanks. The Discharger shall abandon the site by seeding and mulching this site to establish riparian vegetation.
- c. Buffers shall be of sufficient width to filter wastes from runoff discharging from production lands and associated facilities to all wetlands, streams, drainage ditches, or other conveyances. Riparian and wetland areas shall be protected in a manner that maintains their essential functions, including temperature and microclimate control, filtration of sediment and other pollutants, nutrient cycling, woody debris recruitment, groundwater recharge, streambank stabilization, and flood peak attenuation and flood water storage.

The three sites mentioned above are the only locations where the riparian buffers are less than the minimum functional width. These sites shall be restored with specific attention given to essential functions, including temperature and microclimate control, filtration of sediment and other pollutants, nutrient cycling, woody debris recruitment, groundwater recharge, streambank stabilization, flood peak attenuation and flood water storage.

4. Spoils Management (Compliance: Y☒ / N☐)

- a. Spoils⁵ shall not be stored or placed in or where they can enter any surface water.

Cultivated spoils are stored within their respective beds over winter.

- b. Spoils shall be adequately contained or stabilized to prevent sediment delivery to surface waters.

The wooden beds that the Discharger cultivates in are adequate to contain spoils from leaving the cultivation sites over winter.

- c. Spoils generated through development or maintenance of roads, driveways, earthen fill pads, or other cleared or filled areas shall not be sidecast in any location where they can enter or be transported to surface waters.

There are no locations where construction or maintenance has generated spoils.

5. Water Storage and Use (Compliance: Y☒ / N☐)

- a. Size and scope of an operation shall be such that the amount of water used shall not adversely impact water quality and/or beneficial uses, including and in consideration with other water use by operations, instream flow requirements and/or needs in the watershed, defined at the scale of a HUC-12⁶ watershed or at a smaller hydrologic watershed as determined necessary by the Regional Water Board Executive Officer.

The Discharger is working to minimize and mitigate their impacts across the watershed that they operate in. This includes increasing storage, increasing water conservation strategies, developing a well, and developing multiple rain water catchment ponds. The Discharger plans to divert from the rain catchment pond and well to storage tanks across the property. These strategies will significantly reduce this project's potential

⁵ Spoils are waste earthen or organic materials generated through grading or excavation, or waste plant growth media or soil amendments. Spoils include but are not limited to soils, slash, bark, sawdust, potting soils, rock, and fertilizers.

⁶ See definition and link to maps at: <http://water.usgs.gov/GIS/huc.html>

threats to water quality and beneficial uses. The Discharger shall meter water use and annually assess if storage capacity is adequate.

- b. Water conservation measures shall be implemented. Examples include use of rainwater catchment systems or watering plants with a drip irrigation system rather than with a hose or sprinkler system.

The agricultural source of water on the property is a rain catchment pond and groundwater diversion. The Discharger shall implement more water conservation techniques and record them.

- c. For Tier 2 Dischargers, if possible, develop off-stream storage facilities to minimize surface water diversion during low flow periods.

The project contains 90,000 gallons of water storage in the form of bladders as well as 57,650 gallons stored in polyethylene storage tanks. The rain catchment pond also holds an estimated 200,000 gallons of water. This amount of water, 347,650 gallons, supplemented with a groundwater diversion is estimated to be adequate to prevent the Discharger from diverting surface water during the low flow period.

- d. Water is applied using no more than agronomic rates.⁷

There is no evidence to conclude that the Discharger irrigates at a greater rate than the growth medium can facilitate. No signs of over watering are present on-site. It is recommended that the Discharger meter their water use and install float-valves on appropriate storage tanks.

- e. Diversion and/or storage of water from a stream should be conducted pursuant to a valid water right and in compliance with reporting requirements under Water Code section 5101.

The Discharger utilizes two sources of water for irrigation purposes. Both sources, a groundwater well and rain catchment pond, are non-jurisdictional to Water Code section 5101.

- f. Water storage features, such as ponds, tanks, and other vessels shall be selected, sited, designed, and maintained so as to insure integrity and to prevent release into waters of the state in the event of a containment failure.

There is one location where a water storage feature presents a significant risk to waters of the state.

- The rain catchment pond located at MP #2 risks releasing directly into a Class II watercourse if it fails. As addressed in Standard Condition A(3)b. the Discharger shall remove this rain catchment pond and restore the Class II watercourse per attached specifications.

6. Irrigation Runoff (Compliance: Y / N)

- a. Implementing water conservation measures, irrigating at agronomic rates, applying fertilizers at agronomic rates and applying chemicals according to the label specifications, and maintaining stable soil and growth media should serve to minimize the amount of runoff and the concentration of chemicals in that water. In the event that irrigation runoff

⁷ "Agronomic rates" is defined as the rates of fertilizer and irrigation water that a plant needs to enhance soil productivity and provide the crop or forage growth with needed nutrients for optimum health and growth, without having any excess water or nutrient percolate beyond the root zone.

occurs, measures shall be in place to treat/control/contain the runoff to minimize the pollutant loads in the discharge. Irrigation runoff shall be managed so that any entrained constituents, such as fertilizers, fine sediment and suspended organic particles, and other oxygen consuming materials are not discharged to nearby watercourses. Management practices include, but are not limited to, modifications to irrigation systems that reuse tailwater by constructing off-stream retention basins, and active (pumping) and or passive (gravity) tailwater recapture/redistribution systems. Care shall be taken to ensure that irrigation tailwater is not discharged towards or impounded over unstable features or landslides.

There are no signs of irrigation run-off within either cultivation site. The Discharger irrigates at an agronomic rate to minimize waste and the risk of entrained constituents leaving the site.

7. Fertilizers and Soil Amendments (Compliance: Y / N)

- a. Fertilizers, potting soils, compost, and other soils and soil amendments shall be stored in locations and in a manner in which they cannot enter or be transported into surface waters and such that nutrients or other pollutants cannot be leached into groundwater.

Fertilizers, soils and other amendments are stored within three separate storage structures. These include a standalone garage east of CS #3 and two sheds south of CS #5. All three structures have concrete foundations that prevent any risk of spillage and seepage.

- b. Fertilizers and soil amendments shall be applied and used per packaging instructions and/or at proper agronomic rates.

All fertilizers and soil amendments are applied by the Discharger at agronomic rates per specifications included in the labeling.

- c. Cultivation areas shall be maintained so as to prevent nutrients from leaving the site during the growing season and post-harvest.

Cultivation sites are well maintained with no improperly stored nutrients or fertilizers found throughout the property. The Discharger uses a combination of strategies designed to prevent excess nutrient build up within the soil and nutrient leaching. These include flushing soil during the end of harvest which promotes plant biomass to uptake the remaining nutrients within the soil and cover cropping over winter. This technique promotes plant biomass to immobilize nutrients from the soil through uptake and then release them back into the soil through tilling.

8. Pesticides/Herbicides (Compliance: Y / N)

At the present time, there are no pesticides or herbicides registered specifically for use directly on cannabis and the use of pesticides on cannabis plants has not been reviewed for safety, human health effects, or environmental impacts. Under California law, the only pesticide products not illegal to use on cannabis are those that contain an active ingredient that is exempt from residue tolerance requirements and either registered and labeled for a broad enough use to include use on cannabis or exempt from registration requirements as a minimum risk pesticide under FIFRA section 25(b) and California Code of Regulations, title 3, section 6147. For the purpose of compliance with conditions of this Order, any uses of pesticide products shall be consistent with product labeling and any products on the site shall

be placed, used, and stored in a manner that ensures that they will not enter or be released into surface or ground waters.

Pesticides/herbicides are stored with the fertilizers and amendments in the storage structures. These structures adequately prevent these chemicals from entering surface water and/or ground waters

9. Petroleum products and Other Chemicals (Compliance: Y☒ / N☐)

- a. Petroleum products and other liquid chemicals, including but not limited to diesel, biodiesel, gasoline, and oils shall be stored so as to prevent their spillage, discharge, or seepage into receiving waters. Storage tanks and containers must be of suitable material and construction to be compatible with the substance(s) stored and conditions of storage such as pressure and temperature.

Fuel is stored in a 500 gallon steel tank near the storage sheds south of CS #5. This tank is suitable for the storage of petroleum products.

- b. Above ground storage tanks and containers shall be provided with a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation.

The fuel storage tank on the property does have secondary storage but it is unknown of there is sufficient freeboard for precipitation. The Discharger shall cover this storage tank over winter to prevent precipitation from filling the containment structure.

- c. Dischargers shall ensure that diked areas are sufficiently impervious to contain discharged chemicals.

Not Applicable

- d. Discharger(s) shall implement spill prevention, control, and countermeasures (SPCC) and have appropriate cleanup materials available onsite.

Not applicable

- e. Underground storage tanks 110 gallons and larger shall be registered with the appropriate County Health Department and comply with State and local requirements for leak detection, spill overflow, corrosion protection, and insurance coverage.

Not Applicable

10. Cultivation-related Wastes (Compliance: Y☒ / N☐)

Cultivation-related wastes including, but not limited to, empty soil/soil amendment/fertilizer/pesticide bags and containers, empty plant pots or containers, dead or harvested plant waste, and spent growth medium shall, for as long as they remain on the site, be stored⁸ at locations where they will not enter or be blown into surface waters, and in a manner that ensures that residues and pollutants within those materials do not migrate or leach into surface water or groundwaters.

There are no locations where cultivation related waste is stored in a manner where it may potentially enter any surface waters. Trash bins are kept in the standalone garage east of CS #3 and trash is hauled off site twice a month.

