

Site Management Plan Freerange Holdings, LLC

APNs 104-071-004, 104-071-005



Submitted to:

California Regional Water Quality Control Board
North Coast Region
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This plan must be kept on site and produced upon request by Regional Water Board staff.

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Appendix A: Project Site Plan

Appendix B: Road Assessment and Improvement Plan

Site Management Plan

Introduction

This document has been prepared in order to meet the California State Water Resources Control Board (SWRCB) Order WQ 2017-0023-DWQ GENERAL WASTE DISCHARGE REQUIREMENTS AND WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF WASTE ASSOCIATED WITH CANNABIS CULTIVATION ACTIVITIES (General Order). This document serves as the Site Management Plan for cannabis cultivation activities that fall under the SWRCB Tier 2 Low Risk category. The Plan has been prepared on behalf of the property owner, Freerange Holdings, LLC.

This document includes a description of the cultivation activities that will occur on Humboldt County Assessor's Parcel Numbers (APNs) **104-071-004**, and **104-071-005**. The following sections describe the methods that will be used by Freerange Holdings LLC, and its staff to achieve and maintain compliance with the Best Practicable Treatment or Control (BPTC) measures in order to ensure that water quality is protected downstream of the cannabis cultivation project.

As per the General Order requirements for the North Coast Region, BPTC measures will be implemented property-wide and will address legacy waste discharge activities.

Tier Status

The cultivation project described herein falls under the Tier 2 Low Risk category as defined by the SWRCB General Order. The project falls under the Tier 2 category in that the cannabis will be grown outdoors, and the cultivation footprint has a disturbed area greater than one acre. The project has a Low Risk designation as no portion of the disturbed area is located on a slope greater than 30% and all of the disturbed area complies with the 150' setback from the nearby creeks.

Site Description

The Freerange Holdings LLC commercial cannabis cultivation operation (the Project) will take place on a 333-acre site located in Petrolia, California on Humboldt County APNs 104-071-004 and 104-071-005. The cultivation site is located in the Mattole River watershed between Squaw Creek (Class I) and Granny Creek (Class II/III). Seasonal drainage courses that flow into Granny and Squaw creeks are present on both parcels. All cultivation areas are located at least 300 feet from surface waters.

The cannabis cultivation activities will take place in areas that are relatively flat; less than 2-5% average slope with level greenhouse pads at 0% slope. Nursery activities will occur in a separate onsite greenhouse on a flat pad with 0% slope. Natural drainage will be maintained on all non-cultivation and undeveloped areas.

All previous cultivation on this site has been shut down and cleaned up including the removal of all cultivation materials. Pending permits, the site will be improved to include bio-swales, a storm water detention basin, and improved access roads.



Figure 1: Previous cultivation site

The Applicant has hired a qualified biologist to conduct a full Biological Resources and Sensitive Habitat Survey beginning in 2019. In 2018, biologists conducted an invasive species survey and developed an Invasive Species Control Plan for the site. The applicant is committed implementing the control and monitoring measures recommended in the plan. All heavy equipment used for construction will be cleaned before entering and leaving the site to further control the spread of invasive species.

Project Description

The property owners and approximately 4-12 seasonal employees will conduct the cannabis cultivation operations. The total cultivation area is 53,800ft², as permissible under Humboldt County Codes 314-55.4.6.5 and 314-55.4.6.1.2 (b). The Project consists of 23,800ft² of existing cultivation on APN 104-071-004 comprised of one (1) 34' x 100' greenhouse and three (3) 68'x100' greenhouses. An additional 30,000ft² of new cultivation will take place on APN 104-071-005 in three (3) 100'x100' fully automated greenhouses. A 4,332ft² processing building and a 4,800ft² nursery greenhouse space (three (3) 20'x80' hoop structures) will also be located on APN 104-071-005.

The 23,800ft² existing cultivation operation (located on APN 104-071-004) will be an outdoor operation conducted in greenhouses using natural light only until fully automated greenhouses are installed, at which time the operations will convert to mixed-light. This operation will initially conduct 3 - 4 growing cycles per year using starts (clones) from the onsite nursery. This site will use the existing footprint with minor adjustments to the cultivation area layout to ensure adequate setback is maintained from a seasonal, unnamed Class III creek located at the southwest corner of the parcel.

The 30,000ft² new cultivation operation (located on APN 104-071-005) will initially be conducted in traditional hoop structures using natural light only until professional, fully automated 100' x 100' greenhouses can be installed. Fully automated lighting and light deprivation systems will be employed to allow for year-round cultivation. Lights will be used to supplement natural light during the early and late parts of the season (e.g., spring and fall). This site will be developed on a flat, previously disturbed saddle outside of the riparian setback, directly adjacent to Reynolds Road.

