

Water Resource Protection Plan

APN 316-174-008

180101020103TRC57

Submitted to:

Patrick Murphy

Prepared by:

Timberland Resource Consultants

165 South Fortuna Blvd

Fortuna, CA 95540

Purpose

This Water Resource Protection Plan (WRPP) has been prepared on behalf of the property owner, Patrick Murphy, 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 reviewing soil maps (California Cooperative Soil-Vegetation Survey), CGS Geomorphic Features Map (North Coast Watersheds Mapping, DMG CD 99-002, 1999). 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.

Methods

Identified Sites Requiring Remediation

Location	Map Point Description	Associated Standard Condition	Temporary BMP	Permanent BMP	Treatment Priority	Time Schedule for completion of Permanent BMP	Completion Date
Road Point #1 GPS 724 N 40.8823' W -123.778'	Access Road - Drying/Processing Facility	A.1.a.	N/A	No cross drain exists, seasonal drainage delivers across and down existing access road. Placement of 18'-40' ditch relief culvert to convey water to grassland outlet	2	10/15/17	
Road Point #2 GPS 727 N 40.8826' W -123.778'	Main Access Road	A.1.a.	N/A	Placement of armor rolling dip to ensure surface water discharge.	2	10/15/17	
Road Point #3 GPS 728 N 40.8831' W 123.777'	Main Access	A.1.a.	N/A	Placement of armor rolling dip to ensure surface water discharge.	2	10/15/17	

Road Point #4 GPS 749 N 40.8843' W -123.777'	Main Access Road	A.1.a	N/A	Placement of armor rolling dip to ensure surface water discharge along with stability and longevity of dip	2	10/15/17	
Road Point #5 GPS 750 N 40.8843' W -123.777'	Main Access Road	A.1.a	N/A	Placement of armor rolling dip to ensure surface water discharge along with stability and longevity of dip	2	10/15/17	
Road Point #6 GPS 763 N 40.8836' W -123.777'	Main Access Road	A.1.a	N/A	Placement of armor rolling dip to ensure surface water discharge along with stability and longevity of dip	2	10/15/17	
Road Point #7 GPS 764 N 40.8833' W -123.778'	Main Access Road	A.1.a	N/A	Placement of armor rolling dip to ensure surface water discharge along with stability and longevity of dip	2	10/15/17	
Road Point #8 GPS 765 N 40.8829' W -123.778'	Main Access Road	A.1.a	N/A	Existing 18"-20' seasonal and inboard ditch drainage Culvert in good condition but shot- gunned and gully formation on the outlet	2	10/15/17	

				Placement of 8' x 10' rip rap energy dissipater			
Road Point #9 GPS 767 N 40.8823' W -123.78"	Main Access Road	A.1.a	N/A	Placement armor rolling dip to ensure surface water discharge along with stability and longevity of dip	2	10/15/17	
Road Point #10 GPS 768 N 40.8835' W -123.779'	Main Access Road	A.1.a	N/A	Construction of 20' x 10' rocked ford	2	10/15/17	
Road Point #11 GPS 777/792 N 40.8844' W -123.779'	Main Access Road	A.1.a	N/A	Inboard ditch partially filled with sediment Compromised ditch forcing water to scour road surface and rill lower portion of road Clean out inboard to convey water to outlet Placement of rolling dip prior to road break	2	10/15/17	

Road Point #12 GPS 778 N 40.8846' W -123.78'	Main Access Road	A.1.a	N/A	Reshape and armor rolling dip to ensure surface water discharge along with stability and longevity of dip	2	10/15/17	
Road Point #13 GPS 798 N 40.8823' W -123.777'	Main Access Road	A.1.a	N/A	Placement of rolling dip to ensure surface water discharge along with stability and longevity of dip	2	10/15/17	
Main Access Road	Main Access Road	A.1.a	N/A	Reshape and application of 6" surface rock	2	10/15/17	
Erosion Point #1 GPS 725 and 732 N 40.8827' W -123.777'	Main Access Road	A.1.a	N/A	Shallowly excavate drainage ditch and placement of 220' x 3' rip rap to buttress toe of bank= 660 sqft Replant slope with low growing shrubs such as <i>Sambucus mexicana</i> (blue elderberry, <i>Arctostaphylos</i> spp. (manzanita) and <i>Berberis nervosa</i> (dwarf Oregon-grape)	2	10/15/17	

Erosion Point #2 GPS 732 N 40.8833' W -123.777"	Main Access Road	A.1.a	N/A	Rill formation associated with above drainage channel Application of rip rap to ensure gully formation doesn't expand take place. 10' x 3' x 1'	2	10/15/17	
Erosion Point #3/ #4 GPS 731 N 40.8835' W -123.777'	Main Access Road	A.1.a	N/A	Excavate channel to ensure flow is directed towards the main channel	2	10/15/17	
Erosion Point #5 GPS 761 N 40.8835' W -123.777'	Main Access Road	A.1.a	N/A	Gutter runoff from greenhouse has resulted in rill formation that widens/deepens over the bank Shovel excavate and placement of rip rap 20' x 3' x 1'	2	10/15/17	
Erosion Point #6 GPS 764 N 40.8833' W -123.778'	Main Access Road	A.1.a	N/A	Existing bank slump (43' x 10') associated with road drainage and irrigation practices Excavate material, placement of toe buttress, replace fill material and reseed/mulch with erosion control mix Toe Buttress 43' x	2	10/15/17	

				3'			
Erosion Point #7 GPS 759 N 40.8846' W -123.778'	Main Access Road	A.1.a	N/A	Bank drainage channel routes around cultivation site. Placement of armor at the outlet of ditch to capture sediment fines from Cultivation Site # 1 20' x 3' x 1' rip rap application	2	10/15/17	
Erosion Point #8 GPS 783 N 40.94046827' W-123.72084724'	Main Access Road	A.1.a	N/A	Bank drainage channel routes around cultivation site. Placement of armor at the outlet of ditch to capture sediment fines from Cultivation Site #6. 20' x 3' x 1' rip rap application	2	10/15/17	
Erosion Point #9	Main Access Road	A.1.a	N/A	Bank drainage channel routes around drying facility. Placement of armor at the outlet of ditch to capture sediment fines and material associated with stockpiled material 20' x 3' x 1' rip rap application	2	10/15/17	

Stockpile #1 Drying/ Processing Facility	Main Access Road	A.1.a	N/A	Material near drainage ditch Removal from within ditch to prevent material from moving downslope or obstructing channel flow.	2	10/15/17	
Stream Crossing #1 GPS 733 N 40.8838' W -123.777'	Main Access Road	A.2.a	N/A	Culvert outlet plugged with sediment and rock Removal of obstruction to allow efficient flow	2	10/15/17	
Spoils Location #1 GPS 771 N 40.8841' W -123.779'	Main Access Road	A.4.a	N/A	Spoils located within 50' of watercourse Removal of spoils to ensure delivery opportunities are reduced.	3	10/15/17	
Spoils Location #2 GPS 773 N 40.8837' W -123.779'	Main Access Road	A.4.a	N/A	Spoils located within 50' of watercourse Removal of spoils to ensure delivery opportunities are reduced.	3	10/15/17	
Water Storage and Use	Raincatchme nt Pond	A.5.a	N/A	Placement of water meter at sites	2	4/15/17	

GPS 744 N 40.8849' W -123.776'	& Cultivation Site #1						
GPS 748 N 40.8846' W -123.777'	& Top of Property Storage Tank						
GPS 799 N 40.8831' W -123.776'							
Water Storage and Use Throughout	Throughout	A.5.a	N/A	Placement of float valves on all storage tanks	2	4/15/17	
Irrigation Efficiency	All Cultivation Sites	A.6.a	N/A	Conduct monitoring and reporting on application rates	2	10/15/17	
Irrigation Efficiency	Cultivation #2, 3 and 5	A.6.a	N/A	Cultivation #2, 3 and 5 are to be transitioned to drip irrigation	2	4/15/17	
Fertilizers and Soil Amendments	Throughout	A.7.a	N/A	Conduct monitoring and reporting on application rates	2	10/15/17	
Petroleum Throughout	Throughout	A.9.a	N/A	Provide spill trays for all generators and gas containers	2	4/15/17	

Coordinates associated with sites UTM 10 NAD 83

Treat Priority: The time frame for treatment of each specific site.

- (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 a year 1, or prior to the winter period (Nov. 15) of the 2nd season of operations.
- (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).

Identified Sites Not Requiring Mitigation

Site	Description	Planned Monitoring

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>).

Inspection Personnel Contact Information:

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707-601-7014

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.

Water Resource Protection Plan

Assessment of Standard Conditions

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Assessment of Standard Conditions consisted of field examinations in the summer of 2016. The examination 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**

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.

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

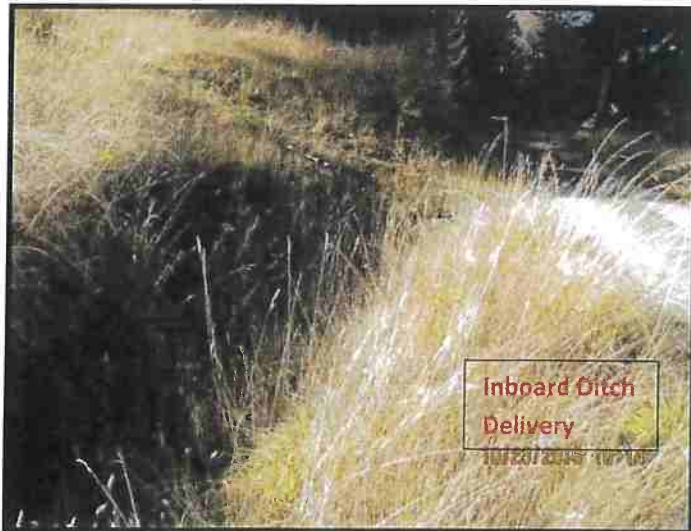
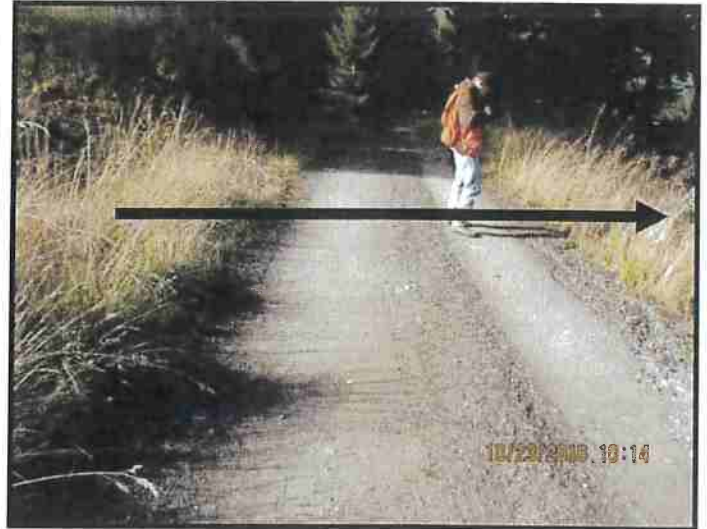
C) Roads and other features shall be maintained so that surface runoff drains away from potentially unstable slopes or earthen fills. Where road runoff cannot be drained away from an unstable feature, an engineered structure or system shall be installed to ensure that surface flows will not cause slope failure.