⁸ Plant waste may also be composted, subject to the same restrictions cited above for cultivation-related waste storage.

11. Refuse and Human Waste (Compliance: Y☒ / N☐)

- a. Disposal of domestic sewage shall meet applicable County health standards, local agency management plans and ordinances, and/or the Regional Water Board's Onsite Wastewater Treatment System (OWTS) policy, and shall not represent a threat to surface water or groundwater.

There is a septic system located on the property. The Onsite Wastewater Treatment System (OWTS) serving the residences appear to be functioning properly. No evidence of dispersal field failure was detected when inspected and the location of the system meets all applicable setback requirements. Although permit records for the system could not be obtained, it is likely that this system will fall under Tier 0 (existing systems that are properly functioning and do not meet the conditions of failing systems or otherwise require corrective action – as defined in the RWQCB OWTS Policy and Humboldt County Local Agency Management Plan).

- b. Refuse and garbage shall be stored in a location and manner that prevents its discharge to receiving waters and prevents any leachate or contact water from entering or percolating to receiving waters.

Refuse and garbage are contained in bins stored within the standalone garage east of CS #3. This location is over 100' from the nearest watercourse and prevents any garbage or waste effluent to reaching surface waters.

- c. Garbage and refuse shall be disposed of at an appropriate waste disposal location.

All waste is transported to Eel River Resource Recovery for disposal twice a month.

12. Remediation/Cleanup/Restoration

Remediation/cleanup/restoration activities may include, but are not limited to, removal of fill from watercourses, stream restoration, riparian vegetation planting and maintenance, soil stabilization, erosion control, upgrading stream crossings, road outcropping and rolling dip installation where safe and suitable, installing ditch relief culverts and overside drains, removing berms, stabilizing unstable areas, reshaping cutbanks, and rocking native-surfaced roads. Restoration and cleanup conditions and provisions generally apply to Tier 3 sites, however owners/operators of Tier 1 or 2 sites may identify or propose water resource improvement or enhancement projects such as stream restoration or riparian planting with native vegetation and, for such projects, these conditions apply similarly. Appendix B accompanying this Order includes environmental protection and mitigation measures that apply to cleanup activities such as: temporal limitations on construction; limitations on earthmoving and construction equipment; guidelines for removal of plants and revegetation; conditions for erosion control, limitations on work in streams, riparian and wetland areas; and other measures.

Mitigation measures are listed in the Mitigation Report and also noted above in the document. All locations listed within the mitigation report will be monitored by the discharger.

Photographs

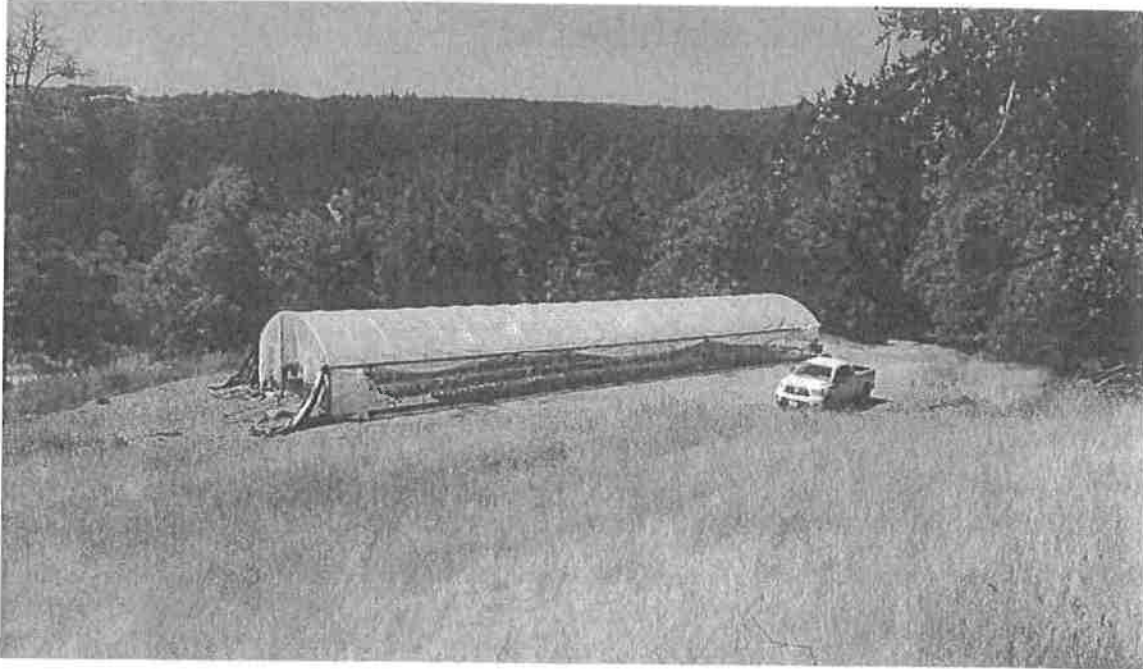


Picture 1: Cultivation Site #1 consists of a landing divided into two tiers containing five greenhouses. The fifth greenhouse is located behind the photographer. Photo date: 07/14/2016.



Picture 2: Fifth greenhouse located at CS #1. Photo date: 07/14/2016

Photographs



Picture 3: Greenhouse and landing located at CS #2. This site will be abandoned and restored per Standard Condition A(3)b and A(3)c. Photo date: 07/14/2016



Picture 4: CS #3 consists of a hillside developed into two terraces that contain greenhouses. Photo date: 05/26/2016

Photographs

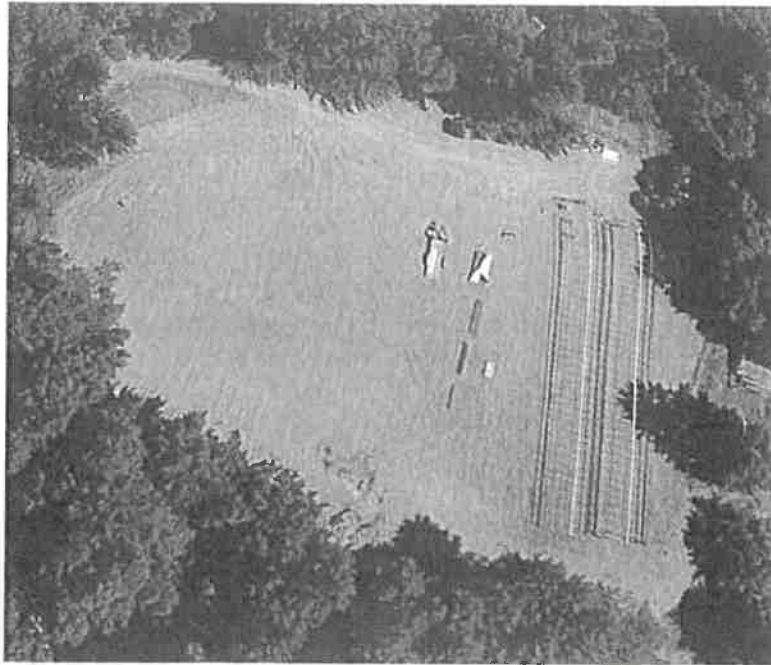


Picture 5: CS #3 consists of a hillside developed into two terraces that contain greenhouses. Photo date: 08/03/2017



Picture 6: CS #4 consists of a single small greenhouse used as a nursery for the other cultivation sites. It is located on a developed flat next to an existing residential structure. Photo date: 07/14/2016

Photographs



Picture 7: CS #5 consists of an approximately 1.4 acre graded landing containing 10 varying sizes of greenhouse. Photo date: 05/26/2016

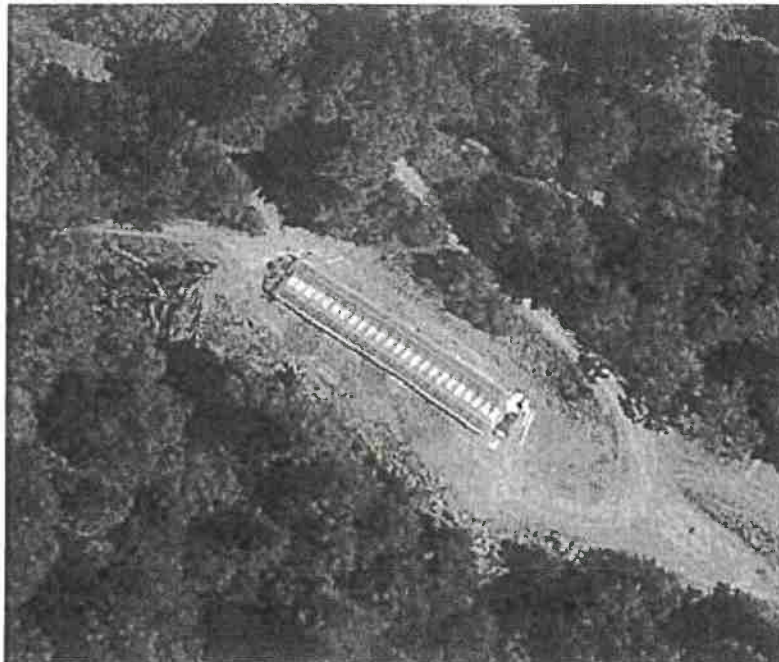


Picture 8: The 10 greenhouses of varying length located at CS #5. Photo date: 08/03/2017