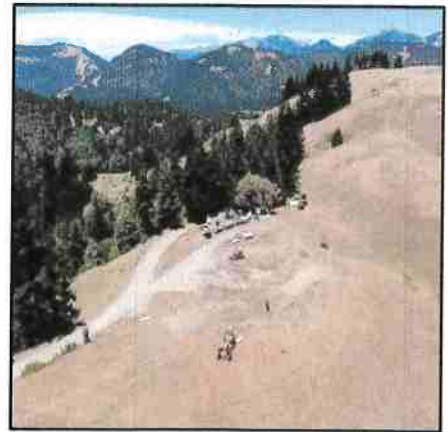


Figure 2: Proposed 30,000ft² new cultivation site

Water for cultivation operations will be collected in a 120-foot by 150-foot rainwater catchment pond (to be constructed), and will be supplemented with water from two onsite wells (existing). A solar electric system at each wellhead will be used to power the two well pumps; both wells are covered to limit exposure to rainfall. Water from the rainwater catchment pond will flow via gravity into storage tanks and out to the cultivation sites for use in irrigation. Water use will be measured by flow meters to be installed at the wellheads and the main water storage outlet line(s). Tanks will be filled manually as needed, and will be equipped with a float valve to prevent overflow. All irrigation will be maintained inside the greenhouses and cannabis plants will be hand-watered to avoid over-watering.

Irrigation water storage and delivery systems will be inspected regularly for leaks. The rainwater catchment system will be equipped with a shut-off valve at the pond outlet, a valve at each connection going to the cultivation sites, and shut off valves at each cultivation site. This redundant valve system will allow for all parts of the system to be isolated so that any leaks can be repaired immediately without interrupting irrigation activities.

The rainwater catchment pond will be de-watered and allowed to dry once per year in order to prevent invasive aquatic species habitation. A flush-out connection will be installed at the point of discharge to allow the pond to be fully drained. Any water remaining in the pond will flow through a sediment catchment structure consisting of straw bales lined with a geotextile fabric.

Compliance with Best Practical Treatment of Control (BPTC) Measures

1. Sediment Discharge BPTC Measures

1.1. Site Characteristics

Site Map

A site plan showing access roads, vehicle parking areas, streams, stream crossings, cultivation sites, disturbed areas, buildings, and other relevant site features is included as Appendix A. Disturbed areas shown on sheet 1 in the map set include: the existing and new cultivation areas, abandoned cultivation areas, the bio-swales and storm water detention basin, and the rainwater catchment pond. All other features of interest are shown in detail in the subsequent sheets, as noted in the sections that follow.

Access Road Conditions

The Project site is accessed via Reynolds Road, a 1.1 mile road that connects to the Humboldt County-owned Mattole Road. Reynolds Road is a 20ft wide, crowned gravel road accessed via a 15ft wide gate with a large turnout at the entrance. Reynolds Road meets Cal Fire standards and Humboldt County Code (Title III) Category 4 road standards. Reynolds Road consists of slopes no greater than 15% and the road surface is armored with numerous functional drainage features. In 2018, a qualified engineer evaluated the access roads at this site and prepared a Road Assessment and Improvement Plan. Road maintenance and improvements are planned for 2019. This report can be found in Appendix B.



Figure 3: Reynolds Road

Reynolds Road terminates on the property where it transitions into a 16ft wide Category 3 driveway that comes to a dead-end within ½ mile. Two other Category 3 access roads branch off of Reynolds Road and terminate within ½ mile. The Project site also contains three short segments of Category 1 access roads.

Reynolds Road crosses several intermittent drainages that convey to Class II/III streams. These seasonal drainages are non-fish bearing tributaries to Squaw Creek that sit near the top of a ridge. Drainage crossing culverts on Reynolds Road range in size from 18" to 60". Upon inspection, some of stream crossing culverts appear to under-sized, and may require realignment and/or replacement where required by the California Department of Fish and Wildlife (CDFW) as part of the Lake and Streambed Alteration Agreement (LSAA) process (LSAA 1600-2019-0326-R1). All of the ditch relief culverts along Reynolds Road are 18" corrugated metal pipes (CMPs) appropriately sized and spaced evenly along the road.

Planned upgrades to Reynolds Road include: re-grading and modification of the inboard ditches to include ditch-relief culverts upstream of all natural drainages in order to eliminate sediment transfer from road runoff. Planned upgrades also include: armoring culvert outlets and adding large rocks as energy dissipation mechanisms where needed, adding rock slope protection where needed, and adding fencing or otherwise preventing cows from disturbing the riparian areas adjacent to the roadways. All other roads (e.g., those not related to cultivation operations) on both parcels will be assessed as part of the CDFW LSAA process; engineered designs for all required road upgrades will be included with the Project's LSAA application.

Storm water is drained from the roads via a combination of out sloping, rolling dips, inboard and outboard ditches, and ditch relief culverts. These features will ultimately discharge onto the natural vegetated topography. The access roads will be hydrologically disconnected from the nearby creeks as part of planned upgrades listed above.