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.

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.

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)

Road Point #1: GPS 724



- No cross drain exists, seasonal drainage delivers across and down existing access road.
- Placement of 18'-40' ditch relief culvert to convey water to grassland outlet

Road Point #2: GPS 727

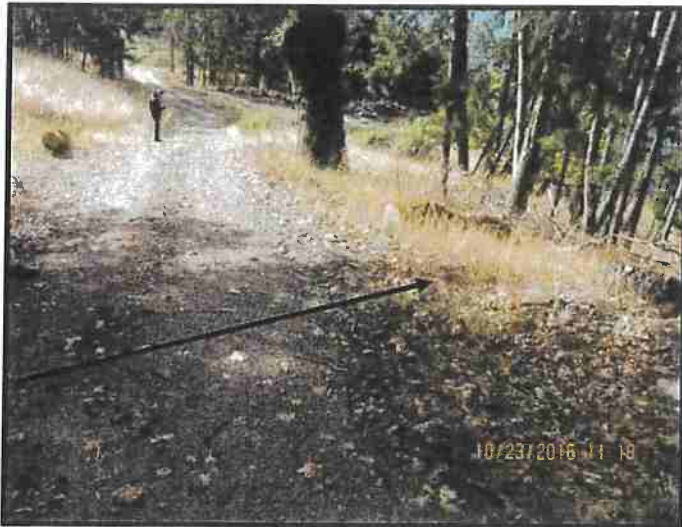
- Placement of armor rolling dip to ensure surface water discharge. Armoring ensures stability and longevity
- Reshape and application of 6" surface rock equaling 5050'



Road Point #3: GPS 728

- Reshape and armor rolling dip to ensure surface water discharge along with stability and longevity of dip
- Armor outlet of dip to prevent further downcutting
- Continue to reshape and application of 6" surface rock





Road Point #4: GPS 749

- Placement of armor rolling dip to ensure surface water discharge along with stability and longevity of dip
- Continue to reshape and application of 6" surface rock

Road Point #5: GPS 750/751

- Placement of armor rolling dip to ensure surface water discharge along with stability and longevity of dip
- Crown road to drain road towards both the inboard and outboard side
- Continue to reshape and application of 6" surface rock



Road Point #6: GPS 763

- Placement of armor rolling dip to ensure surface water discharge along with stability and longevity of dip
- Continue to reshape and application of 6" surface rock



Road Point #7: GPS 764

- Reshape and armor rolling dip to ensure surface water discharge along with stability and longevity of dip
- Continue to reshape and application of 6" surface rock



Road Point #8: GPS 765

- Existing 18"-20' seasonal and inboard ditch drainage
- Culvert in good condition but shotgunned and gully formation on the outlet
- Placement of 8' x 10' rip rap energy dissipator
- Continue to reshape and application of 6" surface rock



Road Point #9: GPS 767

- Placement armor rolling dip to ensure surface water discharge along with stability and longevity of dip
- Continue to reshape and application of 6" surface rock



Road Point #10: GPS 768

- Seasonal drainage that overtops the road and creates muddy conditions
- Water eventually drains toward ditch and downslope
- Construction of 20' x 10' rocked ford





Road Point #11: GPS 777/792

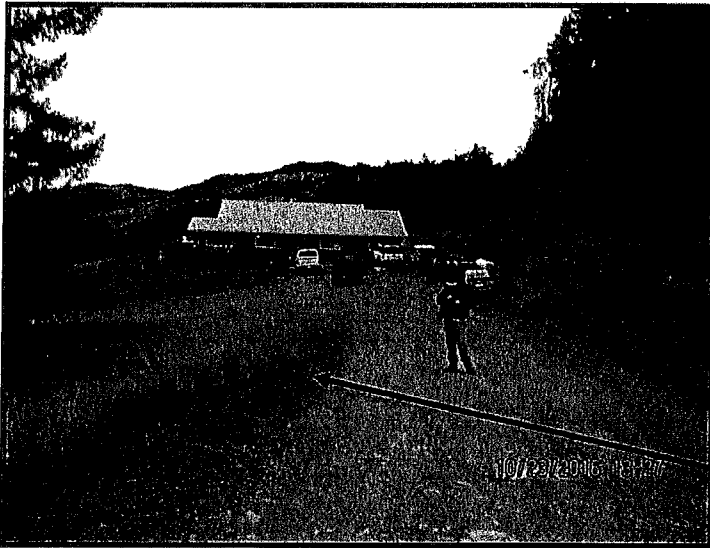
- Inboard ditch partially filled with sediment
- Compromised ditch forcing water to scour road surface and rill lower portion of road
- Clean out inboard to convey water to outlet
- Placement of rolling dip prior to road break



Road Point #12: GPS 778

- Reshape and armor rolling dip to ensure surface water discharge along with stability and longevity of dip
- Continue to reshape and application of 6" surface rock



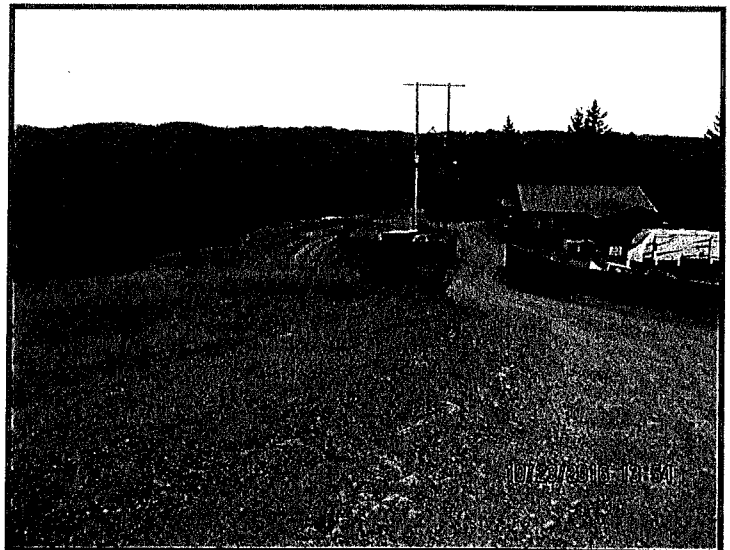


Road Point #13: GPS 798

- Placement of rolling dip to ensure surface water discharge along with stability and longevity of dip
- Continue to reshape and application of 6" surface rock

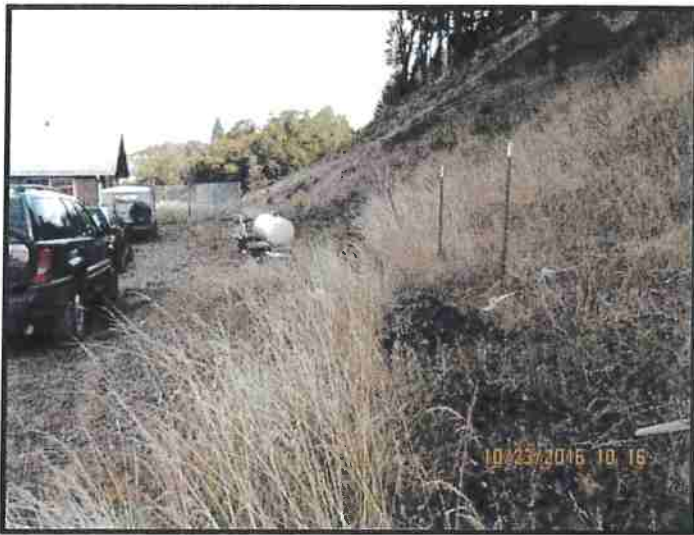
Road Point #14:

- Begin reshape and application of 6" surface rock



Erosion Point #1 GPS 725 and 732

- Drainage ditch along the toe of steep bank adjacent to residence
- Bank slump has occurred and blocked ditch from appropriately draining
- During precipitation events, water overtops and spreads across residence parking area
- Shallowly excavate drainage ditch and placement of 220' x 3' rip rap to buttress toe of bank= 660 sqft
- Potentially replant slope with low growing shrubs such as *Sambucus mexicana* (blue elderberry, *Arctostaphylos* spp. (manzanita) and *Berberis nervosa* (dwarf Oregon-grape)



Erosion Point #2 GPS 732

- Rill formation associated with above drainage channel
- Application of rip rap to ensure gully formation doesn't take place.
- 10' x 3' x 1'



Erosion Point #3 GPS 731

- Drainage channel has diverted and splits in two(2) directions.
- The main channel flows to the right into a stabilized channel associated with Stream Crossing #1
- The diverted channel to the left is scouring out the bank associated with Erosion Point #4
- Excavate channel to ensure flow is directed towards the main channel

Erosion Point #4 GPS 731

- The diverted channel from above has scouring out the bank and delivered to lower access road
- Excavate channel to ensure flow is directed towards the main channel
- Erosion point should stabilize with diversion addressed



Erosion Point #5 GPS 761

- Gutter runoff from Cultivation #1 greenhouse eating rill formation over the side bank. Rill forms in gully on bank
- Shovel excavate and placement of rip rap
- 20' x 3' x 1' = 60 sqft



Erosion Point #6 GPS 764

- Existing bank slump (43' x 10') associated with road drainage and irrigation practices
- Excavate material, placement of toe buttress, replace fill material and reseed/mulch with erosion control mix
- Toe Buttress 43' x 3'



**** Refer to suggested erosion control mix***

Erosion Point #7 GPS 759

- Bank drainage channel routes around cultivation site.
- Placement of armor at the outlet of ditch to capture sediment fines from Cultivation Site # 1.
- 20' x 3' x 1' rip rap application



Erosion Point #8 GPS 783

- Bank drainage channel routes around cultivation site.
- Placement of armor at the outlet of ditch to capture sediment fines from Cultivation Site #6.
- 20' x 3' x 1' rip rap application





Erosion Point # 9 GPS

- Bank drainage channel routes around drying facility.
- Placement of armor at the outlet of ditch to capture sediment fines and material associated with stockpiled material
- 20' x 3' x 1' rip rap application

**** All erosion related sites shall be monitored prior to and following prescribed treatments***

**** Refer to Figure 28/36-Rolling Dip Types -The Handbook for Forest, Ranch and Rural Road***

**** Refer to Figure 79-Rip Rap Application -The Handbook for Forest, Ranch and Rural Road***

**** Refer to Figure 120-Rocked Ford -The Handbook for Forest, Ranch and Rural Road***

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

Stockpile #1: Drying/Processing Facility

- Stockpile of greenhouse/infrastructure construction material including plastic, metal and wood.
- Material near drainage ditch
- Removal from within ditch to prevent material from moving downslope or obstructing channel flow.