Photographs

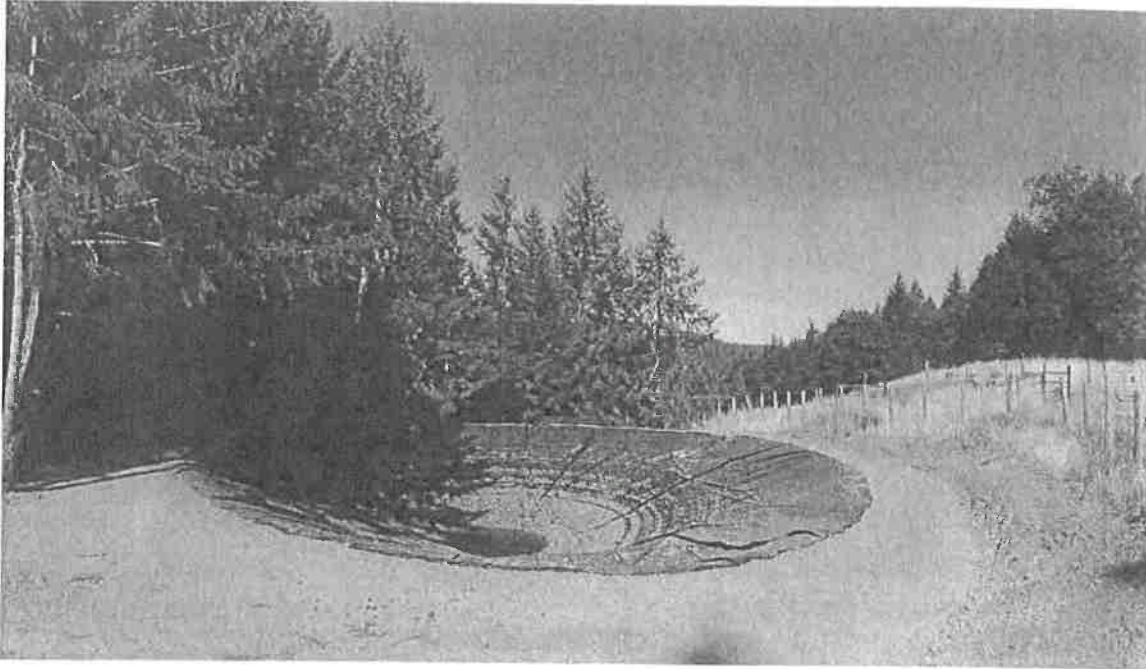


Picture 9: CS #6 is a single 20' by 96' greenhouse located on a small flat within the switchback of a road segment. Photo date: 05/26/2016

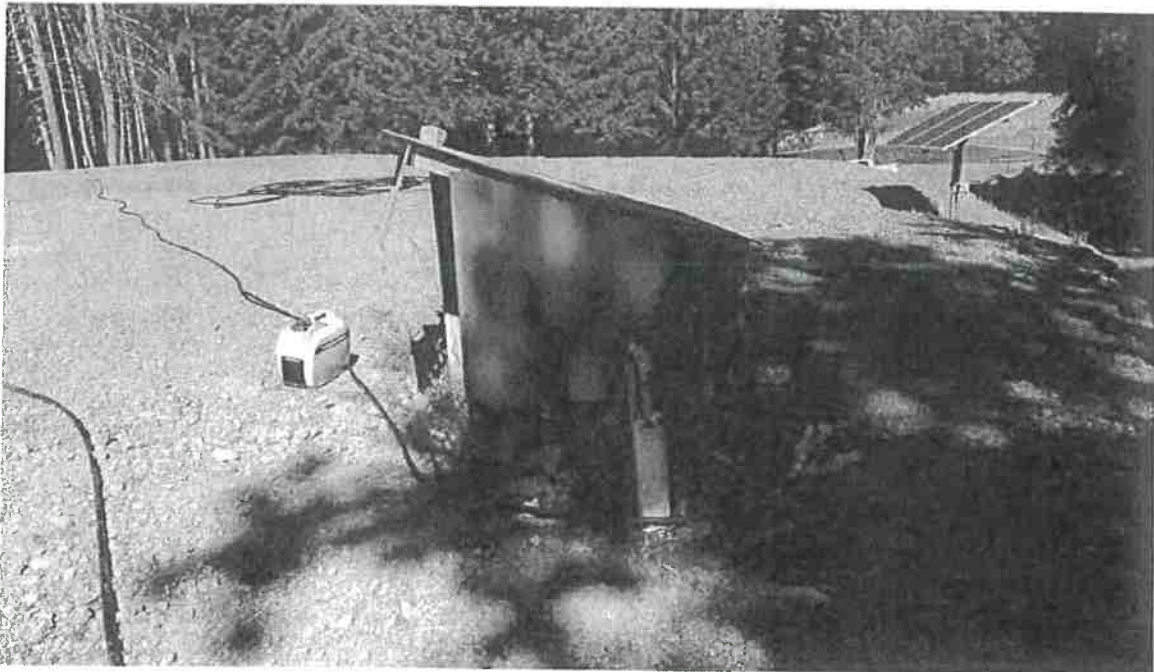


Picture 10: CS #7 is a single 20' by 100' greenhouse located on a small flat within the switchback of a road segment. Photo date: 05/26/2016

Photographs



Picture 11: One source of agricultural water in the property is a 275,000 gallon rain catchment pond. The pond is 108' wide by 75' long by 15' deep with an average depth of 6'. Photo date: 07/14/2016



Picture 12: The second source of agricultural water is a groundwater diversion powered by a solar powered electric pump. Photo date: 07/14/2016

Photographs

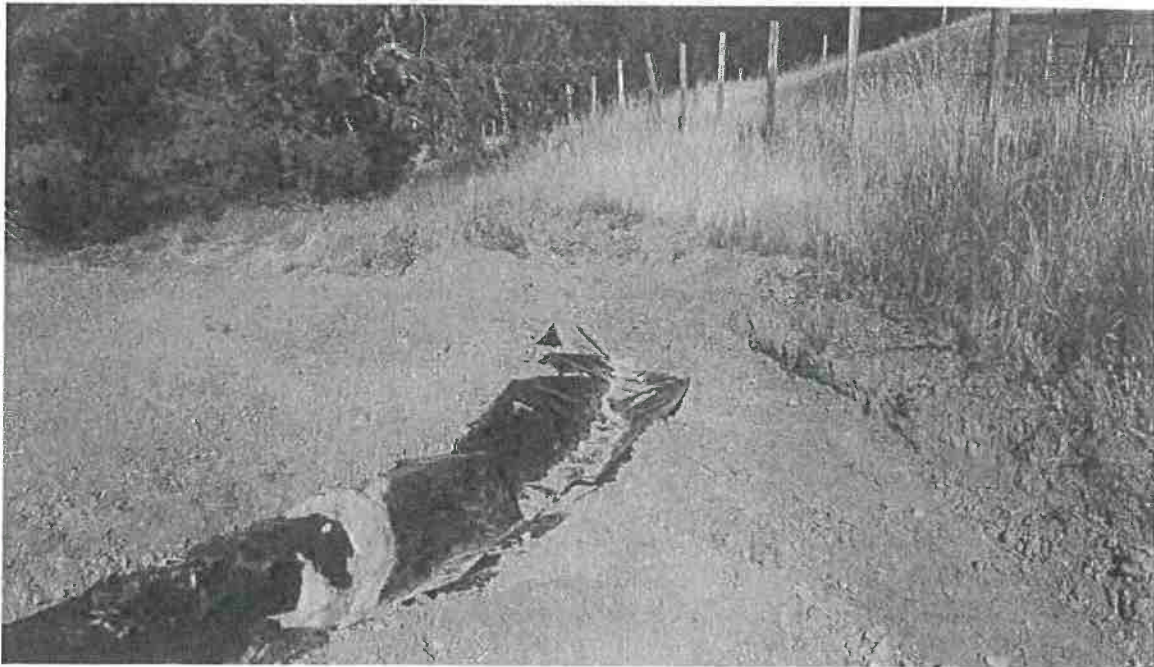


Picture 13: MP #1 is where storm runoff is concentrating along a road resulting in sediment delivery to a Class III watercourse. The Discharger shall install a drainage structure at this location. A lead out along the inboard edge of the road at this location is recommended. Photo date: 08/03/2017