All roads are currently established, and therefore no temporary roads will be created during Project site development. Access roads meet Cal Fire standards as well as the requirements of the California Code of Regulations Title 14, Chapter 4. Additional traffic is anticipated to range between 4 - 12 vehicles per day for both construction and operation periods; the additional traffic is not expected to exceed road design standards. The Applicant is solely responsible for maintaining the roads on APNs 104-071-004 and 104-071-005. The Applicant will make arrangements with the neighboring easement holders to ensure regular maintenance is provided for the segments of Reynolds Road leading to the Project site.

Stream Crossings

There are approximately ten intermittent stream (Class III) crossings on the Project site in addition to one Class II stream crossing on Upper Granny Creek. All crossings are CMP culverts of varying sizes (18 - 60 inches in diameter), with the exception of one corrugated plastic culvert. As noted in the Road Assessment and Improvement Plan (Appendix B), all stream crossing culverts will be armored, upgraded and/or replaced as required. Planned stream crossing upgrades include: hydrologically disconnecting the road drainage flows from the natural drainage courses via the addition of ditch relief culverts, armoring culvert inlets/outlets as needed, and fencing out or otherwise preventing cows from disturbing the riparian areas adjacent to the roadways.

The primary legacy discharges identified at the site include: sediment transfer due to road drainage stormwater discharging into natural drainage systems, and land disturbance activities related to historic cannabis cultivation. Legacy waste discharge issues related to access roads will be addressed through the planned upgrades described above, as well as any culvert re-alignment and/or replacement required by CDFW as part of the LSAA process. Former cultivation areas that are no longer in use will be re-graded to match the surrounding topography, mulched with straw and allowed to naturally re-vegetate. The historic cultivation sites to be abandoned can be seen on the site plan on sheets 1 and 2, and stream-crossing / ditch relief culverts can be seen in the Road Assessment and Improvement Plan in Figures 1-9 (Appendix B).

1.2. Sediment Erosion Prevention and Sediment Capture

Erosion Prevention BPTC Measures

All of the land disturbance activities proposed for this project will occur on relatively flat sections of the existing topography and therefore no grading will occur on slopes greater than 30%. The potential for erosion due to stormwater runoff from the greenhouses will be managed through the

construction of a 3' x 3' bio-swale perimeter set 5 feet back from the edge of the cultivation area on APN 104-071-005, and a 10' x 10' storm water detention basin located on the southwest corner of APN 104-071-004. Any runoff from the greenhouses will be contained within these features and allowed to infiltrate slowly through the soil.

The Project operations are outside of the riparian setback, and therefore no heavy equipment will be operated within this setback at any time. A minimum of 300 feet of natural vegetation provides a buffer between the cultivation sites and the nearby creeks. All other natural drainages on site will be maintained.

BPTC measures that will be implemented to prevent or limit the potential for erosion include:

a. Use of BPTC measures during construction:

- All site construction work will be conducted between April 16th and October 31st to avoid the rainy season.
- The local weather forecast will be checked once daily during land disturbing activities; the applicant will maintain records of the conditions for each day. Conditions include: 24-hour rainfall prediction, inches of new rainfall expected, and current and predicted wind speeds.
 - New work will not be initiated unless the National Weather Service seven-day forecast shows five (5) consecutive days with no precipitation.
 - The applicant agrees to cease any land disturbance activities and immediately implement short-term erosion control measures when any 24-hour forecast reports a 50% or greater chance of rain above 0.5 inches.
- Straw waddles (or equivalent measures) will be in place around any work area prior to any precipitation that could cause run-off.
- All construction entrances to the sites will be mulched or otherwise armored and surrounded with fiber rolls before the onset of the winter season.
- Once work is complete, all bare soils associated with construction will be mulched and allowed to naturally re-vegetate to prevent soil erosion.

- b. Cows will be fenced out or otherwise kept separated from the riparian areas near the natural drainage crossings along the access roads. This will help to prevent soil disturbance and destruction of vegetative soil stabilization features.
- c. Abandoned cultivation sites will be re-contoured at the edges and covered with straw to allow the sites to re-vegetate naturally via the surrounding native grasses.
- d. Existing and new cultivation sites will be re-graded to include mulched bio-swale perimeters (APN 104-071-005), and a storm water detention basin (APN 104-071-004). Any runoff from the greenhouses will be contained within these features and allowed to slowly infiltrate through the soil.
- e. Long-term measures to prevent erosion include armoring and improvement of access road drainage systems.
 - Hydrologically dis-connect road drainage features (in-board ditches) from watershed drainage crossings. Re-grade and/or install additional ditch relief culverts to re-direct road drainage onto vegetated slopes that lie outside of the natural drainages.

- Upgrade culverts on main Category 4 access road; armor, re-align, and/or replace as recommended by design engineer in consultation with CDFW.
 - Upgrade Category 3 and Category 1 access roads include: re-grading (adding crowns and/or out sloping), importing rock to armor roadways and improve road drainage, re-shaping and cleaning out rolling dips, installation of check dams in the inboard ditches, installation of ditch relief culverts and armored sediment basins, and installation of down spouts and energy dissipators where needed.
- f. All disturbed areas not used in cultivation will be mulched with rice straw and allowed to naturally re-vegetate with adjacent native grasses.