2. Stream Crossing Maintenance

Culverts and stream crossings shall be sized to pass the expected 100-year peak streamflow.

Culverts and stream crossings shall be designed and maintained to address debris associated with the expected 100-year peak streamflow.

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.

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.

Culverts shall align with the stream grade and natural stream channel at the inlet and outlet where feasible.²

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

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 #1: GPS 733

- Existing 24"-20' culvert
- Culvert in good condition
- Outlet plugged with sediment and rock
- Removal of obstruction to allow efficient flow



** All stream crossings are sized for the 100 year storm event using the rationale method.*

3. Riparian and Wetland Protection and Management

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 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 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.

Buffers shall be maintained at natural slope with native vegetation.

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.

- Standard condition is being met 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.

4. Spoils Management

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

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

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.

Spoils Location #1 -GPS 771

- Spoils located within 50' of watercourse
- Removal of spoils to ensure delivery opportunities are reduced.



Spoils Location #2 -GPS 773

- Spoils located within 50' of watercourse
- Removal of spoils to ensure delivery opportunities are reduced.

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.

5. Water Storage and Use

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.

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.

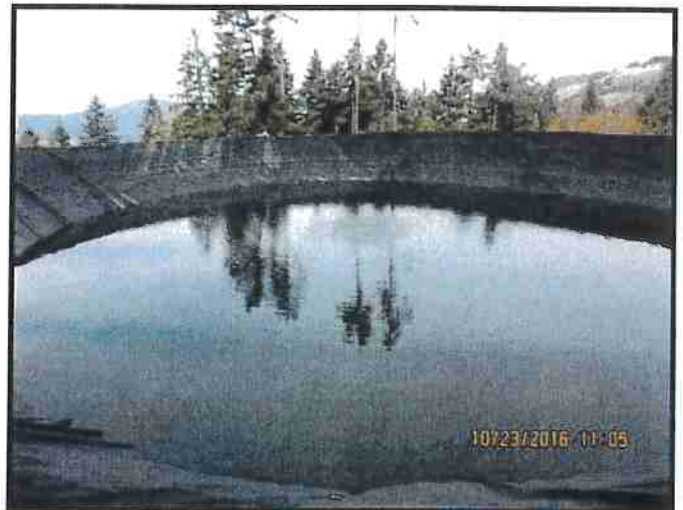
For Tier 2 Dischargers, if possible, develop off-stream storage facilities to minimize surface water diversion during low flow periods.

Water is applied using no more than agronomic rates.⁷

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. 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.

Main Irrigation Source (GPS 741-747)

- Rain catchment pond
- 135' x 120' x 20
- 324,000 gallon pond
- Pump house (GPS 744)
- Armored overflow-GPS 745
- No water meter attached to pond



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

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.



Two (2) delivery routes

1) Delivery to a 5000 gallon (GPS 748) storage tank that delivers to Cultivation Site #3

- No float installation within storage tank



- Delivered by a 3/4" Polyethylene pipe to two (2) 500 gallon mixing tanks (GPS 760)



Cultivation Site #1 involves:

1) Greenhouse: (GPS 757-760)

- One (1) 70 x 30 Greenhouse= 2100 sqft
- Three (3) 7' x 60' raised beds=1260 sqft
- Drip irrigation with mushroom emitters
- Shredded bark used within greenhouse for water conservation purposes

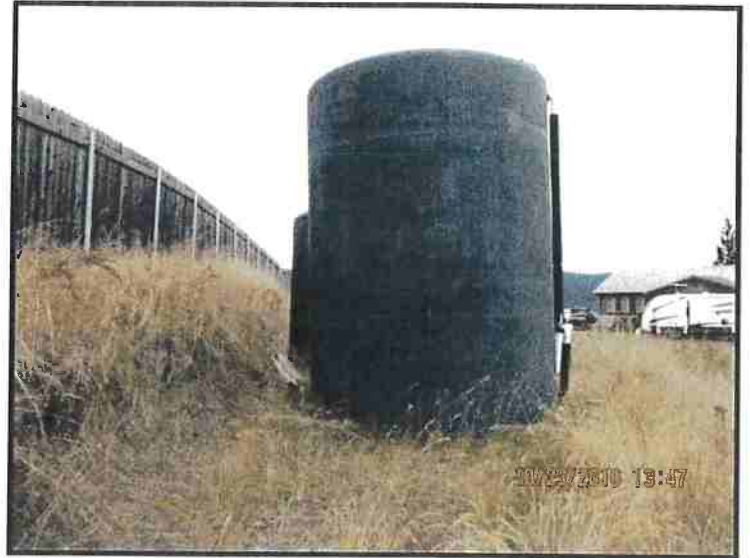


2) Cultivation Trench #1

- Equaling 70' x 15'= 1050 sqft
- Nine (9) Inground plants

2) Pumped by a 2" pvc pipe to two (2) storage tanks at the top of the property and gravity fed/generator(s) to other cultivation sites

- One (1) 5000 gallon storage tank and one (1) 7500 gallon storage tank
- No float installation on tanks



Cultivation Site #2: GPS 734-738

Smartpots

- 62' x 55'=3410 sqft
- Consists of nine (9) plants within 4 x 4 smart pots
- Fenced to protect from wildlife impacts
- Handwatered with the intent to place on drip irrigation system

Cultivation Site #3:

Smartpots

- 77' x 75' = 5775 sqft
- Consists of fourteen (14) plants within 4 x 4 smart pots
- Handwatered with the intent to place on drip irrigation system



- Gravity fed to one (1) 2500 gallon storage tank (GPS 769)



Cultivation Site #4: (GPS 769-774)

Raised Beds and Smart Pots

- 165' x 112' = 18,480 sqft
- Consists of one hundred (100) plants within 4 x 4 smart pots
- Consist of two (2) 8' x 60' raised beds = 480 sqft x 2 = 960 sqft
- Drip system installed
- No float system in place



Cultivation Site #5: (GPS 793-796)

- Not in use at this time, but future use expected
- Total Perimeter=260.5'
- When not in use, application of erosion control seed mix and straw mulch is necessary to reduce soil loss and invasive species establishment





- Irrigation continues to a nearby 5000 storage tank (GPS 776) by a 3/4" polyethylene pipe
- Gravity fed to Cultivation #6 and into 500 gallon mixing tank (GPS 779)

Cultivation Site #6:

1) Greenhouse (GPS 780-783)

- One (1) 70 x 30 Greenhouse=2100 sqft
- Three (3) 7' x 60' raised beds= 1260 sqft
- Drip irrigation with mushroom emitters
- Shredded bark used within greenhouse for water conservation purposes





2) Cultivation Trench

- Equaling 70' x 15' = 1050 sqft
- Nine (9) In-ground plants





Two (2) Cultivation Terraces (GPS 784-787)

- 60' x 9' each= 540 sqft x 2= 1080 sqft

- When not in use, application of erosion control seed mix and straw mulch is necessary to reduce soil loss and invasive species establishment.



Square Footage and Water Use

1) Handwatering

SmartPots

Cultivation Site #2: 4' x 4' = 9 Plants=Total Cultivation Area=3410 sqft

Cultivation Site #3: 6' x 6' smart pots= 14 Plants= Total Cultivation Area 4900 sqft

Cultivation Site #4: 6' x 6' smart pots =100 Plants=Total Cultivation Area 9050 sqft

17360 sqft

2) Mushroom Bubblers

Cultivation Trench

Cultivation Site #1-Trench #1= 9 Plants= 1050 sqft

Cultivation Site #6 Trench #2= 9 Plants= 1050 sqft

2120 sqft

Greenhouses

Cultivation Site #1- 1st Greenhouse: One (1) 70' x 30' greenhouse=2100 sqft

Cultivation Site #6 - 2nd Greenhouse: One (1) 70' x 30' greenhouse=2100 sqft

2520 sqft

Raised Beds

Cultivation Site #4: Two (2) 8' x 60' raised beds x 2= Part of Smartpot square footage

Total Sqft=22,000

Available/Utilized Water

From Rain Catchment and Storage Tanks= 324,000 gallons (Raincatchment Pond) + 19,000 (Storage/Mixing Tank)= 343,000 gallons

1) Hand watered

Cultivation Site #2: 4 x 4 Smart Pots=

- 5 gallons every other day
- Approximately 9 plants

5 gallons x 15 days= 75 gallons per month/per plant

9 plants x 75 gallons/month= 675 gallons per month

675 gallons x 6 months= 4,050 gallons per season

Cultivation Site #3: 6 x 6 Smart Pots= 400 gallon pots

- 10 gallons every other day
- Approximately 14 plants

10 gallons x 15 days= 150 gallons per month/per plant

14 plants x 150 gallons/month= 2110 gallons per month

2110 gallons x 6 months= 12,600 gallons per season

Cultivation Site #4: 6 x 6 Smart Pots

- 10 gallons every other day
- Approximately 100 plants

10 gallons x 15 days= 150 gallons per month/per plant

100 plants x 150 gallons/month= 15,000 gallons per month

15,000 gallons x 6 months= 90,000 gallons per season

2) Mushroom Bubblers

Trench/ Outside Raised Beds/ Geenhouse Raised Beds

- Plants are watered every 2 days equaling approximately 560 gallons per watering.

560 gallons x 15 days of watering/month = 8400 gallons per month

8400 gallons/month x 6 months= 50,400 gallons per season

Handwatering-Total Gallons Utilized Between April-October = 106,650 gallons per season

Mushroom Bubblers-Total Gallons Utilized Between April-October = 50,400 gallons

Total Irrigation Used: 157,050 gallons

Standard condition is being met at this time, irrigation schedule will be documented and reported in 2017

6. Irrigation Runoff

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.

- The irrigation system for both the full term and greenhouse's are on drip irrigation systems.
- Cultivation #1, 4 and 6 are on a mushroom bubbler system
- Cultivation #2, 3 and 5 are hand watered-Transition to drip irrigation
- Due to the distance between the greenhouses and watercourses there should be no hydrological connectivity between irrigation and watercourse.
- Refer to irrigation schedule. Additional monitoring and reporting to take place in 2017.



7. Fertilizers and Soil Amendments

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 shall be applied and used per packaging instructions and/or at proper agronomic rates.