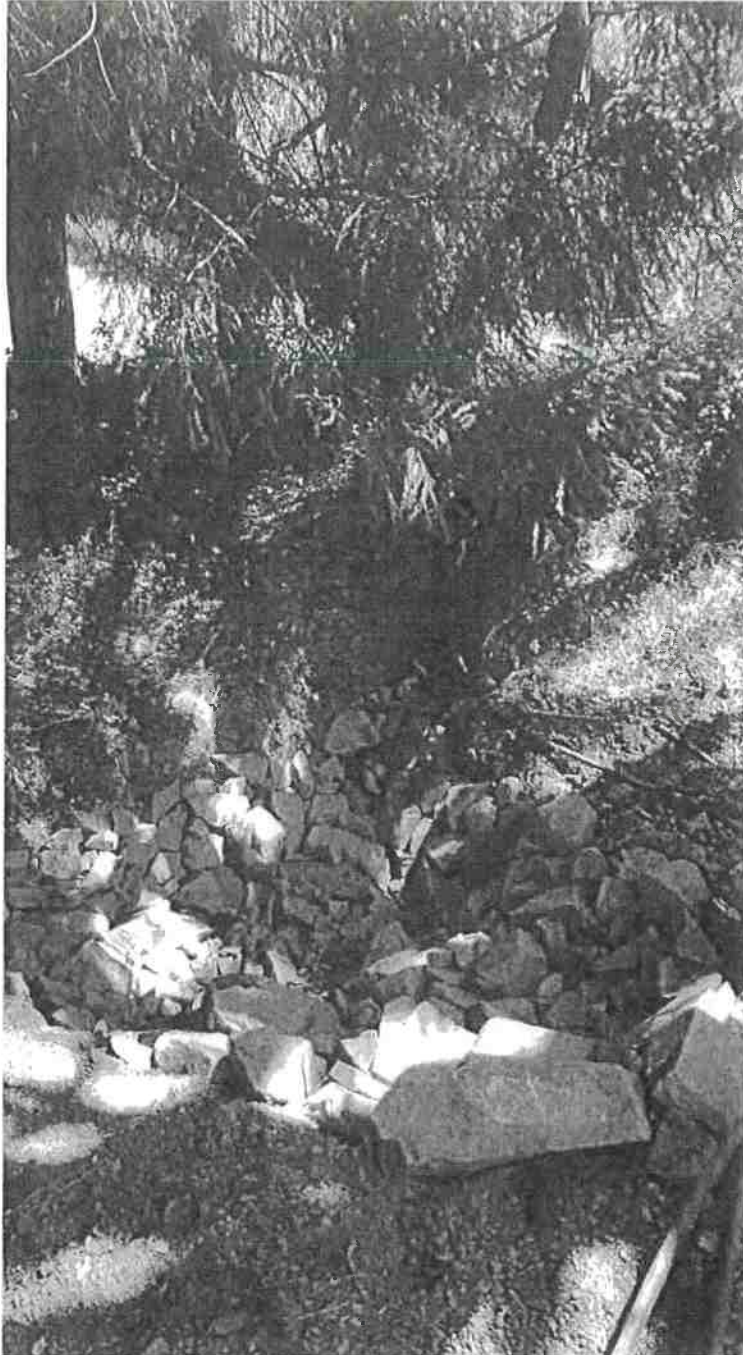
Picture 14: MP #2 is where storm runoff is concentrating along the outboard edge of the road and has eroded the road surface. The Discharger shall repair the drainage feature located behind the photographer in this picture. Photo date: 08/03/2017

Photographs



Picture 15 + 16: MP #3 consists of a lined spillway leading from a rain catchment pond with no rock armor or other form of energy dissipation. The Discharger shall install adequate rock armor at this location to prevent erosion from occurring. Photo date: 07/14/2016

Photographs



Picture 17: SC #1 is a 10" diameter CPP located on an unnamed Class II watercourse. This crossing shall be upgraded to a minimum 42" diameter culvert per attached specifications. Also seen in this picture is the catchment structure for the watercourse bypass. The pond shall be removed and the watercourse shall be restored per Standard Conditions A(3)c. Photo date: 07/14/2016

Photographs



Picture 18: SC #2 consists of a dirt ford located on a Class III watercourse. The Discharger shall decommission and abandon this location by seeding and mulching the site with a native riparian seed mix. Also seen in this picture is the road segment located at MP #4. This road shall be decommissioned by the Discharger per attached BMP specifications. Photo date: 07/14/2016



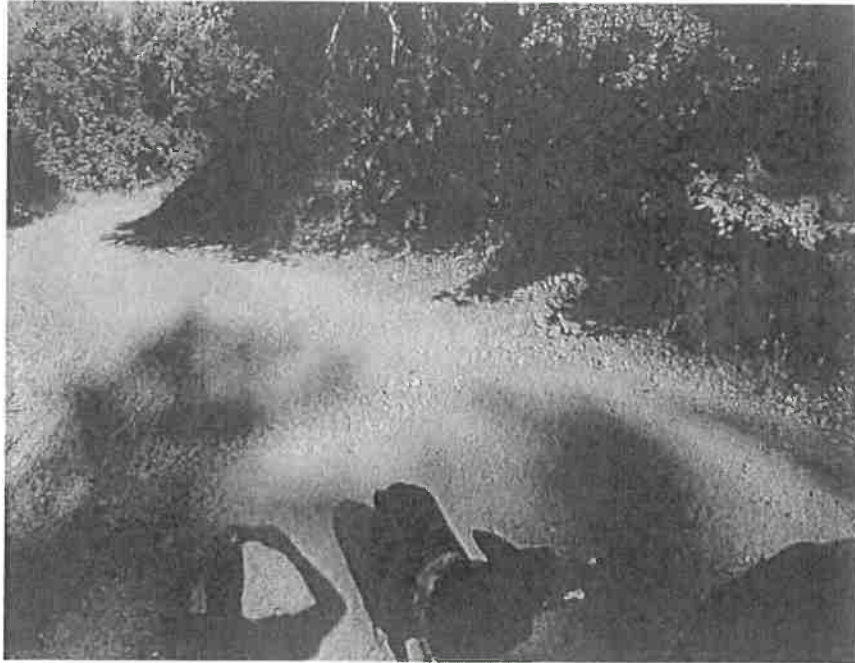
Picture 19: Outlet of SC #3. This crossing is a 24" diameter CPP located on an unnamed Class III watercourse. This culvert shall be upgraded to a minimum 42" diameter culvert per attached specifications. Photo date: 07/14/2016

Photographs

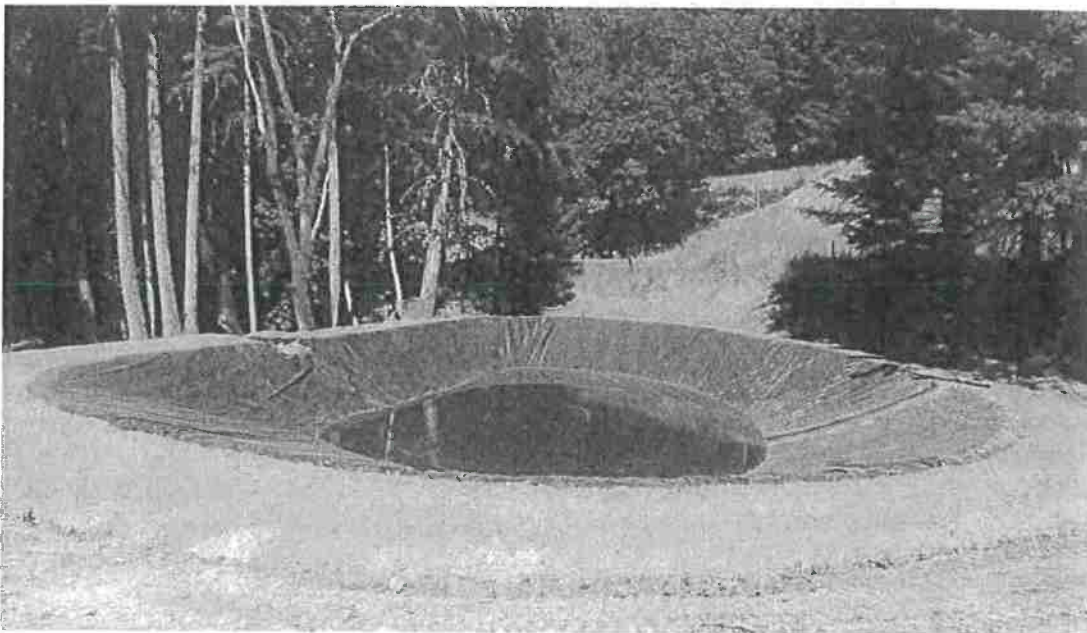


Picture 20 + 21: Inlet (top) and outlet (bottom) of SC #4. This crossing consists of a 24" diameter CPP located on an unnamed Class III watercourse. This culvert shall be upgraded to a minimum 42" diameter culvert per attached specifications. Photo date: 07/14/2016