Erosion prevention BPTC measures are shown in the site map set included in Appendix A. The abandoned cultivation sites can be seen on sheets 1-2, and road drainage features can be seen on sheets 3, 5, & 8. Bio-swale locations can be seen on sheets 4 & 8 with design details on sheet 4. The Storm water detention basin can be seen on sheets 6-7 with design details on sheet 7.

BPTC measure implementation schedule is shown in the table below:

Implementation Schedule: Erosion Prevention Measures	
Description	Schedule for Implementation
Construction-specific BPTC measures	Construction will begin as soon as all required permits are granted; pending permitting timelines, construction activities will begin after April 15th and will be completed before the onset of winter season (Nov. 1).
Construct 3' x 3' mulched bio-swales	
Construct Sediment Retention Basin	
Road Maintenance and Improvements on all access roads / road crossings	Road upgrades will adhere to the construction schedule and may be implemented over 1-4 years.
Disturbed lands restoration	Ongoing

Sediment Control BPTC Measures

Sediment loads for the Project are predicted to be light as the operations are located on a ridge at the headwaters of seasonal drainages with minimal upland runoff. No vehicles or equipment will be operated at any time within the riparian setbacks surrounding Squaw and Granny creeks.

BPTC measures that have been or will be implemented to capture sediment include:

- a. All road drainage features will be hydrologically disconnected from natural drainage crossings and directed towards vegetated slopes eliminating runoff-related sediment transfer into natural drainage systems.
- b. Bio-swales and a sediment detention basin will be constructed to ensure that all sediment from the cultivation areas is captured.
- c. Two legacy cultivation areas on the site will be restored to reduce the overall potential for sediment transfer at the site. The edges of the flats will be re-graded and out sloped at approximately 2% to maintain sheet flow conditions onto the adjacent vegetated slope. Weed-free, clean straw will be placed on the disturbed (re-graded) areas at a depth of 2-4 inches or approximately 2 tons per acre. Nearby natural vegetation will be allowed to re-

seed the disturbed areas. Fiber filters will be staked on the slopes at 10' intervals below the graded areas as needed.

d. Interim sediment control devices:

- Waddles (or equivalent) will be available onsite, and will be put into place within seven (7) days of completion of all grading and land disturbance activities that use heavy equipment.
- All fiber rolls will be constructed of natural loose-weave mesh (e.g., jute, hemp, coconut fiber) without welded weaves. No synthetic netting material will be used onsite.

e. Long-term sediment control treatment for disturbed soils includes:

- Mulching with 2-4" of weed-free, clean straw within 30 days after land disturbing activities cease.
- Natural re-vegetation of the disturbed areas using adjacent, native grasses.

f. Sediment caused by dust from site construction activities will be controlled by:

- Checking local weather conditions daily (during construction) and avoiding land disturbance activities when wind gusts are predicted or reported to be > 25mph. Applicant will maintain a record of these weather readings onsite.
- Conducting access road maintenance and improvement activities in dry weather when moisture is still present in the soil. If this is not possible, a water truck will be brought onsite to control dust and minimize the potential for additional sediment load from this source.

g. Soil storage piles will be located on stable slopes outside the riparian setback areas. Sediment from soil and compost piles will be controlled by the bio-swale perimeters and/or use of silt fencing.

- All soil and compost piles will be covered during the winter season.

h. At the end of useful life, soil piles will be moved to a stable, flat area (<2% slope) outside the riparian setback and spread, compacted, and graded to match the surrounding topography. Graded soil will be mulched and allowed to naturally re-seed.

The soil storage areas can be seen on the site plan map set included with this plan on sheets 4 and 8.

Sediment Control BPTC measure implementation schedule can be seen in the table below:

Implementation Schedule: Sediment Capture BPTC Measures	
Description	Schedule for Implementation
Road drainage upgrades	During the construction period (April 15 - October 31); permits pending.
Bio-swale and sediment basin construction	During the construction period (April 15 - October 31); permits pending.
Re-grading and re-vegetation of abandoned cultivation sites	During the construction period (April 15 - October 31); permits pending.
Fiber roll placement around disturbed areas	Within 7 days of completion of grading and land disturbance activities that use heavy equipment
Disturbed land mulching and re-vegetation	Within 30 days after land disturbing activities cease
Monitor and control dust from construction and road maintenance activities	During the construction period (April 15 - October 31); permits pending.
Soil / compost piles surrounded with waddles and/or silt fencing, covered during the winter season	Piles will be surrounded/covered as part of winterization preparations each year, completed by Nov. 1.
Unusable soil spreading / compaction / mulching & re-vegetation	As needed; soil is recycled for many years before land spreading will be required.

Maintenance Activities – Erosion Prevention and Sediment Control

The erosion prevention and sediment control features proposed for the Project are designed to prevent the transfer of soils into nearby waterways. These features will be inspected and maintained annually in order to ensure that the Project does not negatively impact water quality in the Mattole watershed. Annual inspections and repair work will be completed before the onset of the winter season. Other performance monitoring will occur as needed.