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

- Permanent structure stores all organic fertilizers and soil amendments.
- Within greenhouses, raised beds have not been changed out for 10 years

Soil Mix

1) 70% Recycled Soil from on-site cultivation

2) 30% Royal Gold

- Delivered in bulk soil
- A heavily amended, planting style mix



Liquid Organic Fertilizers

Mineral based fertilizers used include: Cutting Edge Hydroponic Nutrients

GROW:

Micro

Comprised of a high quality Nitrogen and Calcium base, fortified with micro nutrients. **Micro** is to be used throughout the entire growth cycle of a plant, regardless of vegetative or flowering cycles.

N 6.00% – P 0.00% – K 0.00%

800 ml per 100 gallons



Grow

To be used in the vegetative stage, adds more Nitrogen for growth, and Potassium to enhance the plant's photosynthetic rate and energy transfer throughout the plant.

N 2.00% – P 1.00% – K 6.00%

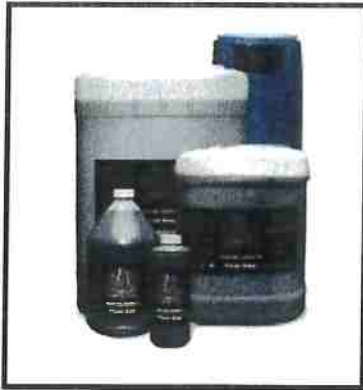
1600 ml per 100 gallons



Bloom is the second component of the base three part blooming formula, to be used in conjunction with the **micro**. Bloom is a Phosphorus heavy formula for enhancing flower production, as well as to encourage a plant to shift it's hormonal signals from vegetative to flowering. Bloom also contains Potassium to enhance the plant's photosynthetic rate and energy transfer throughout the plant.

N 0.00% – P 6.00% – K 5.00%

500 ml per 100 gallons



Plant Amp

Calcium is the basis of cell wall development in a plant and the organic Calcium in Plant AMP is extremely soluble, providing an easily utilized source of Calcium.

350 ml in combination with Mag-Amped per 100 gallons

Mag-Amped is a Magnesium product, proprietary, proven formula, is readily available and easy for the plant to uptake, with an excellent overall solubility.

Magnesium is essential for chlorophyll production in plants, in turn chlorophyll is the component in photosynthesis, essentially starting the process through collection of light energy.

350 ml in combination with Plant Amp per 100 gallons

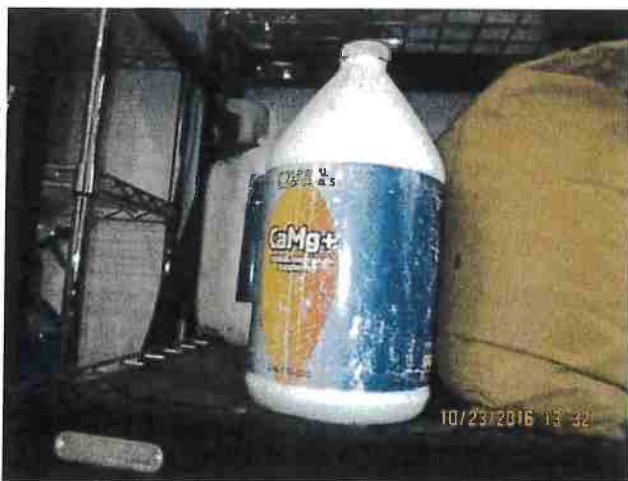


BLOOM:

Micro= 800 ml per 100 gallons

Bloom= 1600 ml per 100 gallons

Cal/Magnesium= 500 ml per 100 gallons

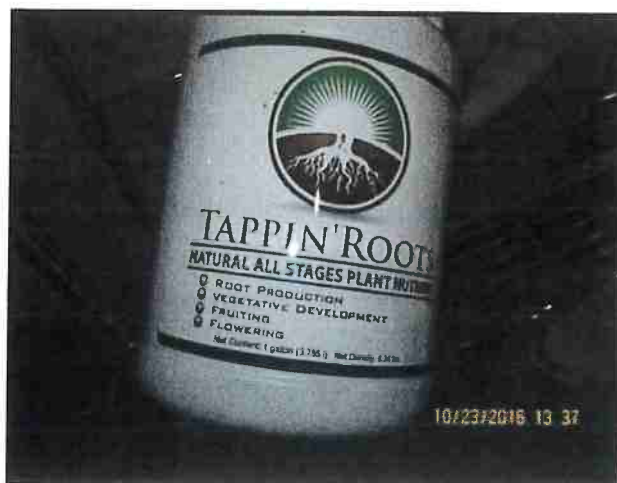


General Organics-Calcium Magnesium Supplement

- Supplement to provide a natural source of Calcium and Magnesium, critical elements in a plant's growth cycle.
- CaMg+ is biologically catalyzed from oyster shell, dolomite lime, and natural plant extracts.
- Through the use of organic compounds, CaMg+ increases calcium and magnesium transport into the plants. This optimizes plant metabolism, enhancing growth and creating healthier flowers and fruits.

Tappin Roots

- Fertilizer made of botanical extracts that are high in micronutrients and are specifically rich in phytohormones.



Sugaree

- N 0.00% – P 0.00% – K 2.00%
- Provides organic carbohydrate and electrolyte source to stimulate amino acid production
 - Adds a carbohydrate source at the end of the flowering season
 - Low molecular weight sugar source
 - Provide the plant with the energy it requires to fuel respiration
 - Provides increases in fruit set, retention and sugar production

Primordial Solutions-Sea Green

N 1.00% – P 0.5% – K 4.00%

- Make nutrient absorption possible even under high salt conditions
- Break down nutrients into forms that can be easily absorbed by your plants
- Increase the amount and type of nutrients that can be absorbed. Keep essential nutrients available
- Aid in the prevention of diseases and pests
- Prevent nutrients from leaching out of the soil Sea Green works with soil and hydroponics

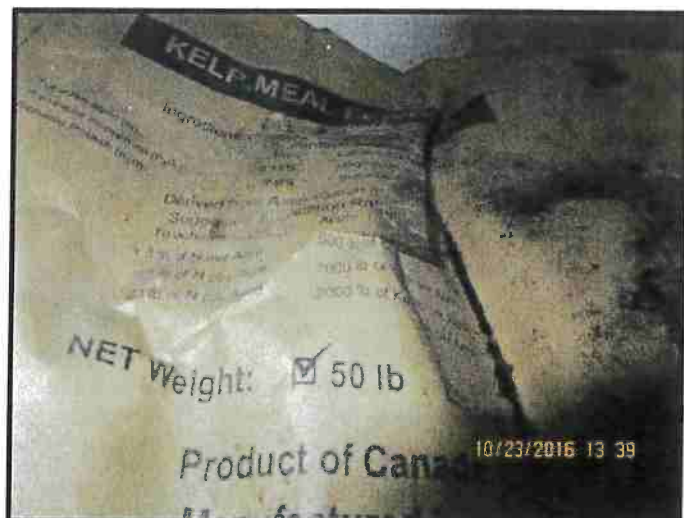
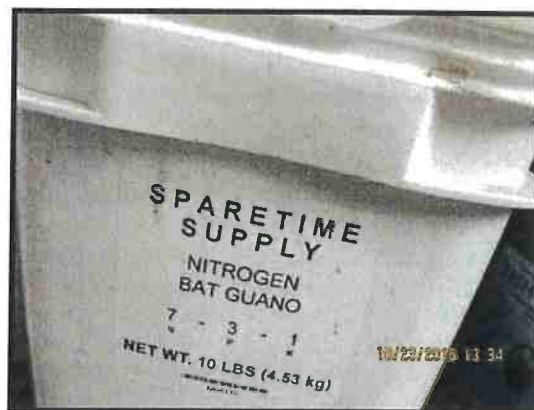


Top Dressing Amendments

Amended during spring and mid summer

Sparetime

- ❖ Nitrogen Bat Guano
 - N 7.00% – P 3.00% – K 1.00%
- Feather meal
 - N 12.00% – P 0.00% – K 0.00%
- Palm Bunch Ash
 - N 0.00% – P 0.00% – K 15.00%



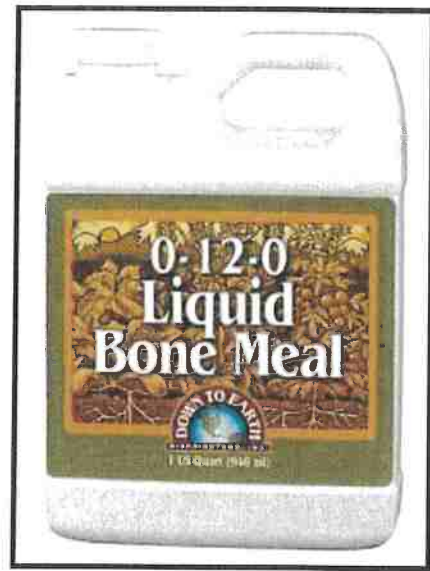
Kelp Meal Fertilizer

- N 1.00% – P 0.15% – K 2.00%
- Made from *Ascophyllum nodosum* seaweed
- An excellent source of micronutrients and beneficial plant growth promoters.

- Contains over 60 naturally-chelated minerals and essential elements that the fast-growing sea plant absorbs from the cold, nutrient-rich waters of the North Atlantic.