Photographs

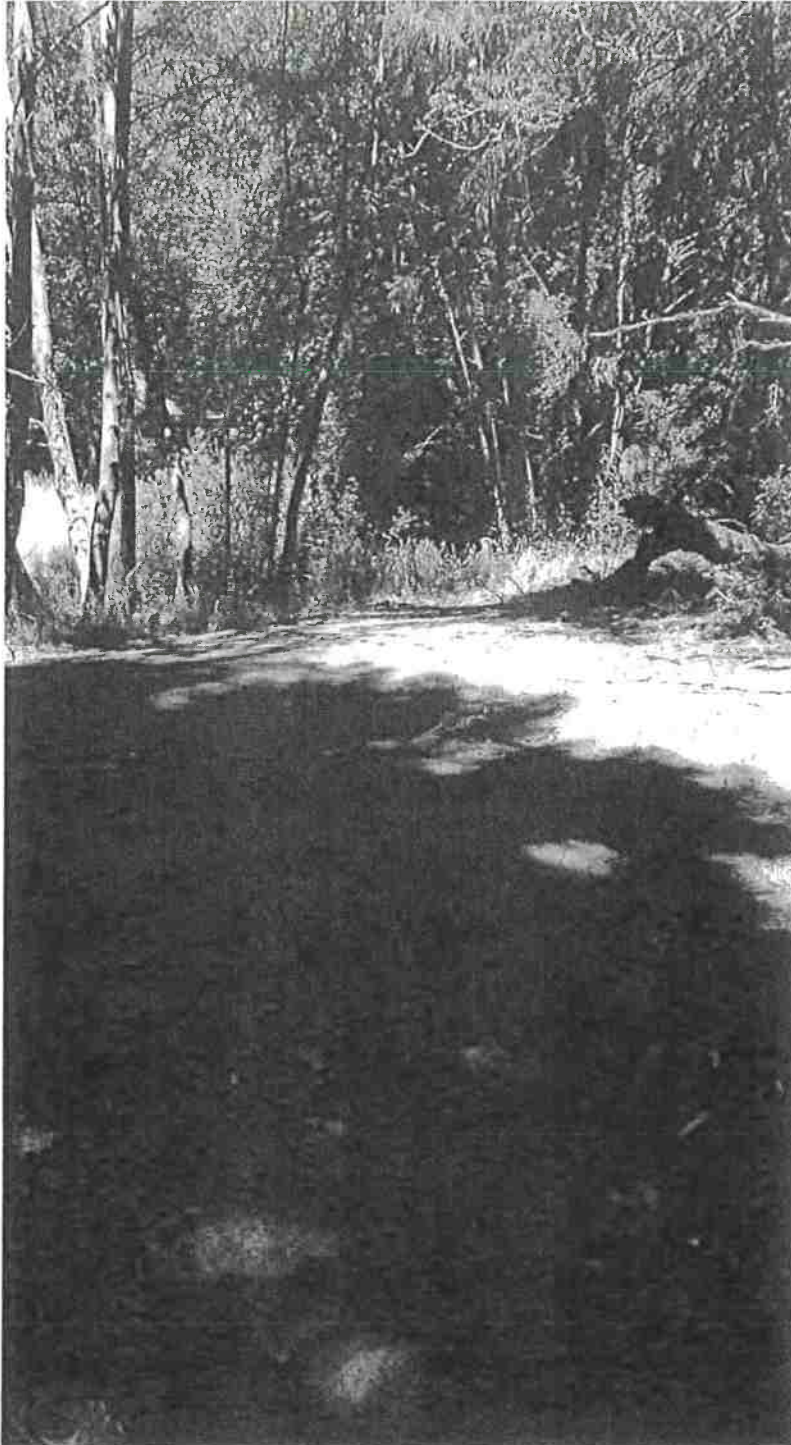


Picture 22: SC #5 is a dirt ford located on an unnamed Class III watercourse. The Discharger shall install a rocked ford crossing per attached specifications. Photo date: 08/03/2017



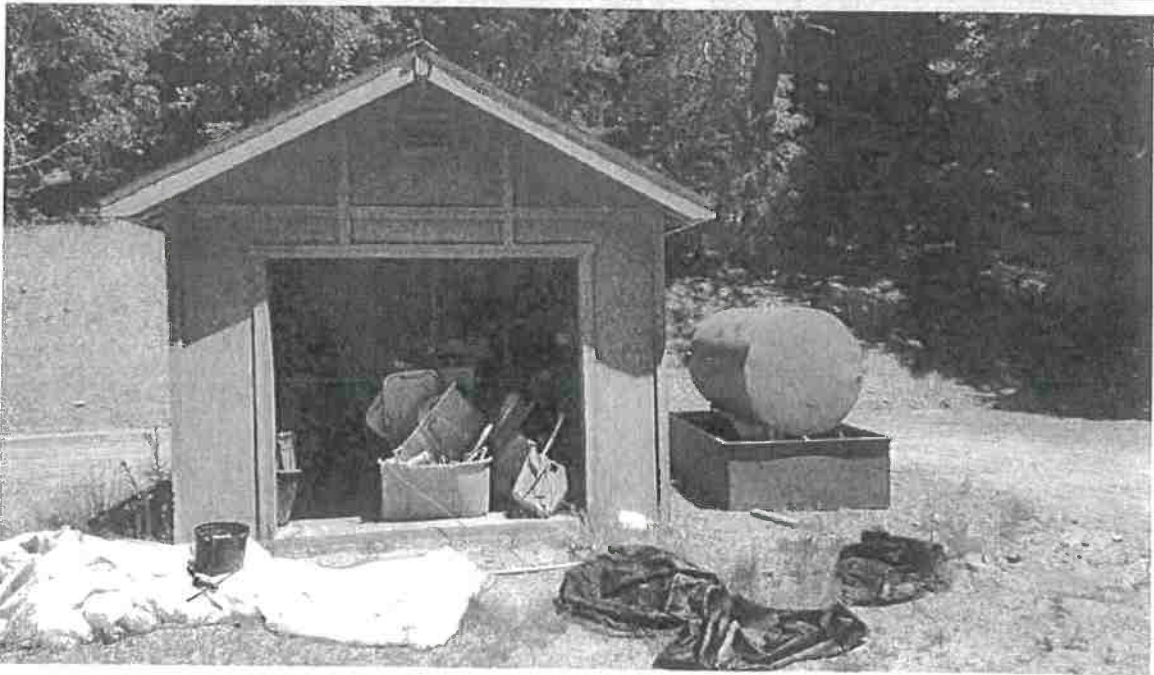
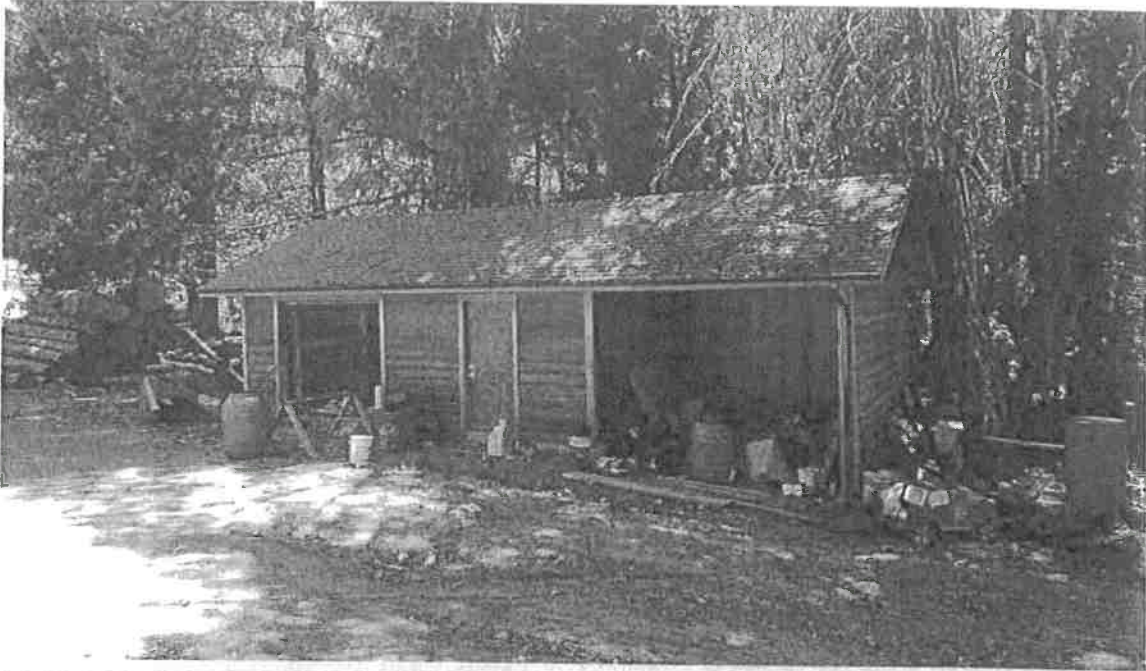
Picture 23: MP #2 consists of an 80' wide by 95' long by 10' deep rain catchment pond. This pond was constructed atop a Class II watercourse. The Discharger shall remove the pond liner, contour the site back to native conditions, and plant native riparian species to restore the riparian buffer per attached specifications. Photo date: 07/14/2016

Photographs



Picture 24: MP #5 consists of a graded flat location directly adjacent to a Class II watercourse. This location was prepared as a site for storage tanks. The Discharger shall abandon the site by seeding and mulching this site to establish riparian vegetation. Photo date: 07/14/2016

Photographs



Picture 25 + 26: Fertilizers, soil amendments, pesticides, herbicides, and other miscellaneous cultivation supplies are stored within two storage structures on the property. These locations are outside of riparian buffers and prevent chemicals from migrating into surface and/or groundwater. Fuel is stored within the 500 gallon fuel tank shown in the lower picture. Photo date: 07/14/2017

STATEMENT OF CONTINGENT AND LIMITING CONDITIONS CONCERNING THE PREPARATION AND USE OF WATER RESOURCE PROTECTION PLAN

Prepared by Timberland Resource Consultants

1. This Water Resource Protection Plan has been prepared for the property within APN 220-292-015 in Humboldt County, at the request of the Client.
2. Timberland Resource Consultants does not assume any liability for the use or misuse of the information in this Water Resource Protection Plan.
3. The information is based upon conditions apparent to Timberland Resource Consultants at the time the inspection was conducted, and as disclosed to Timberland Resource Consultants by the landowner and/or Discharger. Changes due to land use activities or environmental factors occurring after this inspection, have not been considered in this Water Resource Protection Plan.
4. Maps, photos, and any other graphical information presented in this report are for illustrative purposes. Their scales are approximate, and they are not to be used for locating and establishing boundary lines.
5. The conditions presented in this Water Resource Protection Plan may differ from those made by others or from changes on the property occurring after the inspection was conducted. Timberland Resource Consultants does not guarantee this work against such differences.
6. Timberland Resource Consultants did not conduct an investigation on a legal survey of the property.
7. Persons using this Water Resource Protection Plan are advised to contact Timberland Resource Consultants prior to such use.
8. Timberland Resource Consultants will not discuss this report or reproduce it for anyone other than the Client named in this report without authorization from the Client.


