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App# 11491 - cup

Water Resource Protection Plan

APN: 522-021-010

WDID: 1B161203CHUM

Prepared by:



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Purpose

This Water Resource Protection Plan (WRPP) has been prepared on behalf of the Discharger, for the Humboldt County property identified as Parcel Number 522-021-010, 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 property assessed is a 168 acre parcel that is located approximately 7.5 miles northwest of Willow Creek, California at an elevation of approximately 3,600 feet. The property is located within the Southeast ¼ of Section 18, Township 7 North, Range 4 East, HB&M, on the Lord-Ellis Summit 7.5' Quadrangle. There are several Class III and Class II watercourses on the property, all of which are tributary to Supply Creek, which is tributary to the Trinity River, and lastly the Klamath River.

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 a field examination on June 6, 2017. The examinations evaluated areas near, and areas with the potential to directly impact, watercourses for sensitive conditions including, but 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

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.

Physical reconnaissance of the property revealed several locations where surface erosion is occurring on the surface of the seasonal dirt roads. One of these locations appears to be resulting in sediment delivery to surface waters.

The section of road between Map Point #3 (MP 3) and Stream Crossing #3 (SC 3) is experiencing minor surface erosion, resulting in sediment delivery to the Class III watercourse. The Discharger shall rock this section of road to remediate the erosion and prevent further sediment delivery to surface waters.

- 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.

At Map Point #1 (MP 1), inadequate road drainage is resulting in surface erosion on the seasonal dirt road. The Discharger shall install a water break at this location per the attached specifications, in order to prevent further erosion and potential sediment delivery to surface waters.

At Map Point #2 (MP 2), inadequate road drainage is resulting in surface erosion on the seasonal dirt road. The Discharger shall install a water break at this location per the attached specifications, in order to prevent further erosion from occurring.

There are also minor rills developing on the surface of the seasonal dirt road. If the additional water break installations do not adequately prevent further erosion from occurring, the Discharger shall resurface the road with rock.

- 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. of the California Forest Practice Rules handbook.

- 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.

At Map Point #3 (MP 3), surface runoff from Cultivation Area #6 (CA 6) flows south along the seasonal dirt road prior to discharging into the Class III watercourse at Stream Crossing #3 (SC 3). The Discharger shall install a water break at the southern end of Cultivation Area #6, which will direct runoff into vegetation on the east side of the road, where it is expected to disperse and infiltrate.

- 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.

Upon implementation of all mitigation measures aforementioned, all ditch relief drains, rolling dip outlets, road pads, and terraced surfaces are expected to be maintained to promote infiltration/dispersal of outflows, and have no evidence of soil transport to receiving waters.

- f. Stockpiled construction materials are stored in a location and manner so as to prevent their transport to receiving waters.

Physical reconnaissance of the property revealed that there are no construction materials being stored on the property at this time.

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)

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 three stream crossings located on the property, two of which require work that will cause disturbance to a stream channel. No work in a stream channel will begin prior to approval of a Lake and Streambed Alteration Notification with CDFW, and approval of Appendix D.

Stream Crossing #1 (SC 1) consists of a 24" diameter CMP (Corrugated Metal Pipe) on a Class II watercourse. The active channel of the stream has an approximate average width of 18", therefore the 24" diameter culvert is expected to be adequately sized to pass the expected 100-year peak streamflow and the debris associated with it. The outlet of the culvert is positioned above the natural stream channel, which is causing minor erosion. The Discharger shall rock armor the outlet of the culvert with adequately sized rip-rap and per the attached specifications.

Stream Crossing #2 (SC 2) consists of a Humboldt crossing that is situated near the head of a Class II watercourse. This crossing is situated immediately adjacent to stream Crossing #1 (SC 1), which has an approximate active channel width of 18". In addition, the drainage basin for SC 2 is smaller than the drainage basin for SC 1. Therefore, a 24" diameter culvert is expected to be of adequate size to facilitate the expected 100-year peak flow and associated debris at this crossing as well. The Discharger shall replace this crossing with a minimum 24" diameter culvert per the attached specifications and in compliance with the Standard Conditions stated above.

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.

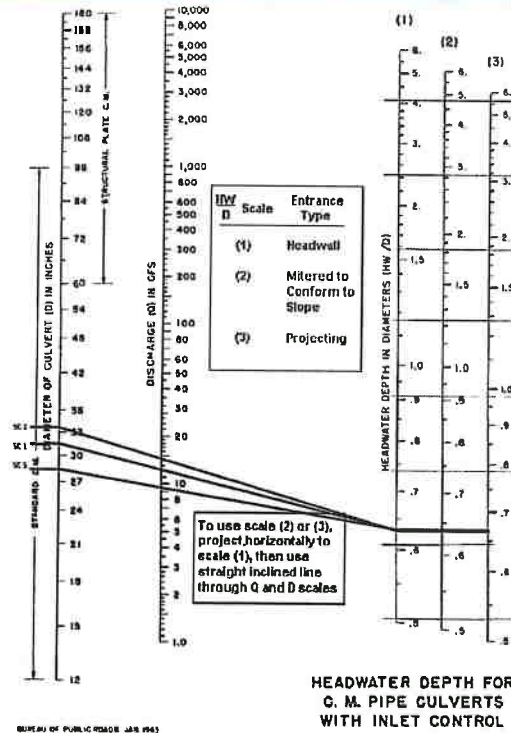
³ If infeasible to install a critical dip, an alternative solution may be chosen.

Stream Crossing #3 (SC 3) consists of a dirt ford that is situated near the head of a Class II watercourse. Some of the water is being diverted by the seasonal dirt road, leading to surface erosion and potential sediment delivery to surface waters. The Discharger shall replace this crossing with a minimum 30" diameter culvert per the attached specifications and in compliance with the Standard Conditions stated above.

Rational Method for 100-year flood flow (A < 200 acres) APN: 522-021-010

$T_c = 60((11.9 \times L^3)/H)^{0.385}$				$Q_{100} = CIA$			
Crossing	Channel length (to top of basin) (mi) L	Elevation difference (ft) H	Concentration time (min) Tc	Runoff coefficient C	100-year Return-Period Precipitation (in/hr) P*	Area (acres) A	100-yr flood flow (cfs) Q100
1				0.4	5.06	7.2	14.6
2				0.4	5.06	6	12.1
3				0.4	5.06	4.7	9.5

This document utilizes the Rationale Method to determine the 100-year flood flow utilizing methods recommended in "Designing Watercourse Crossings for Passage of 100-year Flood Flows, Wood, and Sediment". 2004 Peter Cafferata, Thomas Spittler, Michael Wopat, Greg Bundros, and Sam Flanagan. This report recommends that the rational method be limited to watersheds less than 100 acres. The 100-year return-period precipitation data is from: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca



- Normann and others (1985) culvert sizing nomograph.