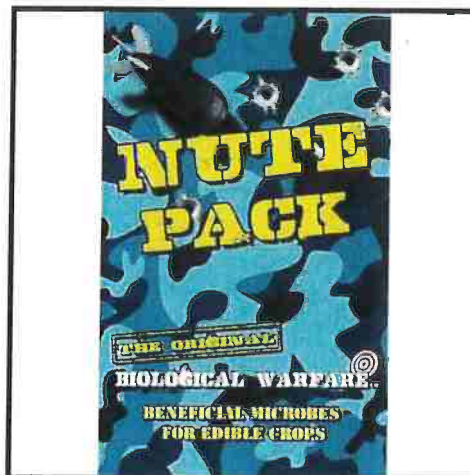
Liquid Bone Meal

- N 1.00% – P 0.15% – K 2.00%
- Provides essential nutrients for metabolic functions, cell structure and flower formation



Beneficial Microbes

- OG Bioware Nute Pack



Humic Substances

- Nutrient Chelation, Retention & Increased availability of soil bound nutrients

- Humboldt Solutions Humic Acid Powder



- BioAG Ful-Power-Fulvic Acid

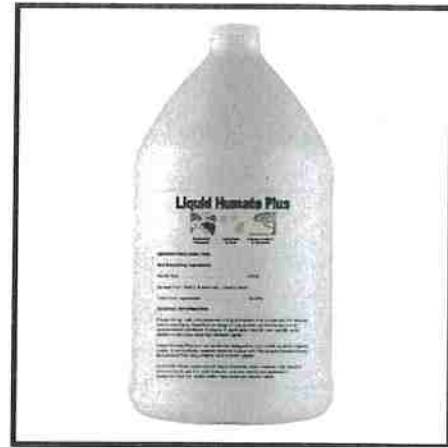


- Baseline Humus Compost



Liquid Humate Plus

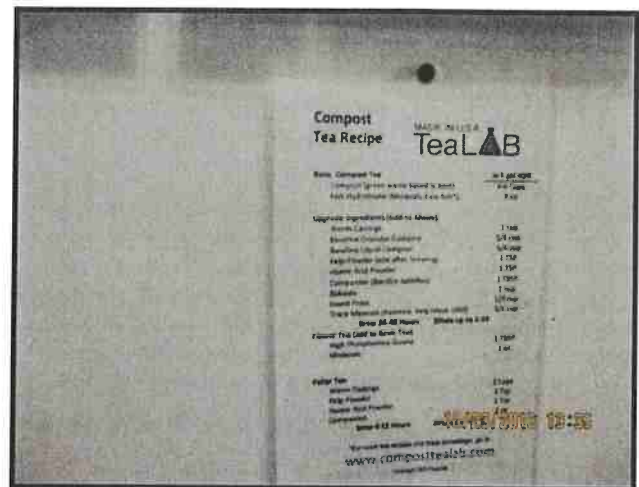
Concentrated liquid source of humic acids extracted from high-quality lignite.



Compost Tea Mix

Biological Brew

- Compost Tea is applied to all cultivation sites. 200 gallons are sprayed once a week.
- N 1.00% – P 5.00% – K 2.00%
- Designed to cleanse and inoculate root tissue, build strong cell walls, and to provide a complete spectrum of nutrients and minerals.

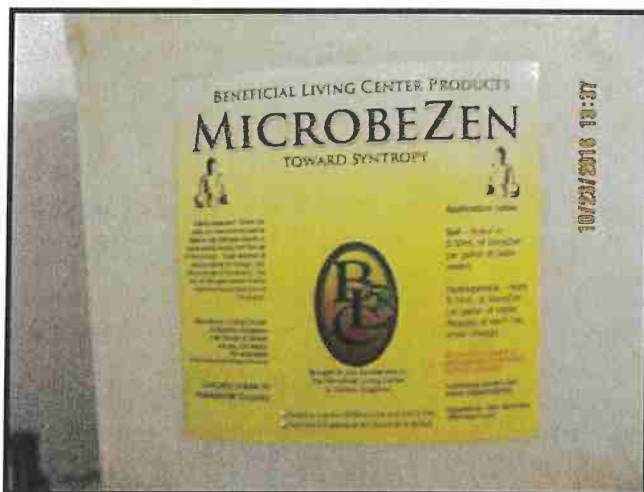


Beneficial Living Products-Fish Fusion

- Fish hydrolysate used for all purpose fertilizer and sourced specifically for compost tea.

Progress Earth-Earth Compound

- Used as a compost tea inoculant, a soil/hydroponic amendment, or as a field spray
- N 0.5% – P 0.00% – K 0.00%

**Beneficial Living Center-MicrobeZen**

- Diverse culture of anaerobic and facultative bacteria
- Unlocking nutrients bound up in organic matter
- Break down old root matter in the soil between crop runs
- Used during growth and flowering stages to accelerate nutrient cycling and plant growth.
- Added to compost tea regularly as an after-brew spike to increase the biodiversity

Natural surfactant or wetting agent**Beneficial Living Center-Yucca Wet**

- The natural saponins in yucca extracts depolarize the water molecule, allowing foliar sprays to spread out more evenly on the waxy leaf surface.
- The thin film that is created covers a greater surface area on the leaf for better and more even absorption by the plant cells.



Coco Wet



- Formulated to be mixed with your liquid foliar sprays to make them work better by increasing the product absorption rate through the leaves and stems of your plants.

- 100% organic

- All label instructions are followed.

- Dispose in accordance with local, state and federal regulations.

- Standard condition is being met at this time, but fertilizer application schedule will be documented and reported in 2017.

8. Pesticides/Herbicides

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 are applied once a week up to the day of harvest.

1) Sparetime Diatomaceous Earth

- Dangerous to creatures with an exoskeleton, diatomaceous earth kills insects (such as ants, bed bugs, fleas, cockroaches, mites and aphids or non-insects like spiders and scorpions) by



absorbing lipids through the cuticles of their carapace and dehydrating them.

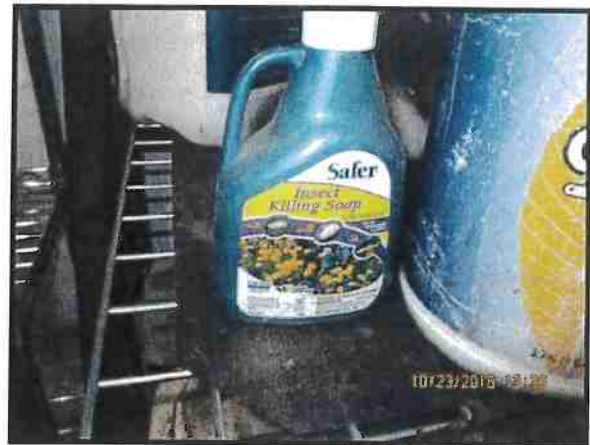


2) Met 52 EC

- Contact bioinsecticide that utilizes a pathogenic fungus for the effective control of thrips, whiteflies and vine weevil in greenhouse ornamentals, protected vegetables, and outdoor fruits and vegetables.
- Met52 fungal spores are suspended in an emulsifiable oil, which can be applied foliar or drenched into the soil.

Safer Insect Killing Soap

- Organic Materials Research Institute (OMRI) Listed insecticidal soap to eliminate soft-bodied insects.
- Utilizes the power of potassium salts of fatty acids (insecticidal soap). The potassium salts weaken the insect's waxy protective outer shell.



Monterey B.t.

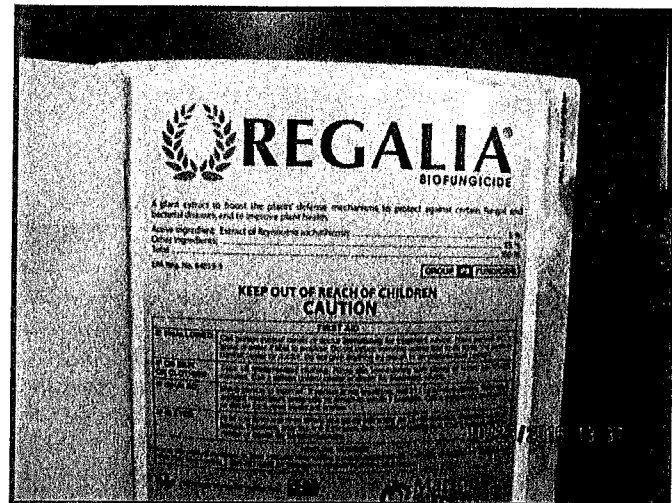
- Biological Insecticide
- Controls Worms & Caterpillars on Fruits, Vegetables, Ornamentals & Shade Trees in and around the Home Garden

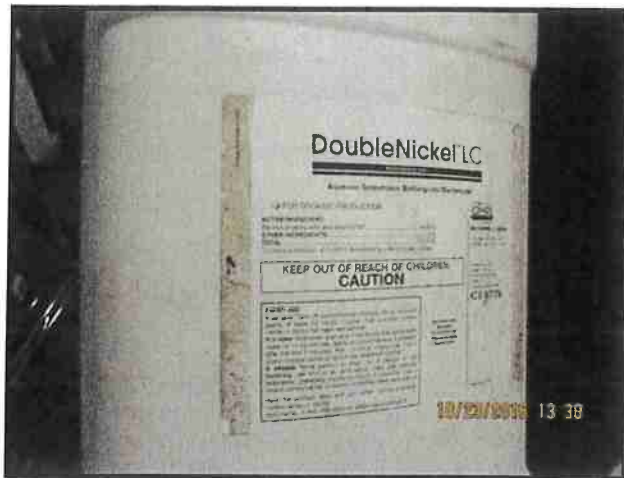
Azamax

- Natural product with a broad spectrum of pest control and broad plant applications
- The special feature of AzaMax is that it does not use hard chemical solvents and uses food grade formulation ingredients
- It effectively controls spider mites, thrips, fungus gnats, aphids, whiteflies, leaf miners, worms, beetles, leafhoppers, scales, mealy bugs, nematodes and other soil borne pests.
- Uses food grade formulation ingredients
- AzaMax is an antifeedant and insect growth regulator which control pests through starvation and growth disruption

Regalia Biofungicide

- Advanced biofungicides activate a plant's natural defenses to protect against a variety of fungal and bacterial diseases.
- Protection against a wide range of foliar and soil-borne pathogens
- Improves overall plant health which can translate into a yield increase, enhanced root development, and plant vigor



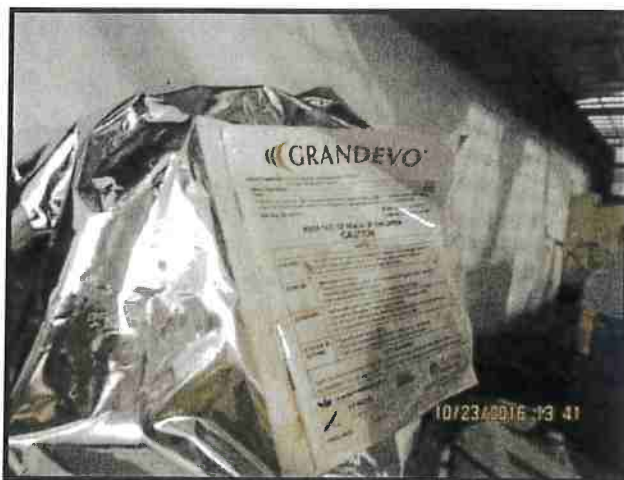
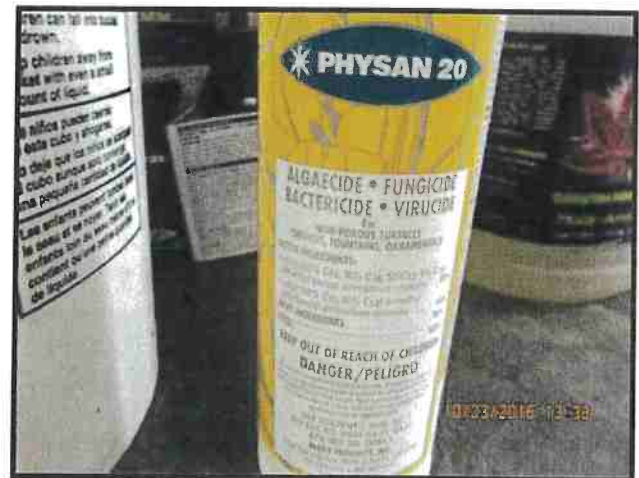


DoubleNickel LC Biofungicide

- *Bacillus amyloliquefaciens* strain D747, a preventive biofungicide for control/suppression of fungal and bacterial plant diseases.