Monitoring and maintenance activities include:

- a. Erosion control features will be monitored during and after precipitation events that produce at least 0.5 inch/day or 1.0 inch/7 days of precipitation.
 - Includes: bio-swales, sediment detention basin, and road drainage features.
 - All needed repairs will be immediately addressed.
- b. Annual perimeter inspections to look for any erosion features related to the cultivation areas (greenhouses and associated structures).
 - Mulching and/or armoring (where needed) will be used to remedy any erosion features found during the annual inspection.
- c. Annual access road drainage performance inspections.

- Roads will be inspected for rills or other signs of erosion. If signs of erosion are found to be present, corrective action will be taken to eliminate concentrated flows via additional rolling dips, cross culverts, or other approved measures.
 - All culverts will be inspected to ensure removal of all sediment and/or woody debris that could restrict flow at the inlets to culverts.
 - Sediment buildup will periodically be removed from road drainage ditches to maintain capacity.
 - Outflow of culverts shall be inspected to ensure erosion is not undermining the culvert. Culverts outlets will be armored as needed.
- d. Annual inspection of bio-swales and sediment basin.
- Inspect for signs of erosion or over-topping.
 - Any erosion features discovered will be reinforced with compacted soil, mulched and allowed to re-vegetate naturally.
 - Inspect levels of excess sediment buildup that could impact performance.
- e. Rainwater catchment pond and sediment detention basin outlets will be monitored for excessive vegetative growth or damage caused by burrowing animals in order to ensure the pond overflows will function as designed.
- f. Re-vegetated sites will be monitored for 3 years to verify >85% establishment of vegetative cover. Sites will be re-seeded with as needed to complete coverage.
- g. Records of all maintenance and inspections will be maintained onsite and included in the annual report.

Captured sediment will be periodically excavated and stabilized onsite. Any sediment removed will be spread on a stable slope outside the riparian setback, contoured to match the surrounding landscape and drainage pattern, compacted, mulched and allowed to naturally re-seed with native vegetation. Re-vegetation will be monitored as described above.

Erosion control BPTC measures

Disturbed areas associated with the Project include: road repair and maintenance, grading at the new cultivation site, constructing bio-swales and a sediment detention basin, constructing a rainwater catchment basin, anchoring greenhouses, and re-grading the edges of the abandoned cultivation sites. The site does not contain improperly constructed features.

Sediment transfer will be prevented via the following BPTC measures:

- a. Interim measures to control sediment transfer during construction include:
- Ensuring that all exposed soils are contained by: an adjacent natural slope, constructed berms, fiber rolls, silt fencing or other containment devices.
 - All exposed soils will be mulched within 7 days of construction completion.
 - If signs of erosion (rills, rutting, or gullyng) are present during any of the inspections, interim soil stabilization devices such as waddles (or equivalent) will be put into place and anchored in 10' intervals to prevent further erosion at the site.

- All fiber rolls will be constructed of natural loose-weave mesh without welded weaves. No synthetic netting material will be used onsite.
- b. Long-term measures to prevent sediment transport at the disturbed areas involve regular inspection and maintenance of the sediment control BPTC measures.
 - Annual and seasonal inspections will ensure road drainage efficacy is maintained.
 - Erosion prevention features will be armored as appropriate.
 - Armoring can include: placing large rocks at culvert outlets to dissipate energy and reduce the potential for scouring, and use of gravel to reinforce berms, rolling dips, and out sloped grading on access roads.
 - If needed, the bio-swales will be reinforced with compacted soil and mulched with 2-4 inches of straw.
 - Roads drainage features will be hydrologically dis-connected from natural drainages and runoff will be directed to broad slopes outside of the natural drainages.
 - Existing culverts will be upgraded, armored, realigned and/or replaced as required by design engineer in consultation with CDFW.
 - Roadside ditches will only be graded or excavated as needed to prevent erosion or sediment buildup. Vegetation growing in these ditches will be retained to capture sediment so long as it does not impede the flow of water.

2. Fertilizer, Pesticide, Herbicide, and Rodenticide BPTC Measures

Organic and natural soil amendments (dried chicken manure, compost tea, guano, kelp, molasses etc.) as well as a paraffinic oil pesticide approved for organic crop production are the only added agricultural products used in this operation. All soil amendments meet organic standards and include: molasses, worm castings, bat and seabird guano, bone meal, kelp and other naturally occurring ingredients. The only pesticide/fungicide employed consists of 97% paraffinic oil and is permitted for use in organic farming. These materials will be applied as per the manufacturer's instructions, and will be returned to storage in a dedicated area located in the Ag barn immediately after use. All plastic bottles will be checked for leaks before and after each use.

2.1. The summary table below shows the agricultural products used at the site and how they are delivered, stored, and used.