This is the same culvert sizing nomograph (Figure 12) referenced in *Designing Watercourse Crossings for Passage of 100-year Flood Flows, Wood, and Sediment*. The nomograph is used by assuming inlet control and a headwater depth to pipe diameter ratio (HW/D) of 0.67.

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.

Physical reconnaissance of the property revealed that all cultivation areas are appropriately located outside of all watercourse buffer zones.

- b. Buffers shall be maintained at natural slope with native vegetation.

Physical reconnaissance of the property revealed that all buffers are maintained at natural slope with native 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.

All buffers are densely vegetated, unaltered, and appear to be of sufficient width to filter wastes from runoff, and to maintain the essential functions of the riparian areas.

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

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

Physical reconnaissance of the property revealed that there are no spoils being stored at this time.

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

Not applicable. There are no spoils being stored on the property at this time.

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.

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.

- 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.

No spoils generated through development or maintenance of roads, driveways, earthen fill pads, or cleared or filled areas were observed anywhere on the property.

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.

There is approximately 50,050 ft² of cultivation on the property. Water is sourced from a groundwater well that has an approximate depth of 250' and is capable of producing 10 gallons per minute. The Discharger states that approximately 640,000 gallons of water is used per year for cultivation purposes.

- 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 Discharger irrigates during the early morning of each day, which prevents evaporation from the surface of the soil. The Discharger states that straw mulching of soil surfaces will be implemented.

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

All water is sourced from a groundwater well, therefore no surface water diversions occur at any time. The Discharger has 15,000 gallons of water storage available in the form of hard-sided plastic tanks. The Discharger is also proposing to construct a rain catchment pond that will be capable of holding one million to two million gallons of water.

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

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

The Discharger states that water is applied using no more than agronomic rates. Timberland Resource Consultants observed no conditions to suggest otherwise.

- 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.

No diversion or storage of water from a stream occurs at any time, therefore there is no need for a valid water right, water appropriation, or Small Irrigation Registration. It is recommended that the Discharger install a water meter to comply with reporting requirements.

- 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.

All water storage tanks are installed on flat stable surfaces and appear to be maintained so as to prevent release into waters of the state.

6. Irrigation Runoff (Compliance: Y / N)

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 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.

No irrigation runoff was observed during the inspection, nor was there evidence that it had occurred in the past. The Discharger states that water and fertilizers are applied at or below standard agronomic rates, thus minimizing pollutant entrainment and preventing any irrigation runoff from occurring.

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.

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 and soil amendments are adequately stored in plastic lidded bins that are located next to the storage structure adjacent to Cultivation Area #1 (CA 1). This storage location is sufficient to prevent any pollutants from being transported to surface waters or leached into ground water.

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

The Discharger states that fertilizers and soil amendments are applied and used per packaging instructions and/or at proper agronomic rates. Timberland Resource Consultants observed no conditions to suggest otherwise.

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

The cultivation area appears to be maintained in a manner so as to prevent nutrients from leaving the site during the growing season and post-harvest.

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 and herbicides are stored with the fertilizers and soil amendments in lidded storage bins next to Cultivation Area #1 (CA 1). The Discharger ensures that all pesticides and herbicides are used per the specifications on the product's label, and that they are placed, and used in a manner that ensures that they will not enter or be released into surface 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.

There are several gasoline canisters on the property, all of which are adequately stored in lidded plastic containers. The gasoline canisters are of suitable material to be compatible with the stored gasoline and the conditions of storage.

- 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.

Not applicable. There are no above ground storage tanks located on the property.

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

Not applicable. There are no diked areas on the property with the purpose of containing discharged chemicals.

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

Not applicable. The Discharger does not have any fuel storage tanks that require implementation of spill prevention, control, and countermeasures (SPCC), or to have appropriate cleanup materials available onsite.

- 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. There are no underground storage tanks 110 gallons or larger on the property.

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 ground waters.

The Discharger states that all cultivation wastes are either burned or adequately stored prior to disposal at an appropriate waste disposal location. There were no cultivation related wastes observed on site at the time of assessment.

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.

An outhouse is currently utilized for the disposal of domestic sewage. The Discharger proposes to have a septic system installed, and a percolation test was performed at the proposed location. The Discharger shall ensure that the septic system meets applicable County health standards, local agency management plans and ordinances, and/or the Regional Water Board's Onsite Wastewater Treatment System policy, and not represent a threat to surface water or groundwater.

- 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 is adequately stored in lidded trash bins prior to being disposed of at an appropriate waste disposal location.

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

The Discharger states that all garbage and refuse is disposed of at an appropriate waste disposal location.

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

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 below in the Mitigation Report and also explained above in the Standard Conditions.

Identified Sites Requiring Remediation (See Standard Conditions Assessment)

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	Surface erosion is occurring due to the lack of adequate drainage features	A.1.b	N/A	The Discharger shall install a water break at this location per the attached specifications.	2	10/15/2018 And each following year for maintenance	
MP 2	Surface erosion is occurring due to the lack of adequate drainage features	A.1.b	N/A	The Discharger shall install a water break at this location per the attached specifications	2	10/15/2018 And each following year for maintenance	
MP 3	Surface water draining from Cultivation Area #6 is hydrologically connected to the adjacent Class III watercourse.	A.1.c	N/A	The Discharger shall install a water break at the southern extent of the cultivation area, which directs the runoff into vegetation off the east side of the road where it can disperse and infiltrate.	2	10/15/2018	
Section of road between MP 3 and SC 3	This section of road is experiencing minor surface erosion, potentially resulting in sediment delivery to surface waters.	A.1.a	N/A	The discharger shall resurface this section of the road with rock to prevent further erosion and sediment delivery from occurring.	2	10/15/2018	
SC 1	This is an existing 24" diameter corrugated metal pipe on a Class II watercourse. The culvert is adequately sized, according to the stream channel having an approximate active channel width of 18". The outlet of the culvert is positioned slightly above the natural stream channel, which is causing minor erosion.	A.3.e	N/A	The Discharger shall rock armor the outlet of the culvert per the attached specifications.	2	10/15/2018	
SC 2	This is an existing Humboldt crossing on a Class II watercourse. The crossing is not adequately sized to facilitate the expected 100-year peak flow.	A.3.a A.3.b	Minimize driving on this crossing during the winter period	This crossing shall be replaced with a minimum 24" diameter culvert per the attached specifications and in compliance with the standard conditions.	3	10/15/2019	
SC 3	This is an existing dirt ford on a Class III watercourse. The crossing is experiencing surface erosion, which is resulting in sediment delivery to surface waters.	A.3.a A.3.b	Minimize driving on this crossing during the winter period	This crossing shall be replaced with a minimum 30" diameter culvert per the attached specifications and in compliance with the standard conditions.	3	10/15/2019	