Jack Henry
Timberland Resource Consultants

Attachments

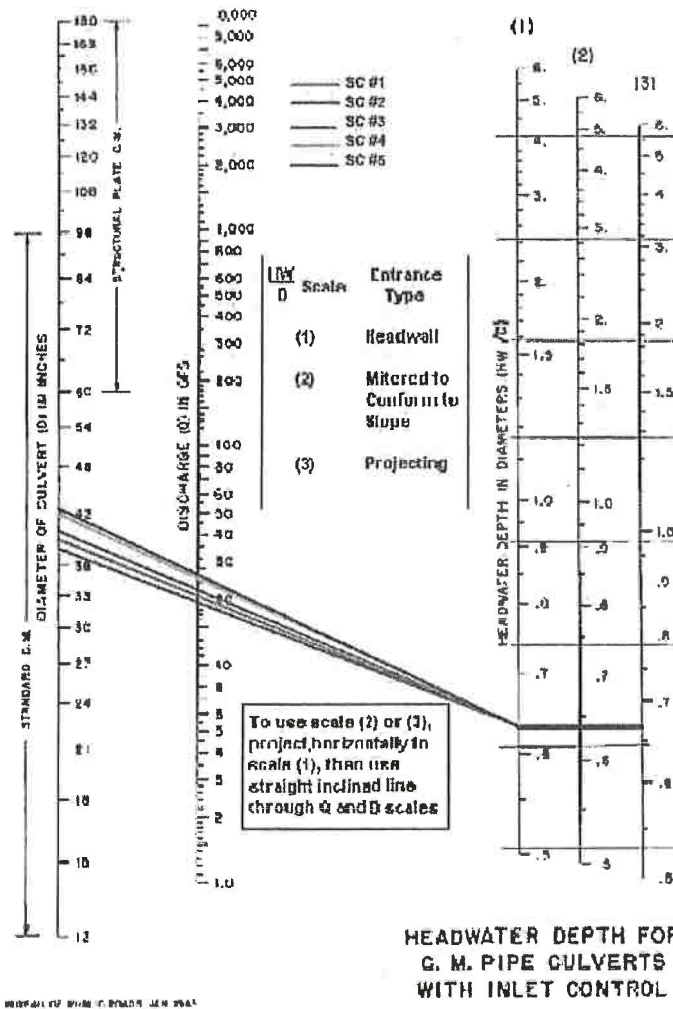
Best Management Practices, Diagrams, Supplemental Information

Culvert Sizing Rational

Rational Method for 100-year flood flow (A < 200 acres)

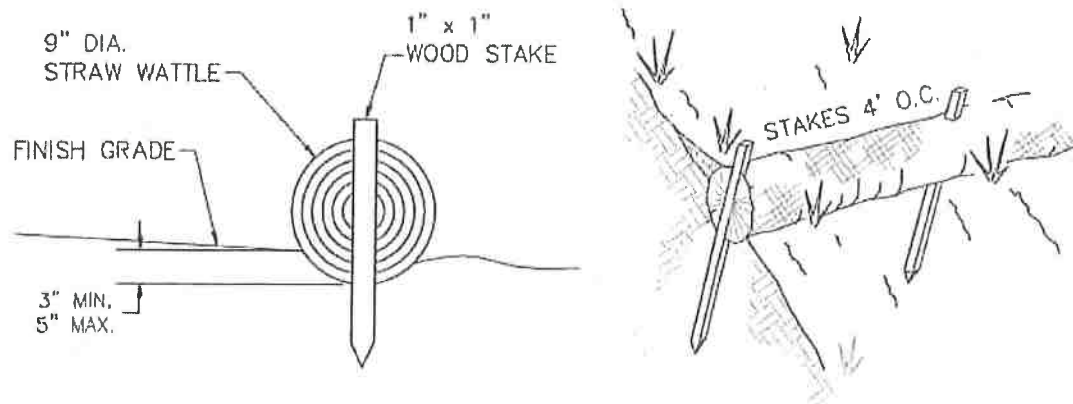
$T_c = 60((11.9 \times L^3)/H)^{0.385}$				$Q_{100} = CIA$			
Crossing	Channel length (to top of basin) (mi) L	Elevation difference (ft) H	Concentration time (min) T_c	Runoff coefficient C	100-year Return-Period Precipitation (in/hr) I^*	Area (acres) A	100-yr flood flow (cfs) Q_{100}
1				0.35	3.06	19.42	20.8
2				0.35	3.06	17.93	19.2
3				0.35	3.06	20.5	22.0
4				0.35	3.06	25	26.8
5				0.35	3.06	25.9	27.7

Norman Nomograph

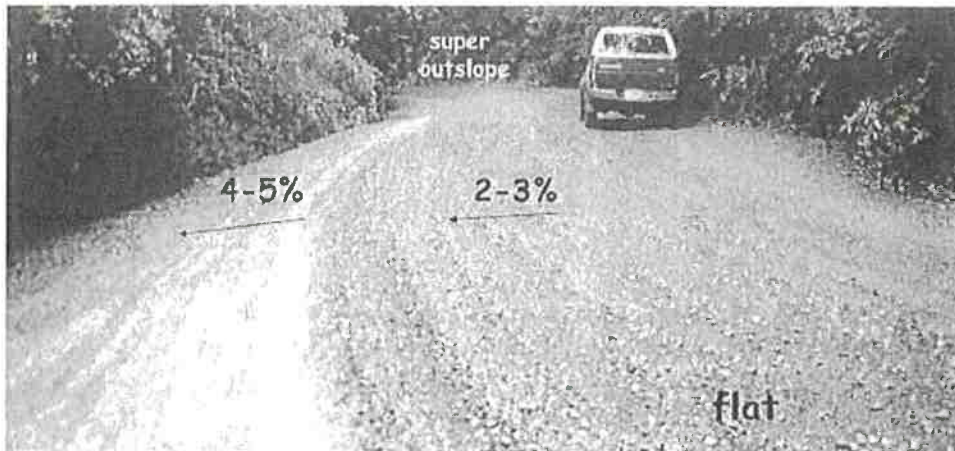


BMP: Erosion Control

- 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.



BMP: Road Shaping – Outsloping



HANDBOOK FOR FOREST, RANCH, AND RURAL ROADS

FIGURE 29. Road shape changes as the road travels through the landscape. For example, an outsloped road will have a steep or "banked" outslope through inside curves, a consistent outslope through straight reaches and a flat or slightly insloped shape as it goes through an outside curve. The road may have an outslope of 2-3% across the travel surface while the shoulder is more steeply outsloped to ensure runoff and sediment will leave the roadbed.

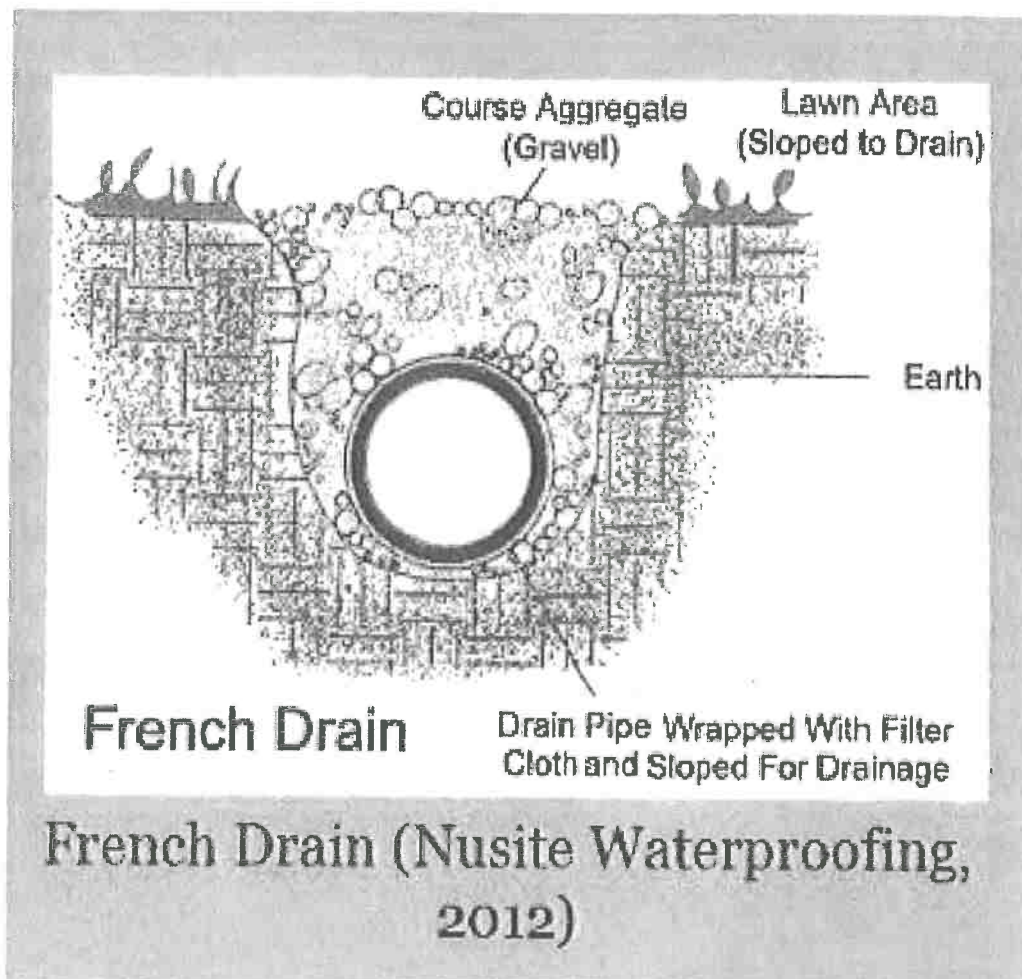
FIGURE 28. Well built, outsloped road displaying minimum cut, smooth free draining surface, and no outside berm. The road contours the topography and its rolling grade and rolling dips disperse surface runoff.