Physan 20

- Effective control of fungi, algae, bacteria and viruses.
- Use it as a general disinfectant for cleaning tools, benches, planter trays, contaminated pots and soil.
- Excellent for controlling bacteria and fungi on seeds, seedlings, cuttings and ornamental plants.



Grandevo

- Bioinsecticides controls a broad spectrum of chewing and sucking insects and mites
- Control of pests is achieved by unique combinations of repellency, oral toxicity, reduced egg hatch, and reduced fecundity (ability of pest to reproduce)

9. Petroleum products and other chemicals

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.

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.

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

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

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.

- Gas storage/cans are currently stored within secondary containment



- Provide spill trays for all generators and gas containers

Cultivation Site #1



Cultivation #4



Cultivation #6





Drying and Processing Facility

10. Cultivation-related wastes

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 groundwater.

- See Spoils documentation.

11. Refuse and human waste

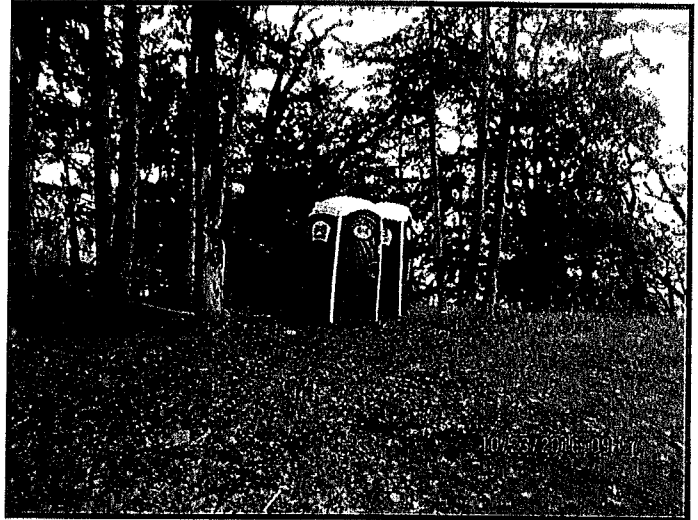
Disposal of domestic sewage shall meet applicable County health standards, local agency management plans and ordinances, and/or the Regional Water Board's Onsite Wastewater Treatment System (OWTS) policy, and shall not represent a threat to surface water or groundwater.

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.

Garbage and refuse shall be 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.

- Two (2) Port-a-Potties located near Drying/Processing Facility
- Garbage and refuse is regularly hauled to Eureka Recology
- In order to meet standards, waste disposal system will either need to be permitted or an engineer will need to document that it can be permitted.



12. Remediation/Cleanup/Restoration

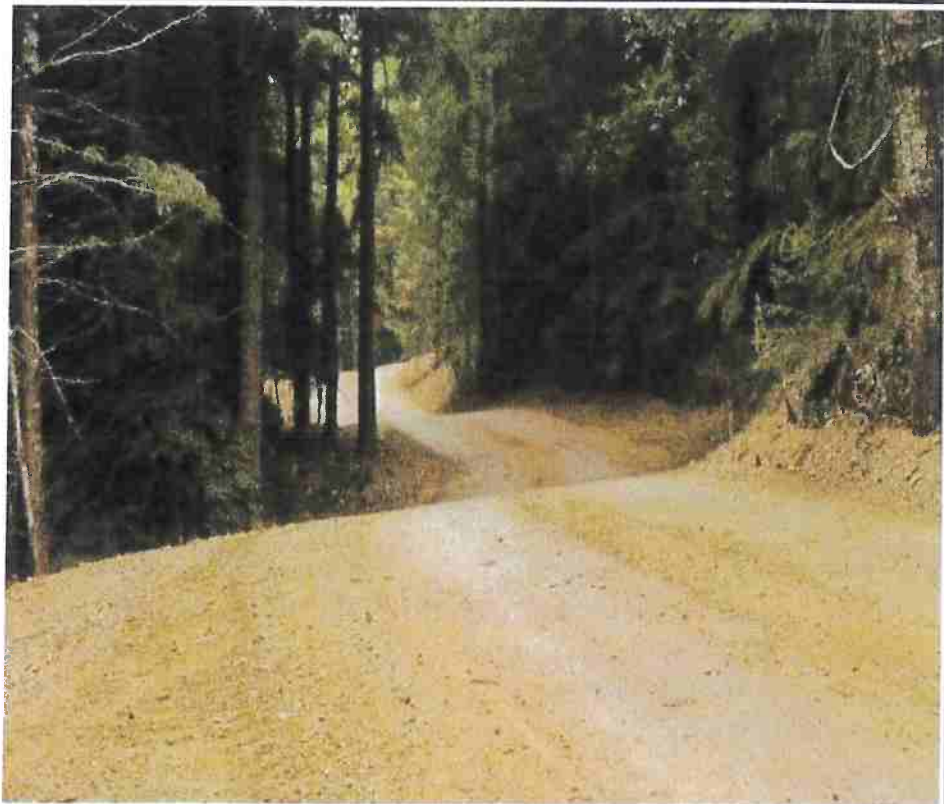
Remediation/cleanup/restoration activities may include, but are not limited to, removal of fill from watercourses, stream restoration, riparian vegetation planting and maintenance, soil stabilization, erosion control, upgrading stream crossings, road outsloping and rolling dip installation where safe 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 Water Resource Protection Plan and also noted above in the Remediation table.

Recommended Seed Mix

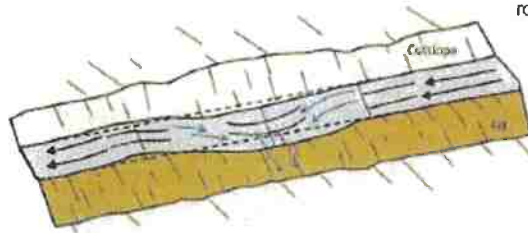
1. Bromus carinatus, Ca Brome	12 lbs.
2. Festuca idahoensis, Idaho Fescue	8 lbs
3. Nassella pulchra, Purple Needlegrass	5 lbs.
4. Danthonia californica, Ca Oatgrass	5 lbs.
5. Poa secunda, Pine Bluegrass	3 lbs.
6. Koeleria macrantha, June grass	3 lbs.
Total	36 lbs/ac

FIGURE 28. Well built, outskloped 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.



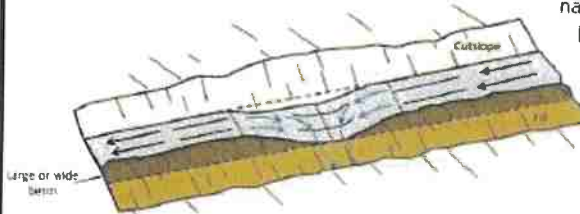
HANDBOOK FOR FOREST RANCH AND RURAL ROADS

**Type 1 Rolling Dip
(Standard)**



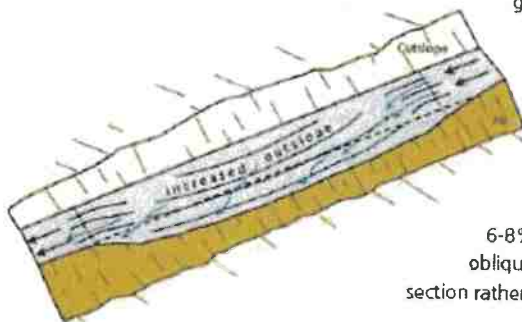
Type 1 rolling dips are used where road grades are less than about 12-14% and road runoff is not confined by a large through cut or berm. The axis of the dip should be perpendicular to the road alignment and sloped at 3-4% across the road tread. Steep roads will have longer and more abrupt dip dimensions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

HANDBOOK FOR FOREST, RANCH AND RURAL ROADS

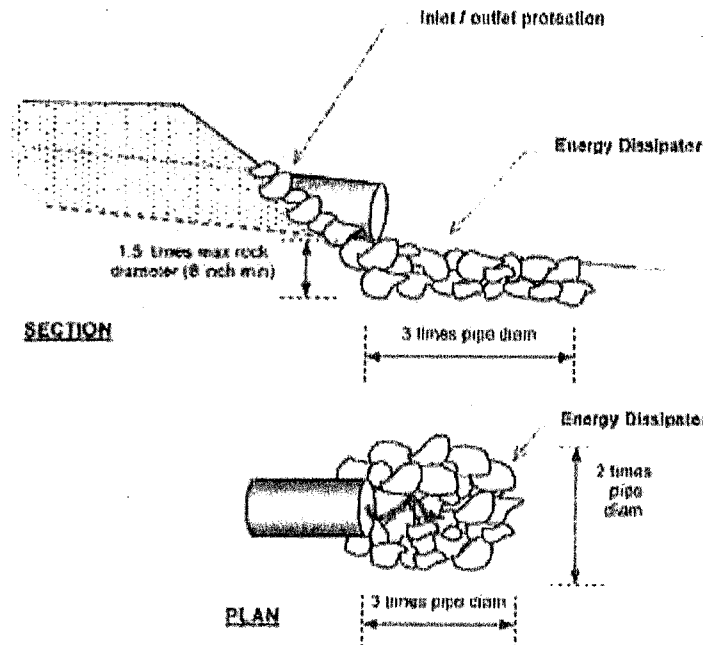


FIGURE 78.
Riprap as outlet
energy dissipation
(Best, 2013).

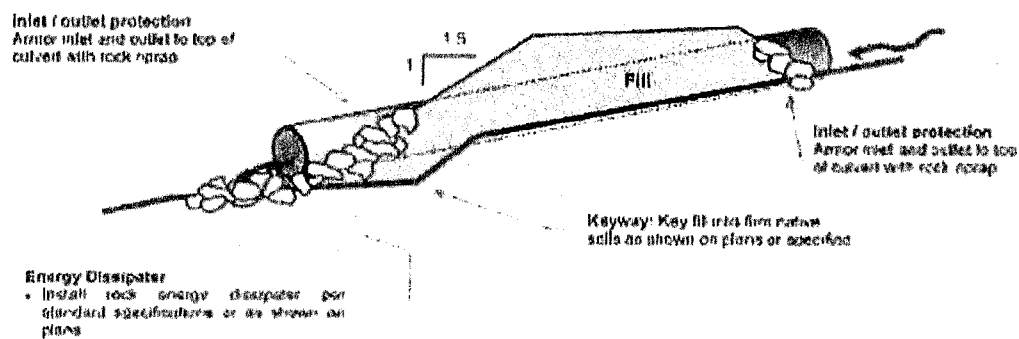


FIGURE 79.
Riprap as inlet
protection and
outlet energy
dissipation
(Modified from:
Best, 2013).