Septic System	An outhouse is currently utilized for the disposal of domestic sewage. The Discharger is proposing to have a septic system installed.	A.11.a	N/A	Upon installation of the proposed septic system, the Discharger shall ensure that it is installed in compliance with applicable County health standards, local agency management plans and ordinances, and/or the Regional Water Board's Onsite Wastewater Treatment System policy.	4	Shortest time possible. No later than 5 years.	
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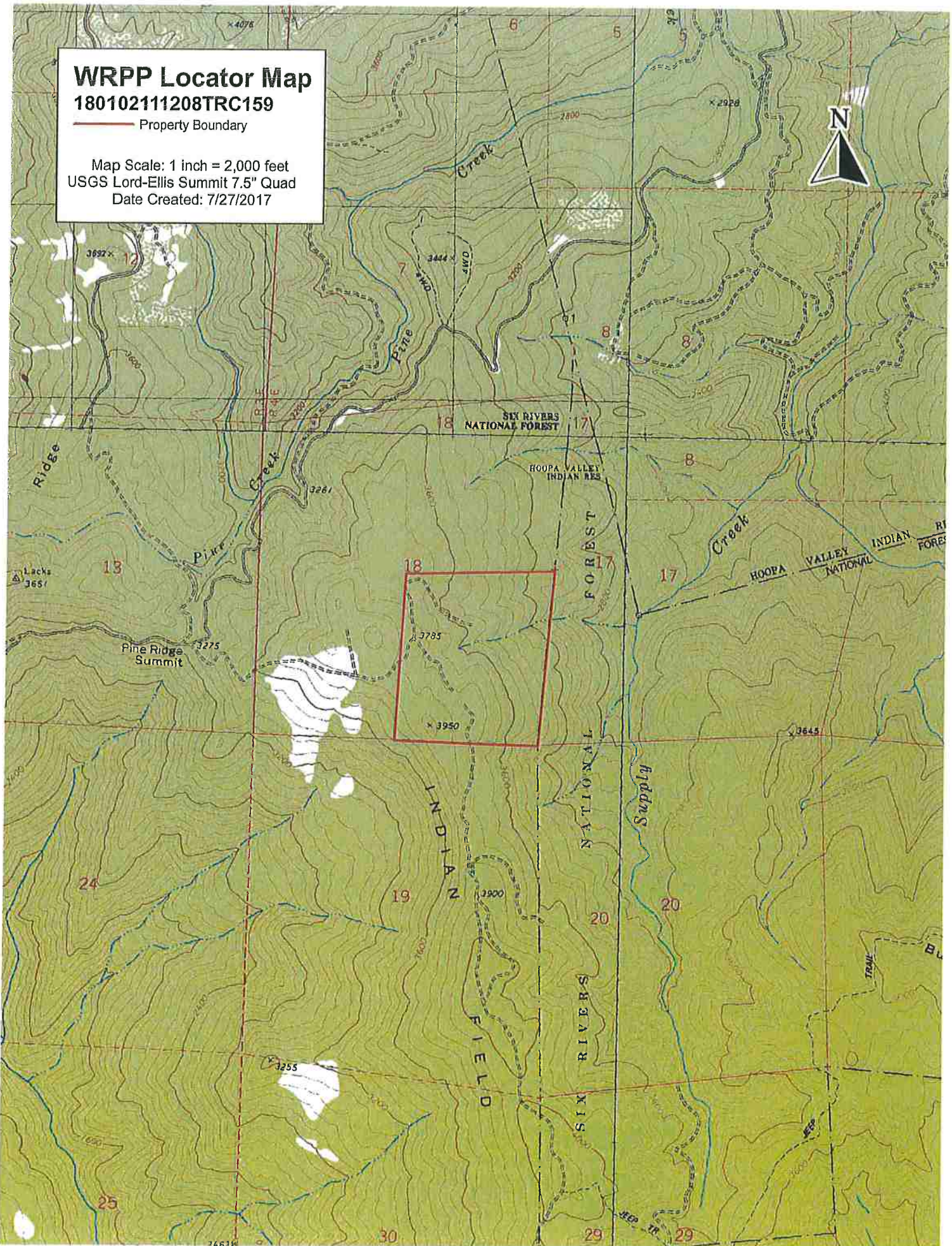
Treat Priority: Treatment Priority (1) indicates a very high priority with treatment being planned to occur immediately, (2) indicates a high priority site with treatment to occur prior to the start of the winter period (Nov. 15), (3) indicates a moderate priority with treatment being planned to occur within one year, or prior to the winter period (Nov. 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 Locator Map

18010211208TRC159

Property Boundary

Map Scale: 1 inch = 2,000 feet
USGS Lord-Ellis Summit 7.5" Quad
Date Created: 7/27/2017