Agricultural Products Used / Stored Onsite		
Product Name	Use; Main ingredient(s)	Application Frequency
Planet Natural Hi-Brix (0-0-3)	Fertilizer; molasses	Applied throughout cycle in diluted quantities in compost tea (~5-7 times / month)
Roots Organics Big Worm (2-0-0)	Fertilizer; worm castings	Used to amend soil at beginning of cycle and applied throughout cycle in diluted quantities (~5-7 times / month)
Planet Natural Rainbow Mix Pro Grow (8-6-3)	Fertilizer; organic fertilizer made from guanos, kelp, feather and bone meal and other naturally occurring ingredients.	Applied throughout cycle in diluted quantities in compost tea (~5-7 times / month)
Sparetime Supply Mocha Bat Guano (4-6-1)	Fertilizer; bat guano	Used to amend soil at beginning of cycle and applied throughout cycle in diluted quantities (~5-7 times / month)
Age Old Organics Age Old Bloom (5-10-5)	Fertilizer; fish and feather meal, colloidal phosphates, seaweed extracts, borax, naturally occurring micronutrients	Applied once during last 2 weeks of each cycle in diluted quantities as part of compost tea
Dried Chicken Manure (1.3-1.3-1)	Soil amendment; scraped chicken manure	Used to amend soil at beginning of each cycle
Organic JMS Stylet Oil	Powdery mildew / fungus / pest / disease control; 97% Paraffinic oil	1-2 times per cycle
Delivery: All fertilizer and pesticide products are delivered to the site at the beginning of the cultivation season and as needed.		
Storage: All fertilizer and pesticide products are stored in the original containers inside the enclosed Ag barn year-round. These materials are stored on pallets that sit on a concrete floor outside the riparian setback. All agricultural products not consumed during the growing season are stored in the Ag Barn for use in the subsequent cultivation cycle.		

2.2. The storage location for agricultural products used onsite (Ag barn) can be seen in the map set in Appendix A on sheet 4.

2.3. Bulk fertilizers include: dried chicken manure (from onsite scrapings), worm castings, guano, and soil amendment mixes of kelp, bone/feather meal, and other naturally occurring ingredients. The soil and amendment mixing will occur within the cultivation and nursery area footprints using a skid steer and/or shovels. Compost tea mixers are located at each cultivation area and the nursery. All mixing is located outside the riparian setback and within the bio-swale or sediment detention basin protected areas. Dried chicken manure, guano and worm castings are used to amend the used soil at the beginning of each cycle. A dilute compost tea consisting of molasses, guano, worm castings, and amendment mixes is used to feed the plants throughout the cultivation cycle. The dilute compost tea is applied approximately every 3 - 5 days along with irrigation. Location of the compost tea mixers as can be seen on sheets 4, 6, and 8 of the site plan map set included in Appendix A.



Figure 4: Ag barn and nursery greenhouses

All fertilizer products will be stored in the Ag barn on a concrete floor on top of a pallet. Disposal of unused product and containers will be done in accordance with product labeling instructions, and either recycled or disposed at the waste transfer station in Fortuna, CA.

2.4. Spill prevention and clean up procedures

Spill kits will be placed in the fuel containment shed, in the processing building, and in the Ag barn. Spill kits will include nitrile gloves, absorbent materials (cat litter, saw dust, rags, shop towels etc.). Five-gallon buckets with lids and high strength garbage bags will be included to contain used cleanup materials. Employees will be trained on proper use of spill response equipment.

Any fertilizer, pesticide, petroleum product, or hazardous materials spills will be immediately cleaned up using the spill kits and shovels/brooms. If spills occur on the ground, the spill area will be dug up and placed in a 5-gallon bucket or thick garbage bag. Potentially hazardous material spills on impermeable surfaces will be controlled with dry absorbents. Once contained, the absorbent materials and the liquids can be shoveled or swept up and placed in a 5-gallon bucket or garbage bag. All spill cleanup waste will be properly disposed at the Eureka hazardous waste facility.

All spills that could threaten the riparian area or groundwater will be reported to the Humboldt County Department of Environmental Health and Human Services (800) 963-9241 and/or the State Office of Emergency Services (800) 852-7550. The RWQCB and CDFW will also be notified.

3. Petroleum Product BPTC Measures

Heavy equipment (mini-excavator and skid steer) will be stored onsite near the Ag barn and will be staged outside of the riparian setback at all times. This equipment will be maintained off-site and will be inspected regularly for leaking fluids. All lubricants and fuels are stored outside the riparian setback, under cover, in secondary containment on a concrete floor.

- 3.1. The summary table below shows petroleum products used onsite, delivery schedule, and how they are stored. No products will be removed from the site, and are properly stored to prevent discharge during the winter season.

Petroleum Products Used / Stored Onsite			
Product	Use	Storage	Delivery
Diesel fuel	Mini-excavator, skid steer	500 gallon above-ground steel storage tank with secondary containment on a concrete pad	Quarterly
Gasoline	Trimmer, chainsaw	500 gallon above-ground steel storage tank with secondary containment on a concrete pad	Quarterly
Oil	All equipment	In Ag barn separate from pesticides/fertilizers, in a tote for secondary containment	As needed

- 3.2. The site map set in Appendix A shows the fuel containment shed location on sheet 2.
- 3.3. There is no onsite fuel or oil mixing. Petroleum products are stored as described in the table above. Disposal of unused oil containers will be done in accordance with product labeling instructions, and either recycled or disposed at the waste transfer station in Fortuna, CA.