FORD: A large dip is graded into the road at the axis of the stream channel. The outside fill face is dished out to form a spillway with large rock. On large watercourses, rock is keyed several feet into firm native soils. The road surface is rocked with 6" of minus rock.

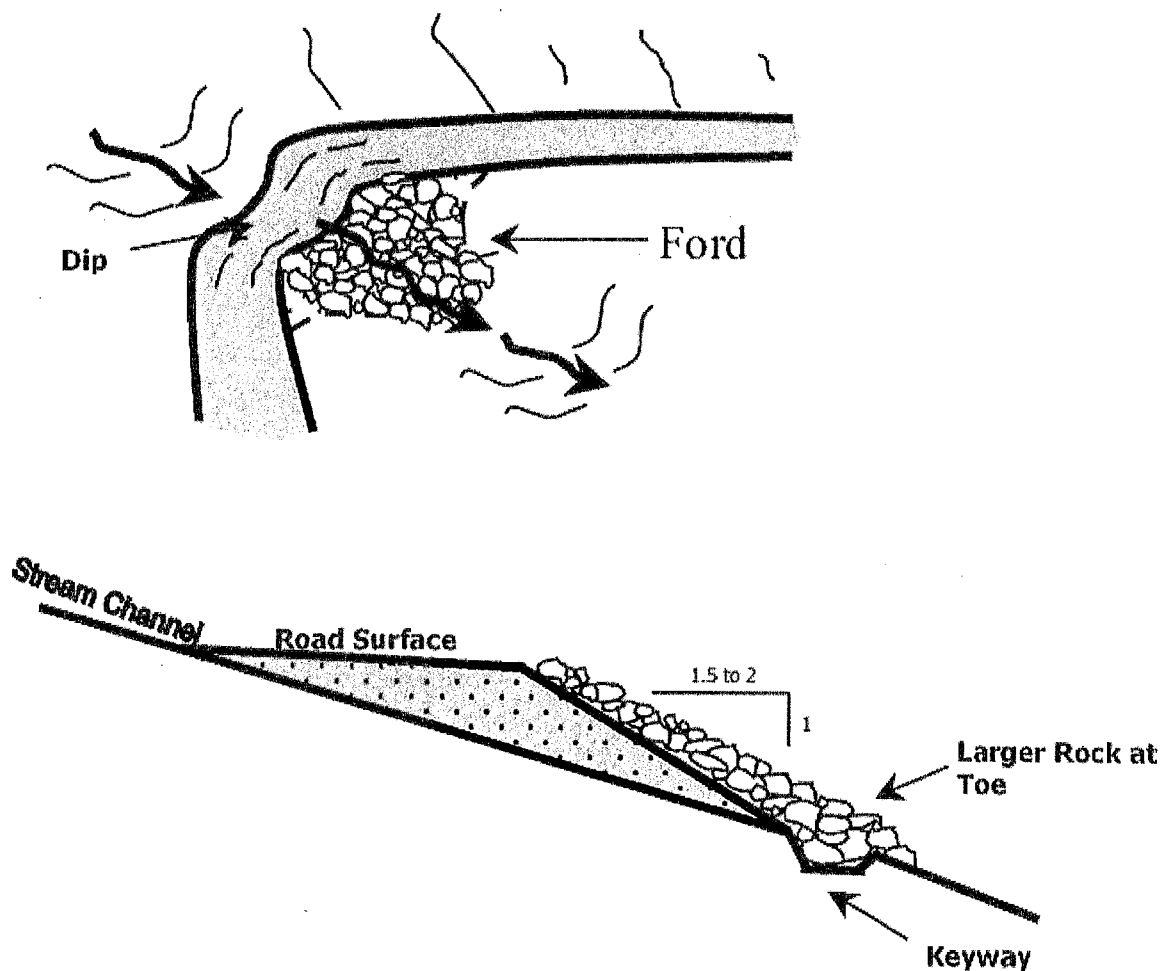




FIGURE 121D. Well graded rock armor is then backfilled into the structure and spread across the breadth of the U-shaped stream crossing, and about one-third the way up the roadbed, so that streamflow will only flow over or come in contact with resistant armor material. The armor must be spread and compacted 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.

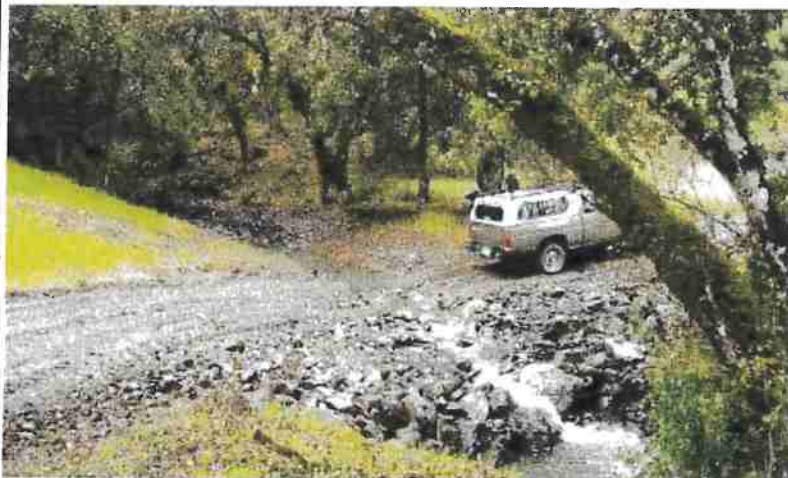


FIGURE 121F. The same armored fill as it appeared after the first winter flood flows. No maintenance was required to reopen the road. It is also clear that no stream diversion is possible at this stream crossing site, and the volume of fill within the crossing has been reduced to the minimum amount needed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

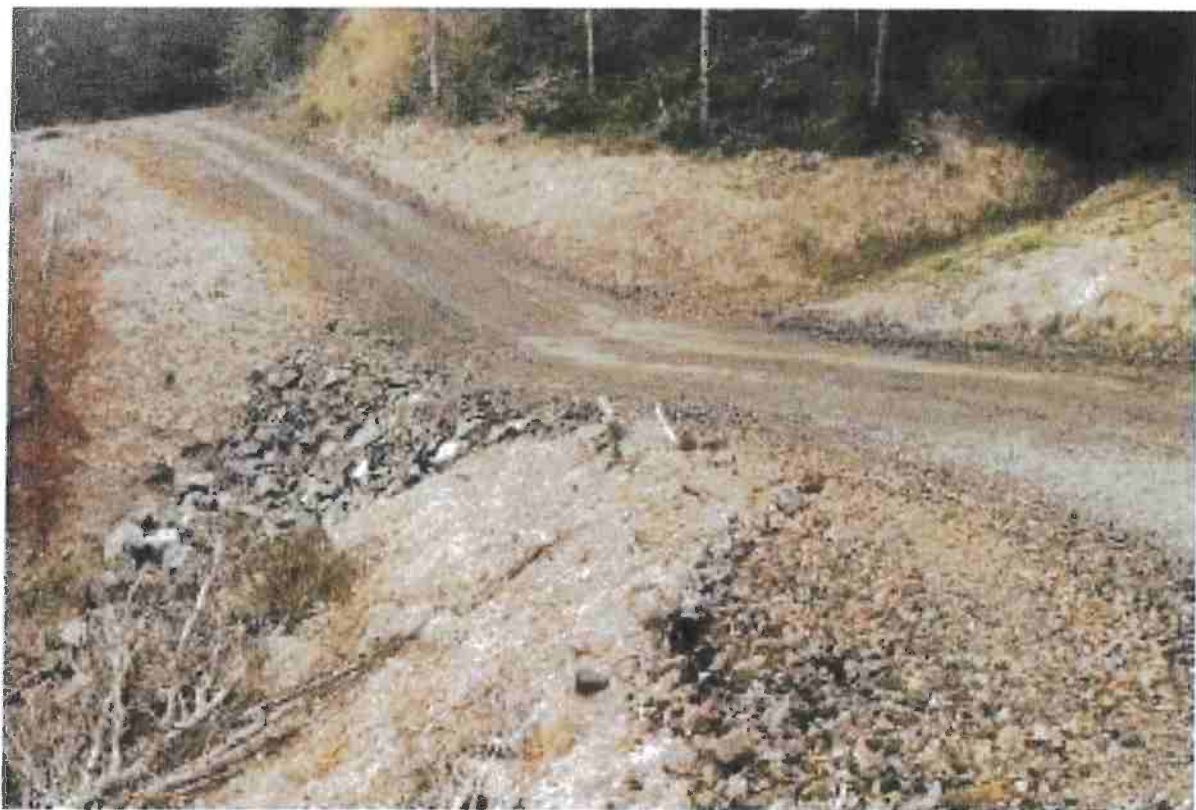
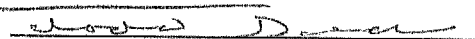


FIGURE 120. This armored fill crossing of a steep, ephemeral stream was constructed to provide a low maintenance crossing. The crossing has been deeply dipped to reduce the volume of road fill and to eliminate the potential for stream diversion. The fill slope has been heavily armored through the axis of the crossing to contain flood flows and prevent down-cutting. Armored fills cannot be used on fish bearing streams.