WRPP Site Map

180102111208TRC159

— Property Boundary
— Seasonal Dirt Road

▨ Cultivation Area

--- Class III Watercourse
--- Class II Watercourse

○ Stream Crossing
+ Well
□ Building
★ Map Point

Map Scale: 1 inch = 400 feet
Humboldt County 2016 DOQ
Date Created: 7/27/2017



WRPP Site Map

180102111208TRC159

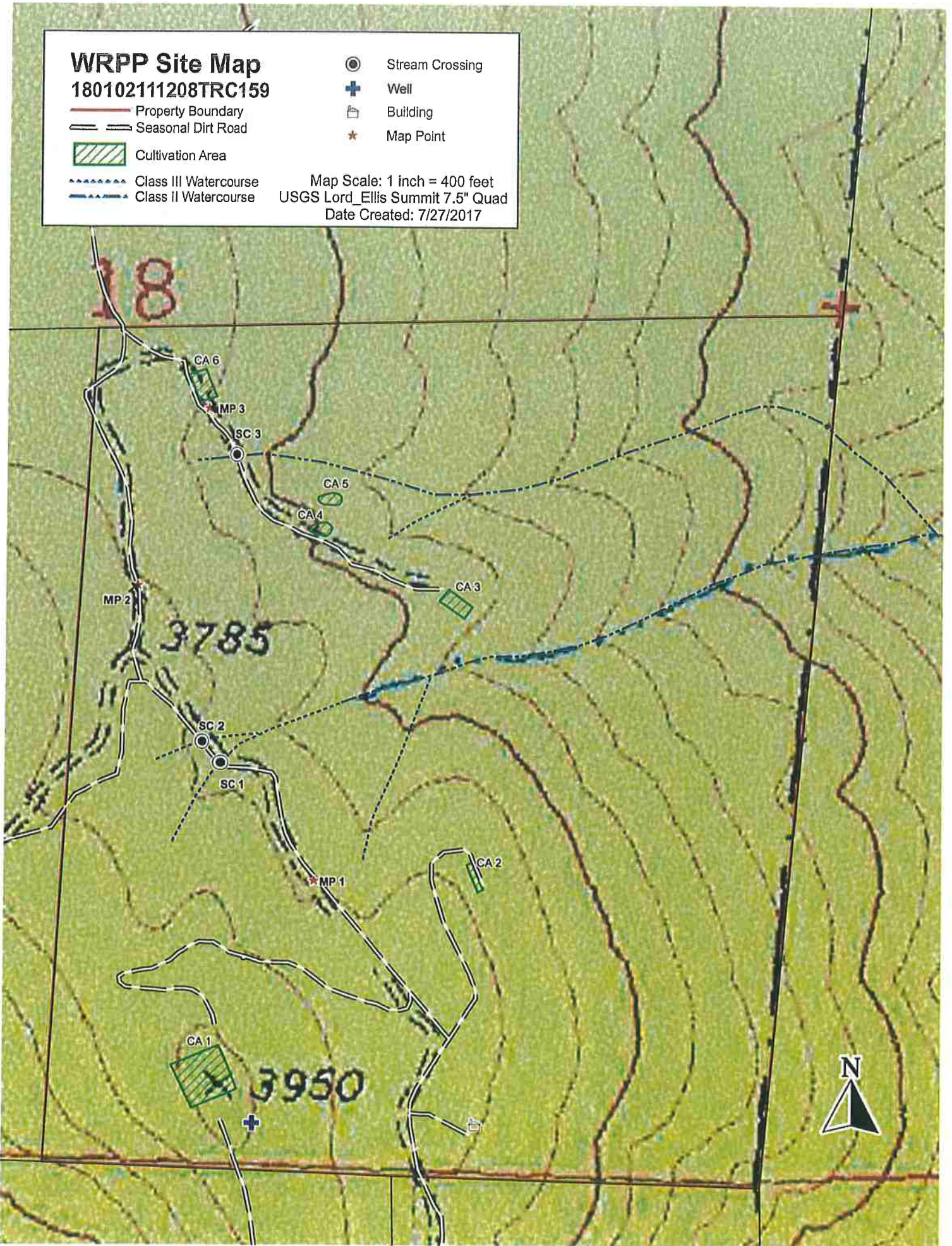
— Property Boundary
— Seasonal Dirt Road

▨ Cultivation Area

--- Class III Watercourse
--- Class II Watercourse

○ Stream Crossing
+ Well
□ Building
★ Map Point

Map Scale: 1 inch = 400 feet
USGS Lord_Ellis Summit 7.5" Quad
Date Created: 7/27/2017



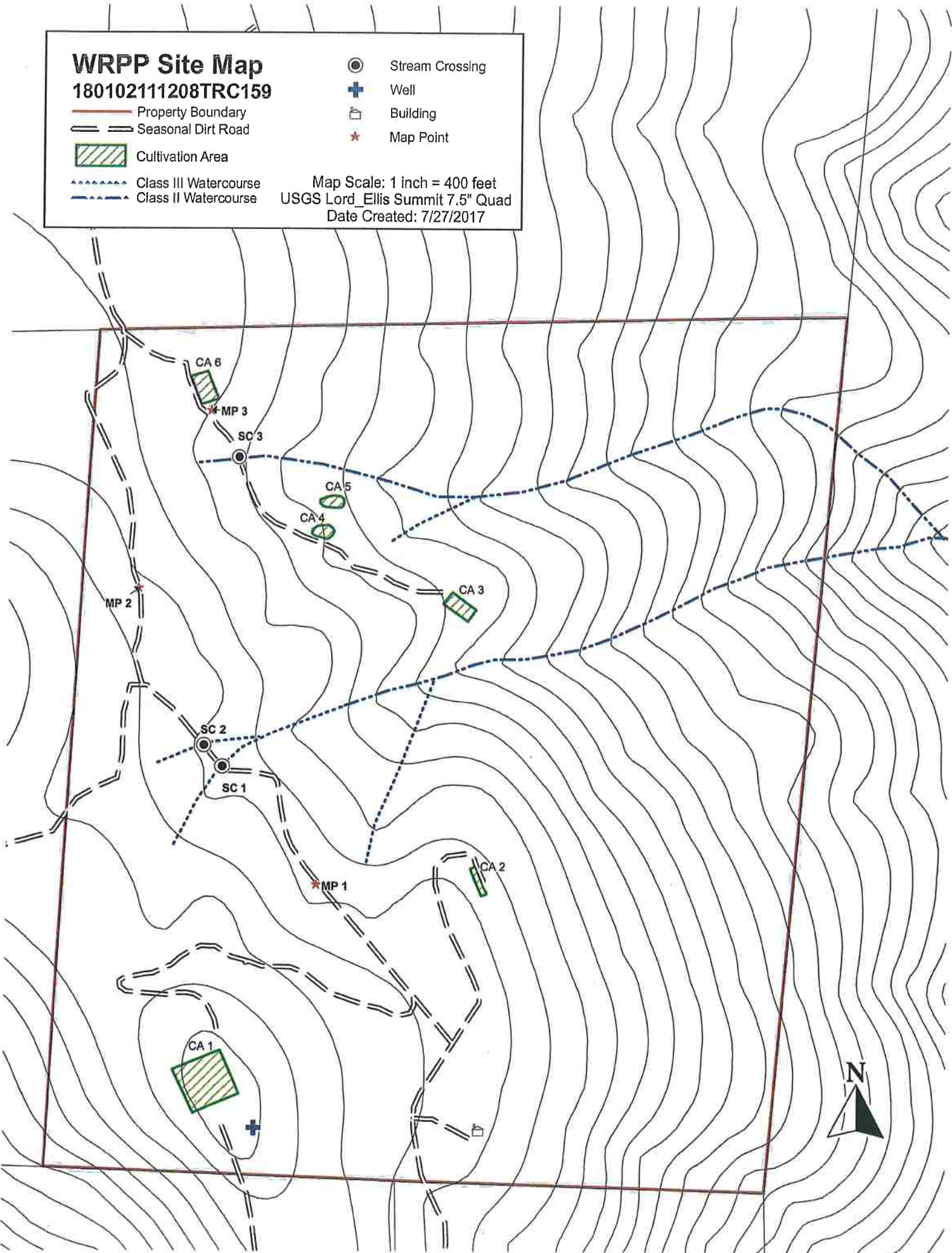
WRPP Site Map

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- Property Boundary
- Seasonal Dirt Road
- Cultivation Area
- Class III Watercourse
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- Stream Crossing
- Well
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Photographs

Photo #1: This is an image of the southern extent of Cultivation Area #6 (CA 6), where surface runoff is hydrologically connected to surface waters. The Discharger shall install a pipe at this location that channels the runoff beneath the road at the top right of the image, where it can disperse and infiltrate in the vegetation. Photo Date: 06/06/2017.