Heavy equipment, off-highway vehicles (OHVs), and trimmers/chainsaws will be re-fueled outside the riparian setback at the fuel containment shed. The fuel containment shed can be seen in the site plan map set on sheet 2. All heavy equipment and vehicles will be inspected for leaks at least quarterly and prior to use. Vehicle repairs, maintenance and washing will be conducted off-site. Vehicles and equipment will be stored in an upland location outside the riparian setback when not in use.



Figure 5: Fuel containment shed

3.4. Spill prevention and clean up procedures

Spill kits will be placed in the fuel containment shed, in the processing building, and in the Ag barn. Spill kits will include nitrile gloves, absorbent materials (cat litter, saw dust, rags, shop towels etc.). Five-gallon buckets with lids and high strength garbage bags will be used to contain cleanup materials. Employees will be trained on proper use of spill response equipment.

Any fertilizer pesticide, petroleum product or hazardous materials spills will be immediately cleaned up using the spill kits and shovels/brooms. If spills occur on the ground, the spill area will be dug up and placed in a 5-gallon bucket or thick garbage bag. Potentially hazardous material spills on impermeable surfaces will be controlled with dry absorbents. Once contained, the absorbent materials and the liquids can be shoveled or swept up and placed in a 5-gallon bucket or garbage bag. All spill cleanup waste will be properly disposed at the Eureka hazardous waste facility.

All spills that could threaten the riparian area or groundwater will be reported to the Humboldt County Department of Environmental Health and Human Services (800) 963-9241 and/or the State Office of Emergency Services (800) 852-7550. The RWQCB and CDFW will also be notified.

4. Trash/Refuse and Domestic Wastewater BPTC Measures

4.1. Trash and refuse generated at the site

Cultivation wastes generated onsite include harvested plant waste, un-useable soil, broken plastic pots, empty plastic bottles, and plastic sheets/bags. Other related wastes include household trash, recycling, and construction debris. Trash and refuse storage locations can be seen in the site map set on sheets 1 & 4.

Harvested plant material will be separated from the soil materials, and composted onsite. Compost piles will be located outside the riparian setback and surrounded by bio-swale perimeters or silt fencing and covered during the wet season. Spent soil piles will also be included within the bio-swale perimeter or surrounded with silt fencing. Soil is reused many times over; un-useable soil will be spread on a stable slope, contoured to match the surrounding topography, compacted, and naturally re-vegetated with adjacent native grass.

Pots used during cultivation are reused each year; when not in use, the pots will be stacked and stored inside the Ag building. All broken pots and plastic bottles will be collected in the onsite recycling bins and hauled on a monthly basis to the Fortuna waste transfer station. Any unused plastic sheeting or used soil amendment bags will be collected and secured in a bin or bundle so as to eliminate the risk of plastics being blown off site and entering waterways. This material will be disposed at the Fortuna Transfer Station until such time that recycling of these materials becomes available.

All household garbage and recycling will be contained in bins with locking lids so that plastics and/or other light weight materials will not be blown into the nearby waterways. Garbage will be self-hauled to the transfer station in Fortuna. All construction debris will be properly recycled or disposed of at the Fortuna transfer station.

Site map

Sheets 1 & 4 of the site map set show the trash and recycling storage location near the Ag barn / nursery.

4.2. Number of employees, visitors, and residents of site

The property owner (resident), and approximately 4 -12 seasonal employees will conduct the cannabis cultivation operation. An additional two residents live on site full time. Visitation to the site consists of a varying amount of family and friends as well as contractors (during construction) and regulatory agency staff (as needed).

Wastewater generated at the site

Wastewater is generated at the onsite residence and the processing building bathrooms. Wastewater will also be generated from the use of portable toilets located at each cultivation site.

Wastewater disposal

The wastewater generated in the onsite residence and processing building will be handled by the existing unpermitted septic systems. Septic systems will require further analysis to assess capacity, and will be replaced or upgraded as needed. The septic tanks will be periodically pumped by a licensed and insured septic system servicing company. All pumped septage will be disposed at the nearest permitted wastewater treatment plant.

Portable toilets will be serviced weekly by Six Rivers Portable Toilets. The septage will be disposed at the nearest permitted wastewater treatment facility. A "will serve" letter for portable

toilet servicing was included as part of the Humboldt County application package. No outhouses or pit privies exist onsite.

The site map set in Appendix A shows the location of the septic tanks on sheet 3, and portable toilet locations on sheets 4, 6, & 8.

5. Winterization and BPTC Measures

5.1. Winterization activities to prevent discharges of waste

Stockpiles of construction materials such as aggregate will be covered and surrounded with fiber rolls or silt fencing. All compost and soil piles will be covered and surrounded with silt fencing if not protected by the bio-swale perimeters. All bare soil associated with cultivation areas will be covered with straw and surrounded by a fiber roll as needed to prevent sediment discharge during rain events. Applicant will ensure that sufficient cover (tarps, straw) and fiber roll / silt fencing materials are onsite.