HANDBOOK FOR FOREST, RANCH, AND RURAL ROADS

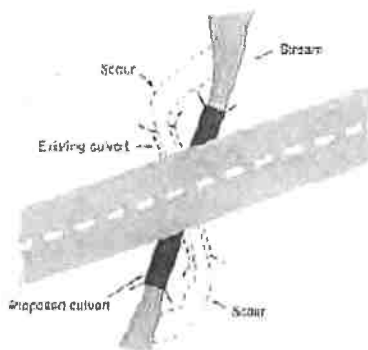
BMP: French Drain System

- Trench dimensions should be minimum 8 inches wide by 18 inches deep
- Set trench grade to a maximum 12:1/4 inches or minimum 12:1/8 inches (h:v)
- Line trench with filter fabric and allow slack to cover the top of the trench
- Lay base layer of course aggregate at least 1 inch thick
- Install minimum 4" diameter perforated pipe
 - Ensure perforations are pointing **DOWN** for correct function
 - Do not use corrugated pipe as it catches sediment and eventually clogs the system quicker
 - Optional: Install vertical "clean-out" at the beginning of each pipe. These vertical access points allow for easy maintenance of the system. Ensure they are above grade and capped to prevent sediment entry.
- Fill trench with course aggregate leaving 2 inches of freeboard within trench
- Use slack fabric to completely enclose gravel and pipe with filter fabric
- For surface water drainage, cover remaining 2" of trench with course aggregate. For groundwater drainage, cover remaining 2" of trench with loosely packed fill
- Outlet runoff at safe location where concentrated flows will not destabilize slopes or cause sediment delivery to a watercourse. Use Tee caps, rock catchments, and/or native plantings to dissipate energy when necessary.



BMP: Permanent Culvert Crossing

- New culvert installations shall be sized to accommodate flows associated with a 100-year storm event.
- If the new culvert is replacing a poorly installed old culvert, the crossing may need to be abandoned to the following standard:
 - When fills are removed they shall be excavated to form a channel that is as close as feasible to natural watercourse grade and orientation, and that is wider than the natural channel.
 - Excavated banks shall be laid back to a 2:1 (50%) or natural slope.
- New culverts shall be placed at stream gradient, or have downspouts, or have energy dissipaters at outfall.
 - Align culverts with the natural stream channel orientation to ensure proper function, prevent bank erosion, and minimize debris plugging. See Figure 97 below.
 - Place culverts at the base of the fill and at the grade of the original streambed or install a downspout past the base of the fill. Downspouts should only be installed if there are no other options.
 - Culverts should be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
 - Culvert beds should be composed of rock-free soil or gravel, evenly distributed under the length of the pipe.
 - Compact the base and sidewall material before placing the pipe in its bed.
 - Lay the pipe on a well-compacted base. Poor basal compaction will cause settling or deflection in the pipe and can result in separation at a coupling or rupture in the pipe wall.
 - Backfill material should be free of rocks, limbs, or other debris that could dent or puncture the pipe or allow water to seep around the pipe.
 - Cover one end of the culvert pipe, then the other end. Once the ends are secure, cover the center.
 - Tamp and compact backfill material throughout the entire process, using water as necessary for compaction.
 - Backfill compacting will be done in 0.5 – 1.0 foot lifts until 1/3 of the diameter of the culvert has been covered.
 - Push layers of fill over the crossing to achieve the final design road grade, road fill above the culvert should be no less than one-third to one-half the culvert diameter at any point on the drivable surface.
- Critical dips shall be installed on culvert crossings to eliminate diversion potential. Refer to Figure 84 below.
- Road approaches to crossings shall be treated out to the first drainage structure (i.e. waterbar, rolling dip, or hydrologic divide) to prevent transport of sediment.
- Road surfaces and ditches shall be disconnected from streams and stream crossings to the greatest extent feasible. Ditches and road surfaces that cannot be feasible disconnected from streams or stream crossings shall be treated to reduce sediment transport to streams.
- If downspouts are used, they shall be secured to the culvert outlet and shall be secure on fill slopes.
- Culverts shall be long enough so that road fill does not extend or slough past the culvert ends.
- Inlet of culverts, and associate fill, shall be protected with appropriate measures that extend at least as high as the top of the culvert.
- Outlet of culverts shall be armored with rock if road fill sloughing into channel can occur.
- Armor inlets and outlets with rock, or mulch and seed with grass as needed (not all stream crossings need to be armored).
- Where debris loads could endanger the crossing, a debris catchment structure shall be constructed upstream of the culvert inlet.
- Bank and channel armoring may occur, when appropriate, to provide channel and bank stabilization.



HANDECOCK FOR FOREST, RANCH AND RURAL ROADS

FIGURE 97. Culvert alignment should be in relation to the stream and not the road. It is important that the stream enters and leaves the culvert in a relatively straight horizontal alignment so streamflow does not have to turn to enter the inlet or discharge into a bank as it exits. This figure shows a redesigned culvert installation that replaces the bending alignment that previously existed. Channel turns at the inlet increase plugging potential because wood going through the turn will not align with the inlet. Similarly, channel turns at the inlet and outlet are often accompanied by scour against the channel banks (Wisconsin Transportation Information Center, 2004).

BMP: Permanent Culvert Crossing (Cont.)

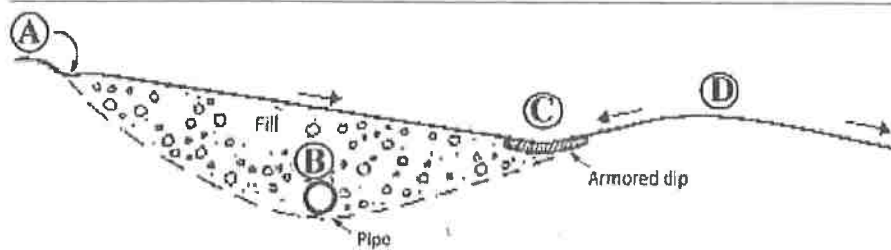
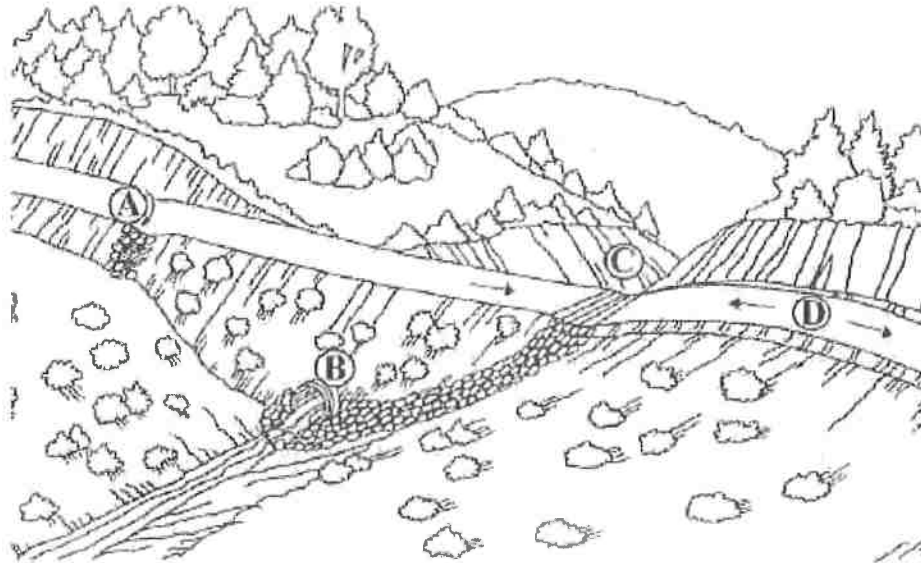


FIGURE 84. Critical dips or dipped crossing fills should be centered near a stream crossing's down-road hinge line, not over the centerline of the crossing where overtopping could cause washout or severe erosion of the fill. If the stream crossing culvert (B) plugs, water will pond behind the fill until reaching the critical dip or low point in the crossing (C) and flowing back down into the natural stream channel. The down-road ditch must be plugged to prevent streamflow from diverging down the ditch line. For extra protection in this sketch, riprap armor has been placed at the critical dip outfall and extending downslope to the stream channel. This is only required or suggested on stream crossings where the culvert is highly likely to plug and the crossing fill overtopped. The dip at the hinge line is usually sufficient to limit erosional damage during an overtopping event. Road surface and ditch runoff is disconnected from the stream crossing by installing a rolling dip and ditch relief culvert just up-road from the crossing (A) (Keller and Sherar, 2003).

BMP: Permanent Culvert Crossing (Cont.)