Photographs



Photo #2: This is an image of the culvert outlet at Stream Crossing #1 (SC 1), which is positioned slightly above the natural stream channel. The Discharger shall rock armor the outlet of this culvert per the attached specifications. Photo Date: 06/06/2017.

**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 522-021-010 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.


Chad Yoakley
Timberland Resource Consultants

Attachments

BMP: General BMPs

- If operations require moving of equipment across a flowing stream, such operations shall be conducted without causing a prolonged visible increase in stream turbidity. For repeated crossings, the operator shall install a bridge, culvert, or rock-lined crossing.
- During construction in flowing water, which can transport sediment downstream, the flow shall be diverted around the work area by pipe, pumping, temporary diversion channel or other suitable means. When any dam or artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream to maintain fish life below the dam. Equipment may be operated in the channel of flowing live streams only as necessary to construct the described construction.
- Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portion of any stream channel shall be restored to as near their original condition as possible. Restoration shall include the mulching of stripped or exposed dirt areas at crossing sites prior to the end of the work period.
- Structures and associated materials not designed to withstand high seasonal flow shall be removed to areas above the high water mark before such flows occur.
- No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washing, oil or petroleum products, or other organic or earthen material from any logging, construction, or associated activity of whatever nature shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

BMP: General Erosion Control

- Timing for soil stabilization measures within the 100 feet of a watercourse or lake: For areas disturbed from May 1 through October 15, treatment shall be completed prior to the start of any rain that causes overland flow across or along the disturbed surface. For areas disturbed from October 16 through April 30, treatment shall be completed prior to any day for which a chance of rain of 30 percent or greater is forecast by the National Weather Service or within 10 days, whichever is earlier.
- Within 100 feet of a watercourse or lake, the traveled surface of logging roads shall be treated to prevent waterborne transport of sediment and concentration of runoff that results from operations. Treatment may consist of, but not limited to, rocking, out sloping, rolling dips, cross drains, water bars, slope stabilization measures, or other practices appropriate to site-specific conditions.
- The treatment for other disturbed areas within 100 feet of a watercourse or lake, including: (A) areas exceeding 100 contiguous square feet where operations have exposed bare soil, (B) approaches to road watercourse crossings out to 100 feet or the nearest drainage facility, whichever is farthest, (C) road cut banks and fills, and (D) any other area of disturbed soil that threatens to discharge sediment into waters in amounts deleterious to the quality and beneficial uses of water, shall be grass seeded and mulched with straw or fine slash. Grass seed shall be applied at a rate exceeding 100 pounds per acre. Straw mulch shall be applied in amounts sufficient to provide at least 2- 4-inch depth of straw with minimum 90% coverage. Slash may be substituted for straw mulch provided the depth, texture, and ground contact are equivalent to at least 2 – 4 inches of straw mulch. Any treated area that has been subject to reuse or has less than 90% surface cover shall be treated again prior to the end of operations.
- Within 100 feet of a watercourse or lake, where the undisturbed natural ground cover cannot effectively protect beneficial uses of water from operations, the ground shall be treated with slope stabilization measures described in #3 above per timing described in #1 above.
- Side cast or fill material extending more than 20 feet in slope distance from the outside edge of a landing which has access to a watercourse or lake shall be treated with slope stabilization measures described in #3 above. Timing shall occur per #1 above unless outside 100 feet of a watercourse or lake, in which completion date is October 15.

All roads shall have drainage and/or drainage collection and storage facilities installed as soon as practical following operations and prior to either (1) the start of any rain which causes overland flow across or along the disturbed surface within 100 feet of a watercourse or lake protection, or (2) any day with a National Weather Service forecast of a chance of rain of 30 percent or more, a flash flood warning, or a flash flood watch.

BMP: Rolling Dip

- Rolling dips are drainage structures designed to carry surface water across roads.
- The truck road shall dip into and out of the rolling dip to minimize diversion potential.
- The rolling dip shall be constructed with clean native materials.
- The rolling dips outlet may be armored to resist downcutting and erosion.
- Do not discharge rolling dips into swales that show signs of instability or active landsliding.
- If the rolling dip is designed to divert both road surface and ditch runoff, block the down-road ditch with compacted fill.

BMP: Rocked Rolling Dip

- Rocked rolling dips are drainage structures designed to carry surface water across roads.
- The truck road shall dip into and out of the rocked rolling dip to minimize diversion potential.
- The rocked rolling dip shall be constructed with clean native rock that is large enough to remain in place during peak flows. Rock size shall vary relative to the size of the watercourse; however an average 6" sized rock shall be used.
- The rocked rolling dips inlet and outlet shall be armored to resist downcutting and erosion.
- The entire width of the rocked rolling dip shall be rock armored to a minimum of 5-feet from the centerline of the dip.
- If a keyway is necessary, the rocked rolling dip keyway at the base of the dip shall be of sufficient size, depth and length to support materials used in the rocked rolling dip construction back up to the road crossing interface.
- Do not discharge rolling dips into swales that show signs of instability or active landsliding.
- If the rolling dip is designed to divert both road surface and ditch runoff, block the down-road ditch with compacted fill.
- The rolling dip must be drivable and not significantly inhibit traffic and road use.