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

Prepared by Timberland Resource Consultants

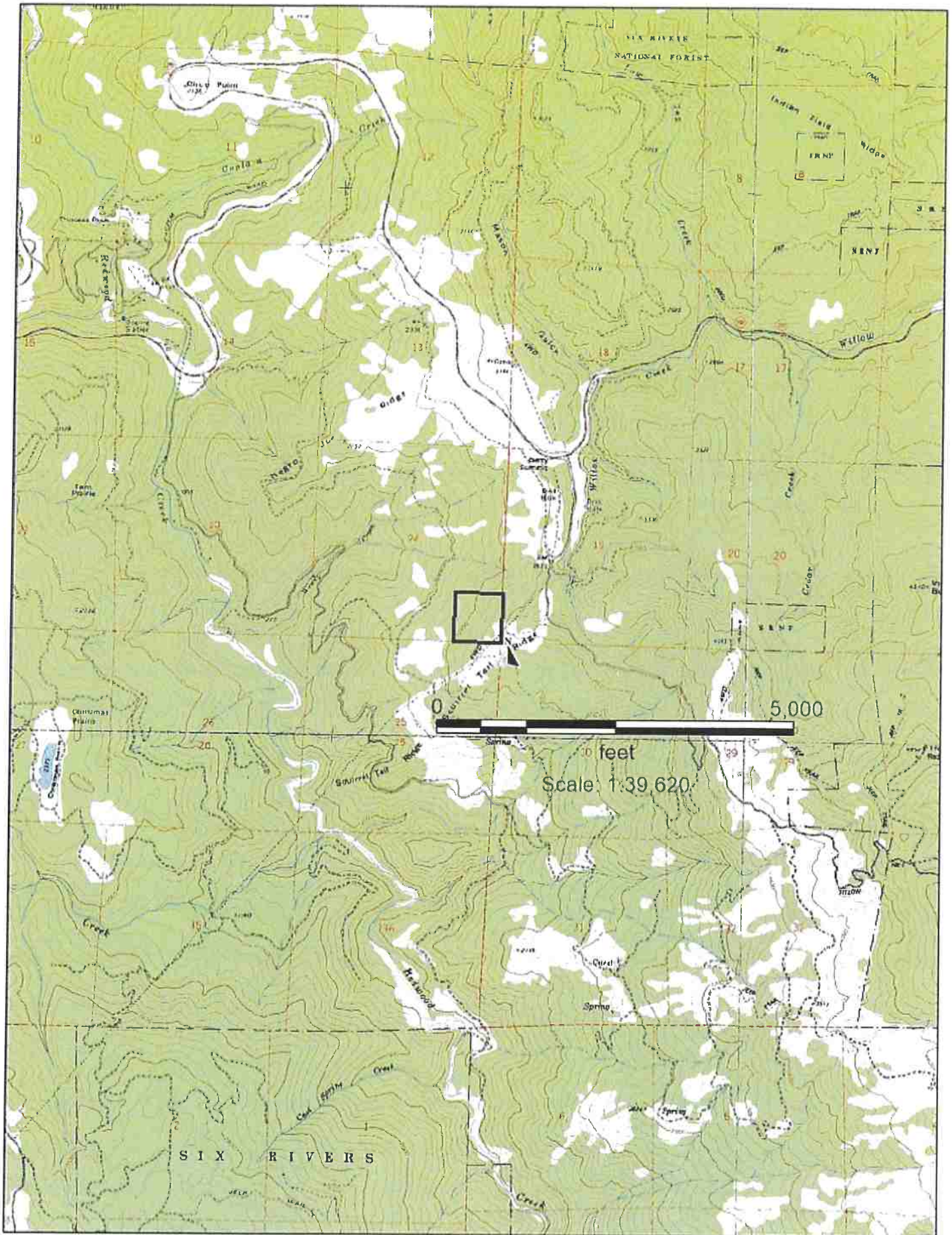
1. This Water Resource Protection Plan has been prepared for the property within APN **316-174-008** at the request of the Client.
2. Timberland Resource Consultants does not assume any liability for the use or misuse of the information in this Water Resource Protection Plan.
3. The information is based upon conditions apparent to Timberland Resource Consultants at the time the inspection was conducted. 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.

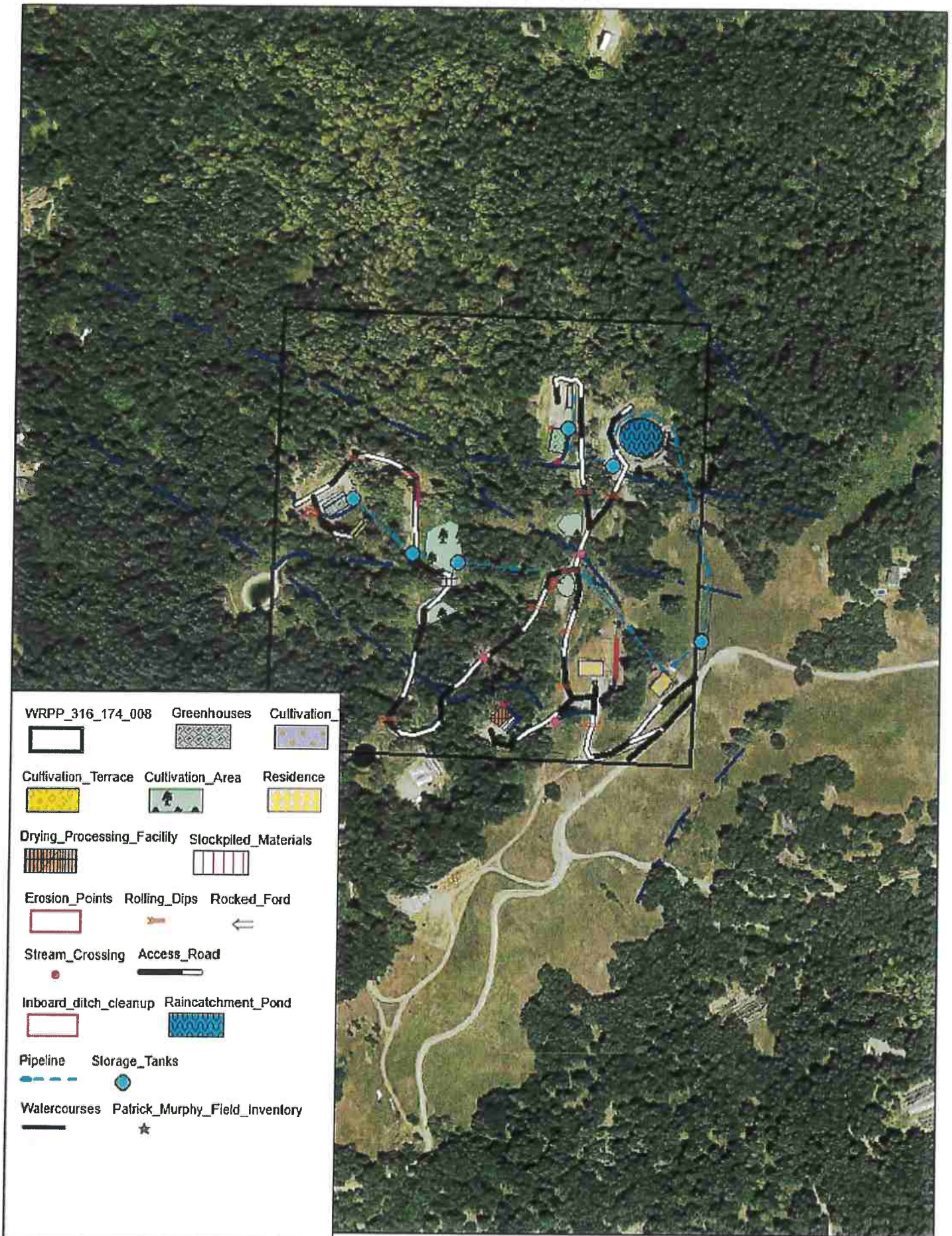

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Timberland Resource Consultants

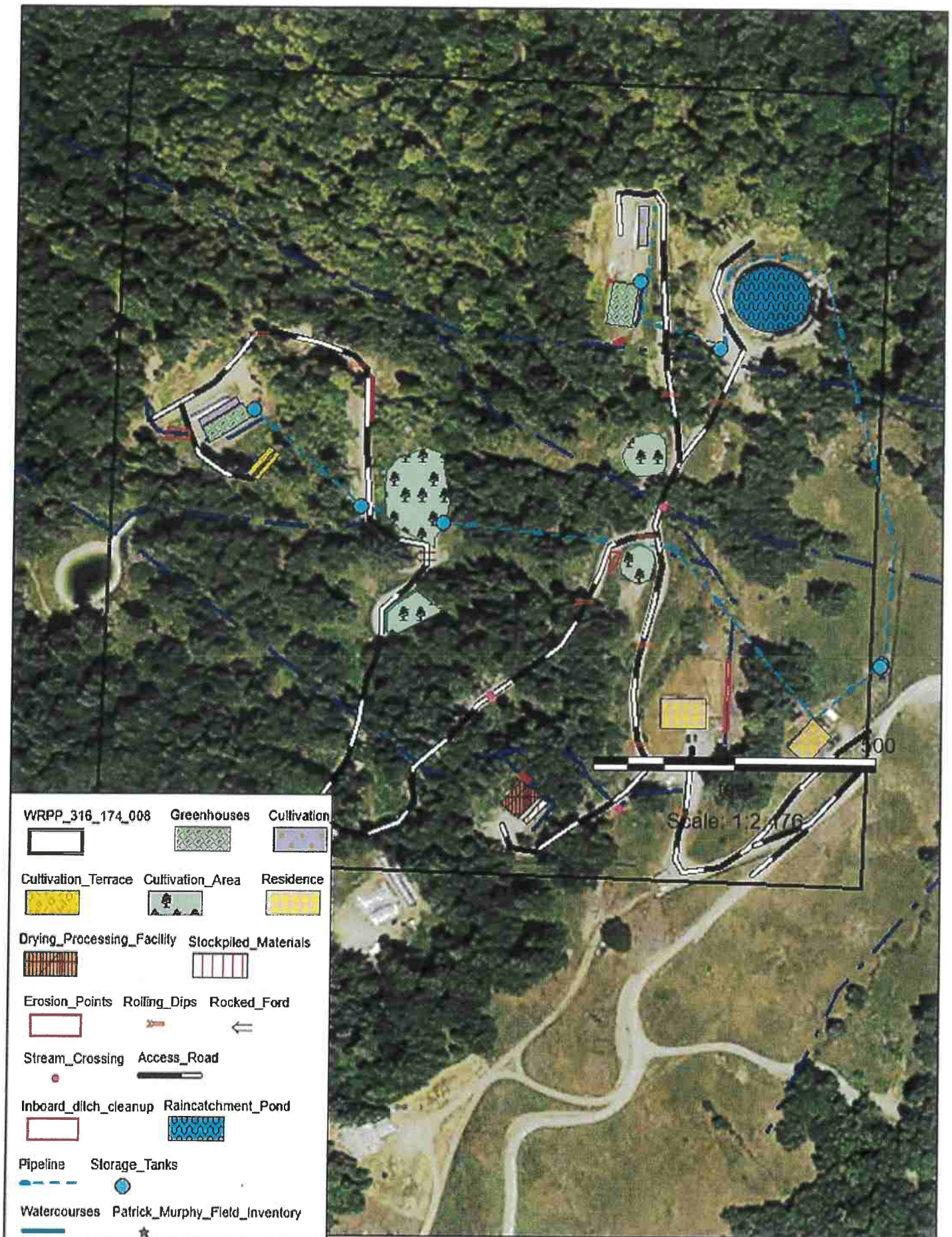
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