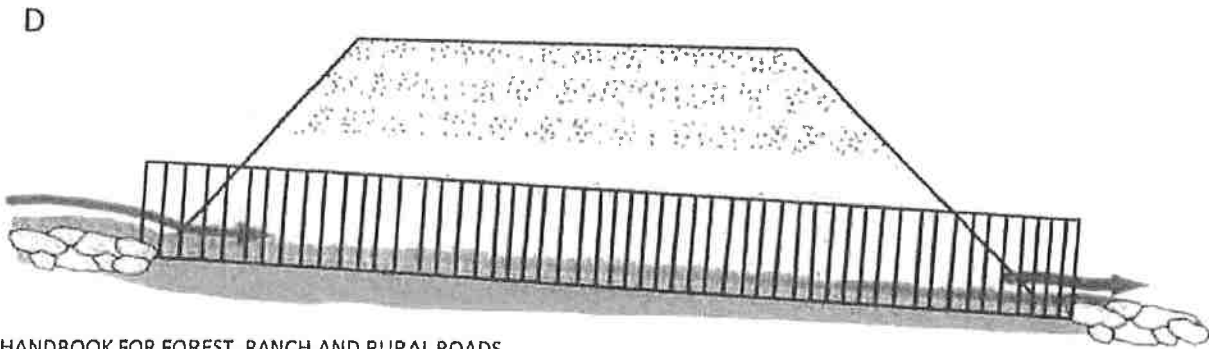
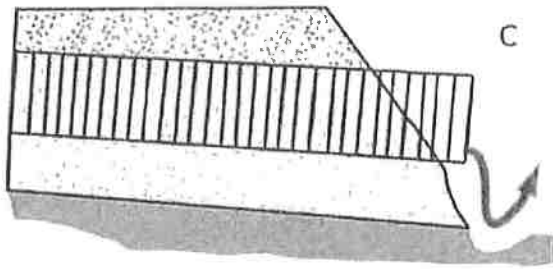
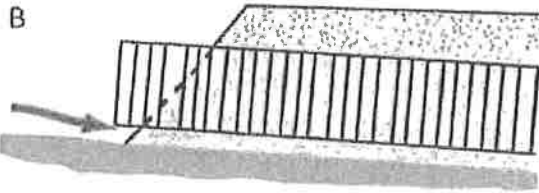
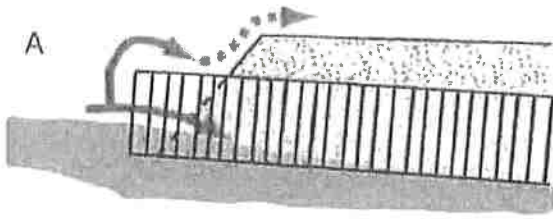
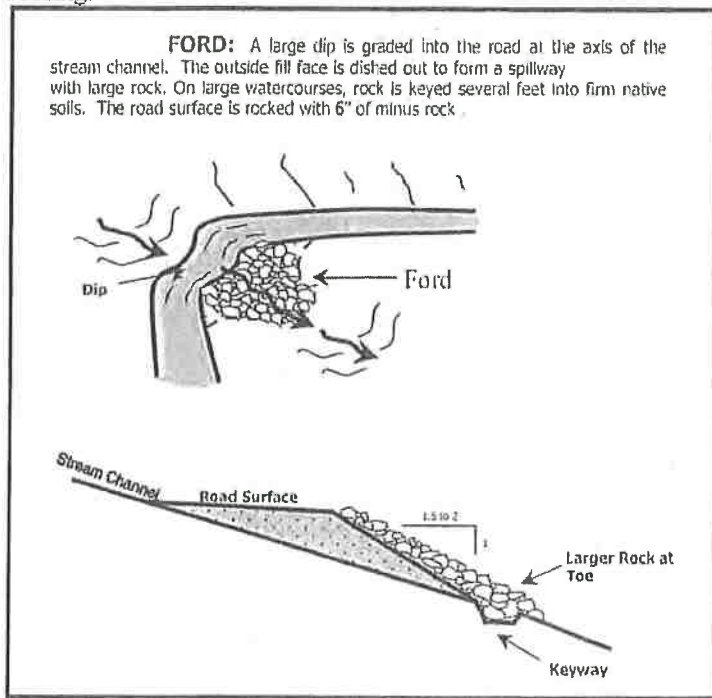


FIGURE 155. Proper culvert installation involves correct culvert orientation, setting the pipe slightly below the bed of the original stream, and backfilling and compacting the fill as it is placed over the culvert. Installing the inlet too low in the stream (A) can lead to culvert plugging, yet if set too high (B) flow can undercut the inlet. If the culvert is placed too high in the fill (C), flow at the outfall will erode the fill. Placed correctly (D), the culvert is set slightly below the original stream grade and protected with armor at the inlet and outlet. Culverts installed in fish-bearing stream channels must be inset into the streambed sufficiently (>25% embedded) to have a natural gravel bottom throughout the culvert (Modified from: MDSL, 1991).

BMP: Rocked Ford

- Rocked fords are drainage structures designed to carry watercourses across roads with little to no erosion of the road surface or fill.
- Fords constructed in-channel shall be of appropriately sized material that shall withstand erosion or displacement by expected velocities and placed in a broad, U-shaped channel to create a drivable crossing.
 - The road shall dip into and out of the rocked ford to minimize diversion potential. Construct a broad rolling dip across the roadbed, centered at the crossing, which is large enough to contain the expected 100-yr flood discharge while preventing flood flow from diverting down the road or around the rock armor.
- The road surface at the ford shall be constructed with clean rock. The rock shall be applied to a minimum depth of 6 inches.
 - A range of interlocking rock armor sizes should be selected and sized so that peak flows will not pluck or transport the armor off the roadbed or the sloping fill face of the armored fill.
- The ford's outlet shall be rock armored to resist downcutting and erosion.
 - *Excavate the keyway and armored area* - Excavate a two to three foot deep "bed" into the dipped road surface and adjacent fillslope (to place the rock in) that extends from approximately the middle of the road, across the outer half of the road, and down the outboard road fill to where the base of the fill meets the natural channel. At the base of the fill, excavate a keyway trench extending across the channel bed.
 - *Armor the basal keyway* - Put aside the largest rock armoring to create the buttresses. Use the largest rock armor to fill the basal trench and create a buttress at the base of the fill. This should have a "U" shape to it and it will define the outlet where flow leaves the armored fill and enters the natural channel.
 - *Armor the fill* - Backfill the fill face with the remaining rock armor making sure the final armor is unsorted and well placed, the armor is two coarse-rock layers in thickness, and the armored area on the fill face also has a "U" shape that will accommodate the largest expected flow.
 - *Armor the top of the fill* - Install a second trenched buttress for large rock at the break-in-slope between the outboard road edge and the top of the fill face.
- Road approaches to rocked fords shall be rock surfaced out to the first drainage structure (i.e. waterbar, rolling dip, or hydrologic divide) to prevent transport of sediment using rock.
- Bank and channel armoring may occur when appropriate to provide channel and bank stabilization.
- Road approach rock and rock ford armoring shall be reapplied following use as needed to maintain a permanent crossing.



BMP: Rocked Ford Crossing (Cont.)



FIGURE 121D. Well graded rock armor is then backfilled into the structure and spread across the breadth of the U-shaped stream crossing, and about one-third the way up the roadbed, so that streamflow will only flow over or come in contact with resistant armor material. The armor must be spread and compacted across the design width of the expected flood flow channel width so peak flows will not flank the armored structure.



FIGURE 121E. Two weeks after this armored fill was constructed, a storm flow event occurred and the structure maintained its function and integrity. The road approaches had not yet been compacted or surfaced with road rock.



FIGURE 121F. The same armored fill as it appeared after the first winter flood flows. No maintenance was required to reopen the road. It is also clear that no stream diversion is possible at this stream crossing site, and the volume of fill within the crossing has been reduced to the minimum amount needed to maintain a relatively smooth driving surface on this low volume road.

Prescribed Seed Mix

Native Erosion (Perennial and Annual) Control Mix

1. <i>Bromus carinatus</i> /California Brome	25
2. <i>Hordeum brachyantherum</i> /Meadow Barley	10
3. <i>Vulpia microstachys</i> /Three Weeks Fescue	6
4. <i>Trifolium wildenovii</i> /Tomcat Clover	4
	45 lbs./acre

- Hydroseeded adjacent to riparian corridors.
- Worked well for erosion control on bare slopes
- Successful establishment of seed mix except for the Trifolium.
- Not sure of the longevity of seed mix, *Holeus lanatus* (Velvet grass) and *Anthoxanthum odoratum* (Sweet vernal) beginning to occur within seeded area.
- Seed mix obtained from Pacific Coast Seed located in Livermore, California





TIMBERLAND RESOURCE CONSULTANTS
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 FORTUNA, CA 95540
 PH. 707-725-1897

COAST CENTRAL CREDIT UNION
 90-7224/3211

13373

1/21/2019

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TIMBERLAND RESOURCE CONSULTANTS

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California Dept. of Fish & Wildlife

1/21/2019

Moody 1600-CDFW 1600 Fees

4,172.00

Coast Central Checkin

4,172.00

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TIMBERLAND RESOURCE CONSULTANTS
 165 S. FORTUNA BLVD., SUITE 4
 FORTUNA, CA 95540
 PH. 707-725-1897

COAST CENTRAL CREDIT UNION
 90-7224/3211

13374

1/21/2019

PAY TO THE
 ORDER OF

California Dept. of Fish & Wildlife

\$ **5,313.00

Five Thousand Three Hundred Thirteen and 00/100*****

DOLLARS

California Dept. of Fish & Wildlife
 619 Second Street
 Eureka, CA 95501

Karin Ripon

AUTHORIZED SIGNATURE

MEMO

⑈013374⑈ ⑆321172248⑆ ⑆25400915753⑈

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