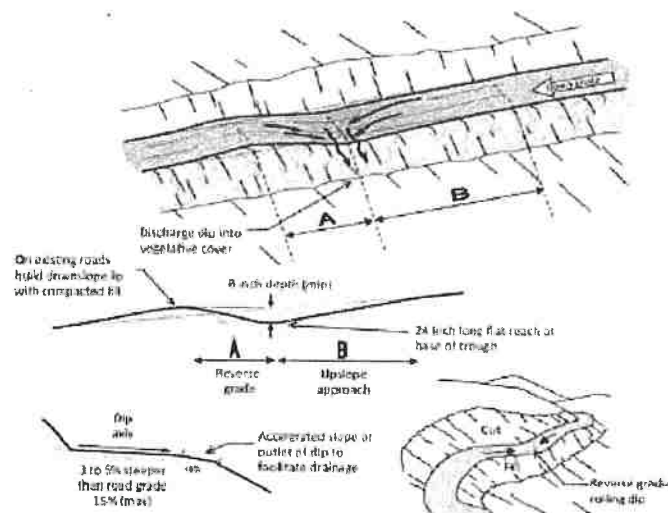
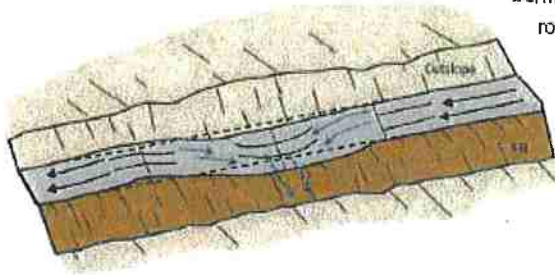


FIGURE 34. A classic Type I rolling dip, where the excavated up-road approach (B) to the rolling dip is several percent steeper than the approaching road and extends for 60 to 80 feet to the dip axis. The lower side of the structure reverses grade (A) over approximately 15 feet or more, and then falls down to rejoin the original road grade. The dip must be deep enough that it is not obliterated by normal grading, but not so deep that it is difficult to negotiate or a hazard to normal traffic. The outward cross-slope of the dip axis should be 3% to 5% greater than the up-road grade (B) so it will drain properly. The dip axis should be out-sloped sufficiently to be self-cleaning, without triggering excessive downcutting or sediment deposition in the dip axis (Modified from: Best, 2013).

HANDBOOK FOR FOREST, RANCH AND RURAL ROADS

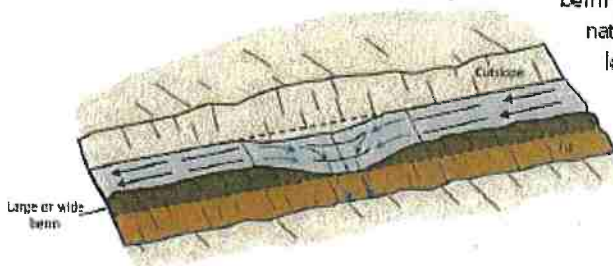
BMP: (Rocked) Rolling Dip (Cont.)

Type 1 Rolling Dip (Standard)



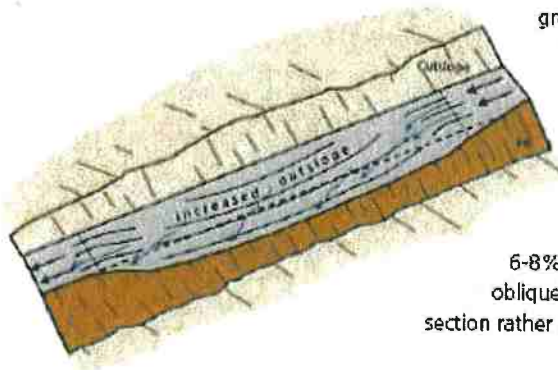
Type 1 rolling dips are used where road grades are less than about 12-14% and road runoff is not confined by a large through cut or berm. The axis of the dip should be perpendicular to the road alignment and sloped at 3-4% across the road tread. Steep roads will have longer and more abrupt dip dimensions to develop reverse grade through the dip axis. The road tread and/or the dip outlet can be rocked to protect against erosion, if needed.

Type 2 Rolling Dip (Through-cut or thick berm road reaches)



Type 2 rolling dips are constructed on roads up to 12-14% grade where there is a through cut up to 3 feet tall, or a wide or tall berm that otherwise blocks road drainage. The berm or native through cut material should be removed for the length of the dip, or at least through the axis of the dip, to the extent needed to provide for uninterrupted drainage onto the adjacent slope. The berm and slope material can be excavated and endhauled, or the material can be sidecast onto native slopes up to 45%, provided it will not enter a stream.

Type 3 Rolling Dip (Steep road grade)



Type 3 rolling dips are utilized where road grades are steeper than about 12% and it is not feasible to develop a reverse grade that will also allow passage of the design vehicle (steep road grades require more abrupt grade reversals that some vehicles may not be able to traverse without bottoming out).

Instead of relying on the dip's grade reversal to turn runoff off the roadbed, the road is built with an exaggerated outslope of 6-8% across the dip axis. Road runoff is deflected obliquely across the dip axis and is shed off the outsloped section rather than continuing down the steep road grade.

FIGURE 36. Rolling dip types

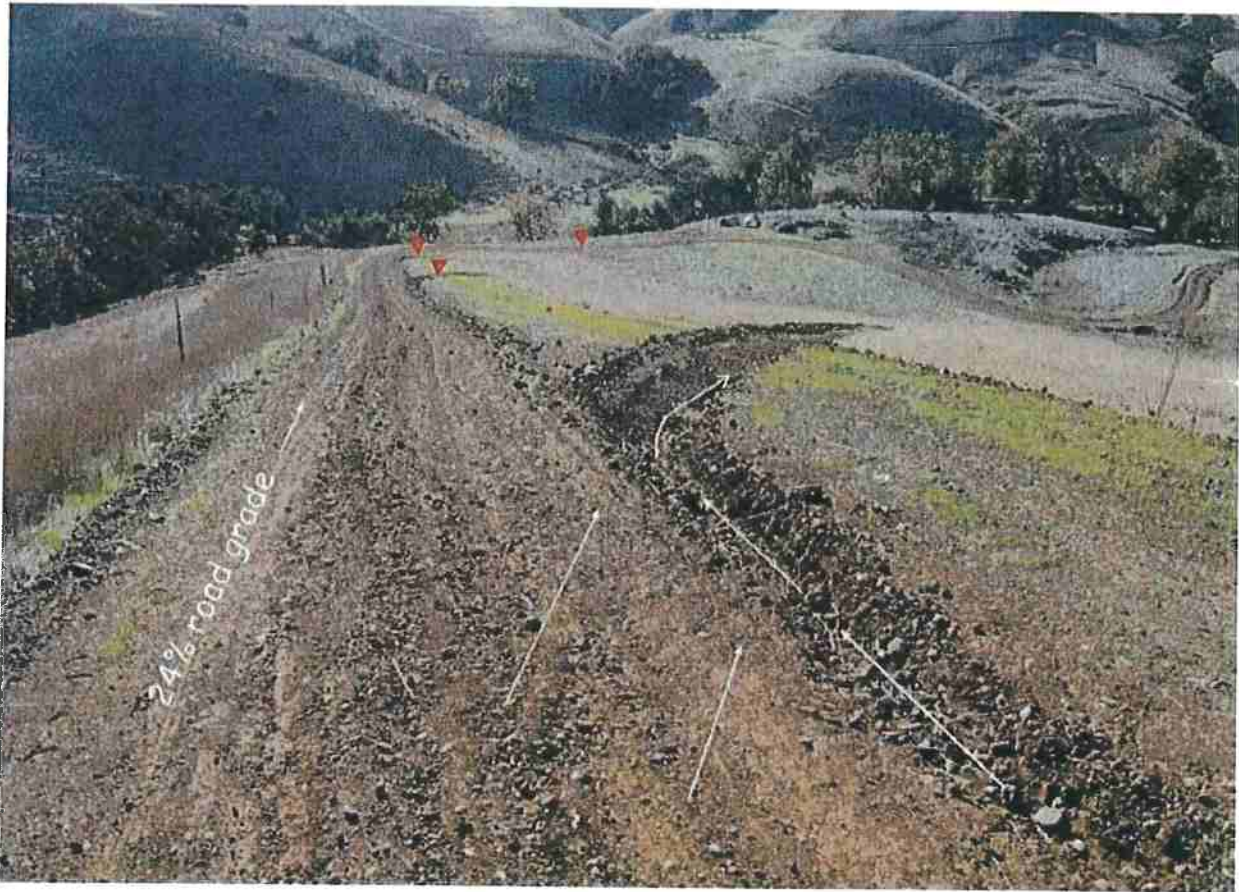
BMP: (Rocked) Rolling Dip (Cont.)

FIGURE 55. *Steep roads that go straight up or down a hillside are very difficult to drain. This steep, fall line road developed a through cut cross section that was drained using lead out ditches to direct runoff off the road and onto the adjacent, vegetated hillside. The road was "outsloped" to drain runoff to the right side, and the lead out ditch was built slightly steeper than the road grade, to be self-cleaning. Four lead out ditches have been constructed at 100-foot intervals to the bottom of the hillside.*

HANDBOOK FOR FOREST, RANCH AND RURAL ROADS

BMP: Permanent Culvert Crossing

- New culvert installations shall be sized to accommodate a 100-year storm.
- 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, at a minimum of one-third to one-half the culvert diameter.
- Critical dips shall be installed on culvert crossings to eliminate diversion potential. Refer to Figure 86 below.
- Road approaches to crossings shall be treated out to the first drainage structure (i.e. waterbar) 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 can not 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.

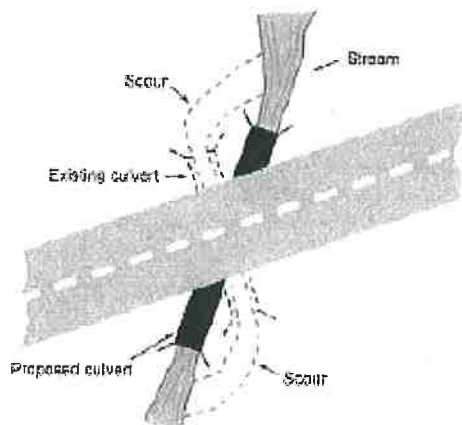


FIGURE 97. *Culvert alignment should be in relation to the stream and not the road. It is important that the stream enters and leaves the culvert in a relatively straight horizontal alignment so streamflow does not have to turn to enter the inlet or discharge into a bank as it exits. This figure shows 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).*

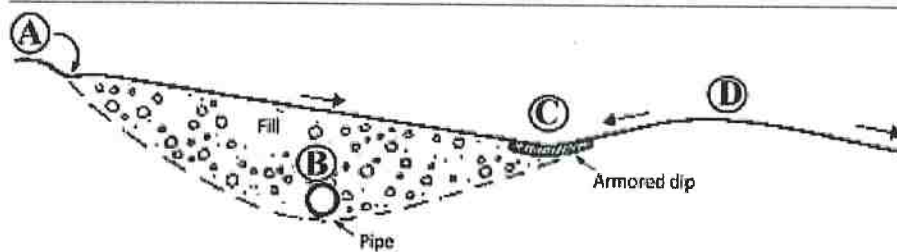
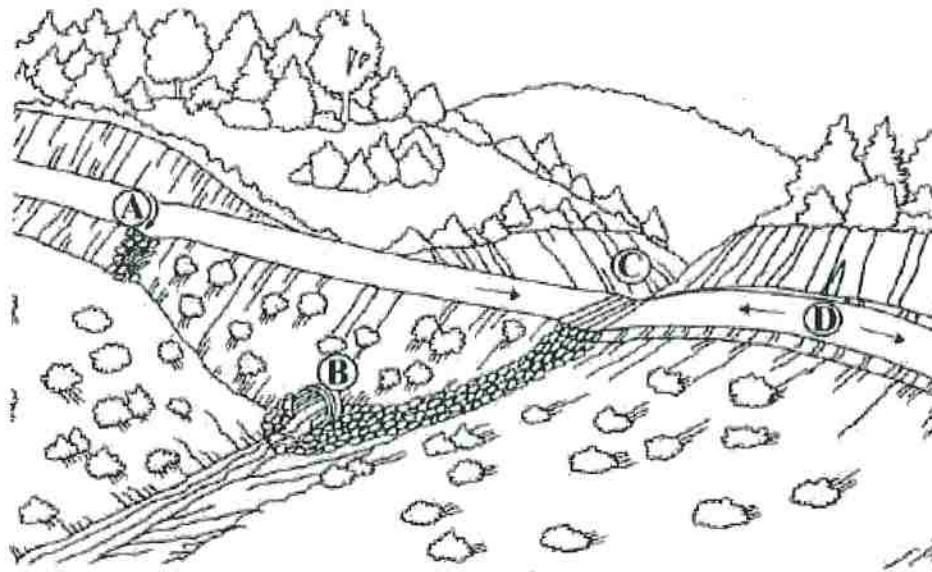
BMP: Permanent Culvert Crossing (Cont.)

FIGURE 84. Critical dips or dipped crossing fills should be centered near a stream crossing's down-road hingeline, 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 diverting 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).

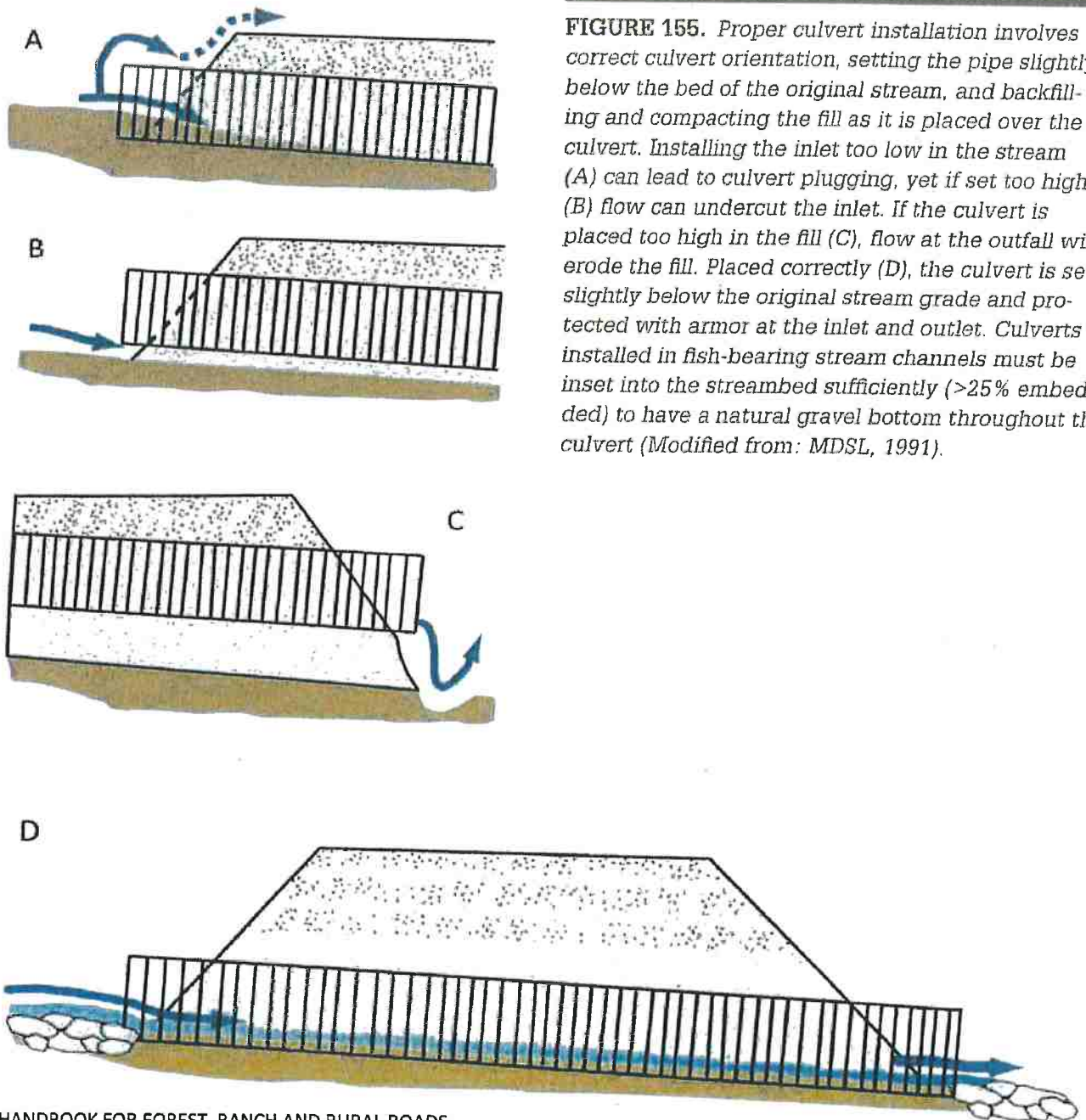
BMP: Permanent Culvert Crossing (Cont.)

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: Inlet and Outlet Armoring

- Inlets of culverts and associate fills shall be protected with rock armoring that extends at least as high as the top of the culvert.
- Outlets of culverts shall be provided a rocked energy dissipater at the outfall of the culvert.
- Outlets of culverts and associate fills shall be protected with rock armoring that extends at least as high as the top of the culvert if road fill sloughing into channel can occur.
- Prior to inlet and outlet rocking, the inlet and outlets shall be prepared. Preparation will include removal of vegetation and stored materials from the inlet and outlet.
- Inlets may require construction of an inlet basin.
- Slopes at the outlet should be shaped to a 2:1 or natural slope prior to placing rock armor.
- Rock used at culvert inlets and outlets should be a matrix of various sized rocks and rip-rap that range from a 3" dia. to a 2' dia.
- The largest rocks should be places at the base of the culvert or fill. Incrementally smaller rocks shall be placed over the larger rocks at the armoring extend up the slope. Voids and spaces shall be back filled with smaller gravels and rocks.

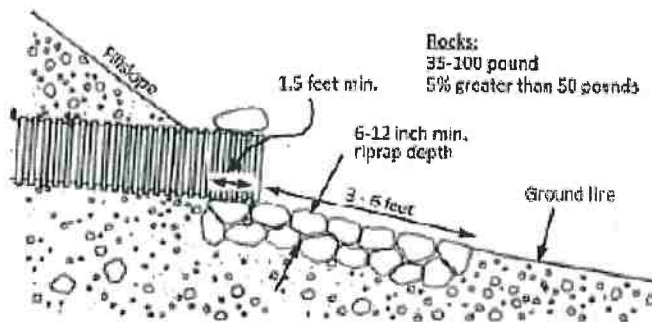


FIGURE 107A. Riprap armor at culvert outlet (Modified from: Keller et al., 2011).

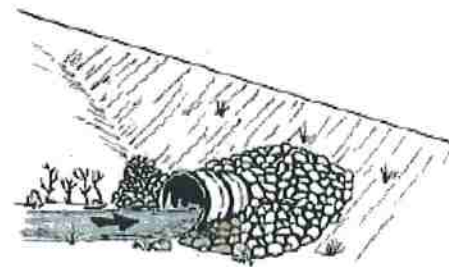


FIGURE 107B. Riprap armor at culvert inlet (Keller and Sherar, 2003).

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BMP: Stream Bank Armoring (Riprap)

- Riprap should be installed on top of geotextile fabric or a clean mixture of coarse gravel and sand.
- The riprap should be keyed into the streambed and extend below the maximum expected scour depth with an adequately sized key base width at a thickness of a minimum of 2x the median (D50) rock diameter with the largest stone sizes placed at the base of the riprap structure.
- The armor should be set into the streambank so it does not significantly protrude into, or constrict, the natural channel, or otherwise reduce channel capacity.
- The riprap should extend along the length of unstable or over steepened bank and up the bank sufficiently to encompass the existing bank instability and/or design flood elevations

United States Department of Agriculture



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