Winterization activities will also include a visual survey of the cultivation areas to ensure that all plastics and trash are collected and secured in bins with lids. The survey will also ensure that all potentially hazardous materials are properly stored in secondary containment in the Ag barn. Heavy equipment will not be operated during the winter season (November 1 - April 15).

5.2. Maintenance of all drainage or sediment capture features

Before the onset of winter, all erosion control devices including bio-swales, the sediment detention basin, road drainage culverts and ditches will be inspected and cleaned out as needed to ensure they are not blocked or filled with debris or sediment. All sediment removed will be spread in an upland location and compacted and blended into the landscape. Bio-swales will be inspected for signs of erosion and over-topping and covered with straw or reinforced as needed. Culvert outfalls will be inspected and armored to ensure that they are not at risk of being under cut during the winter season. See the Road Assessment and Improvement Plan (Appendix B) for more details.

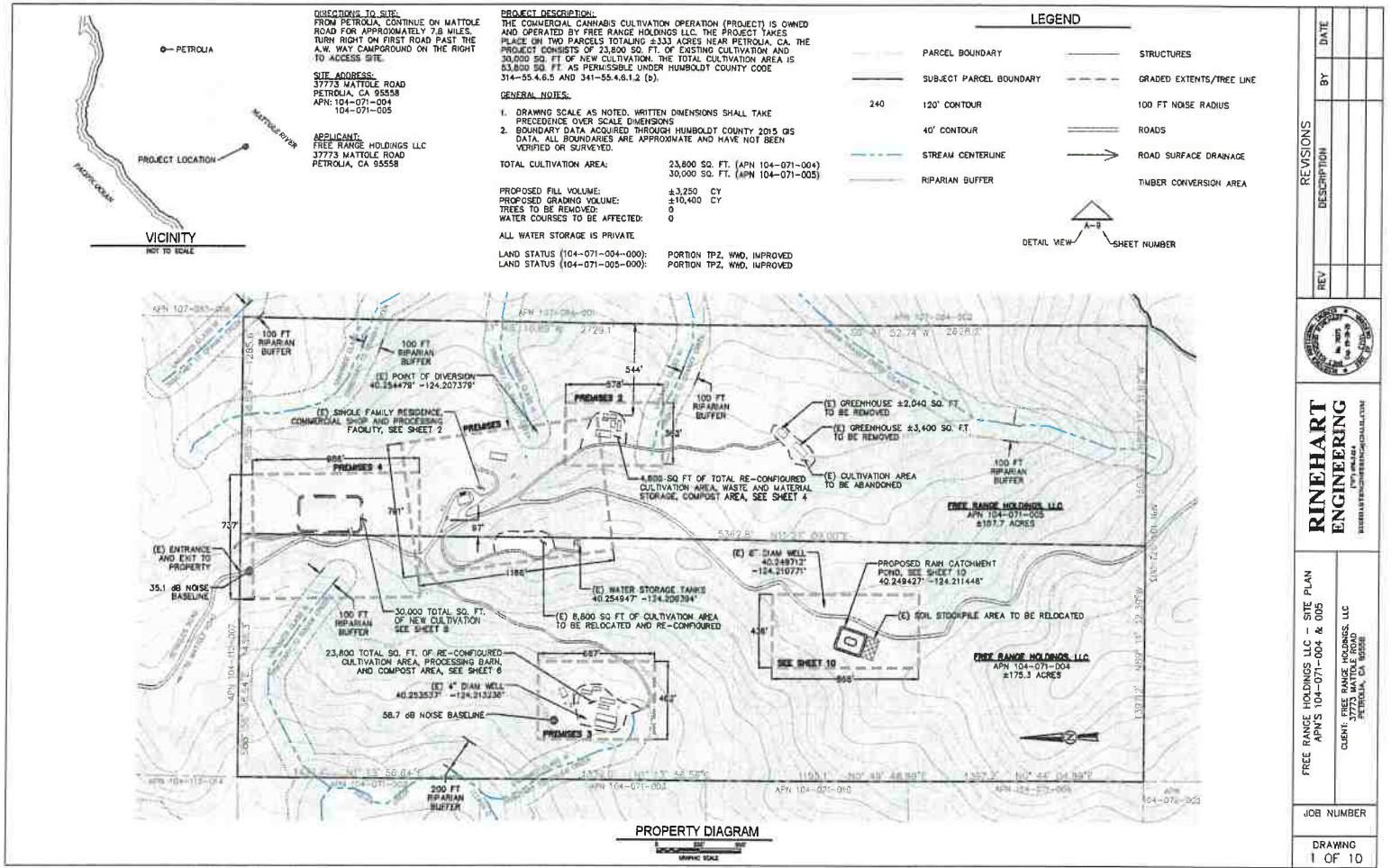
5.3. Re-vegetation activities

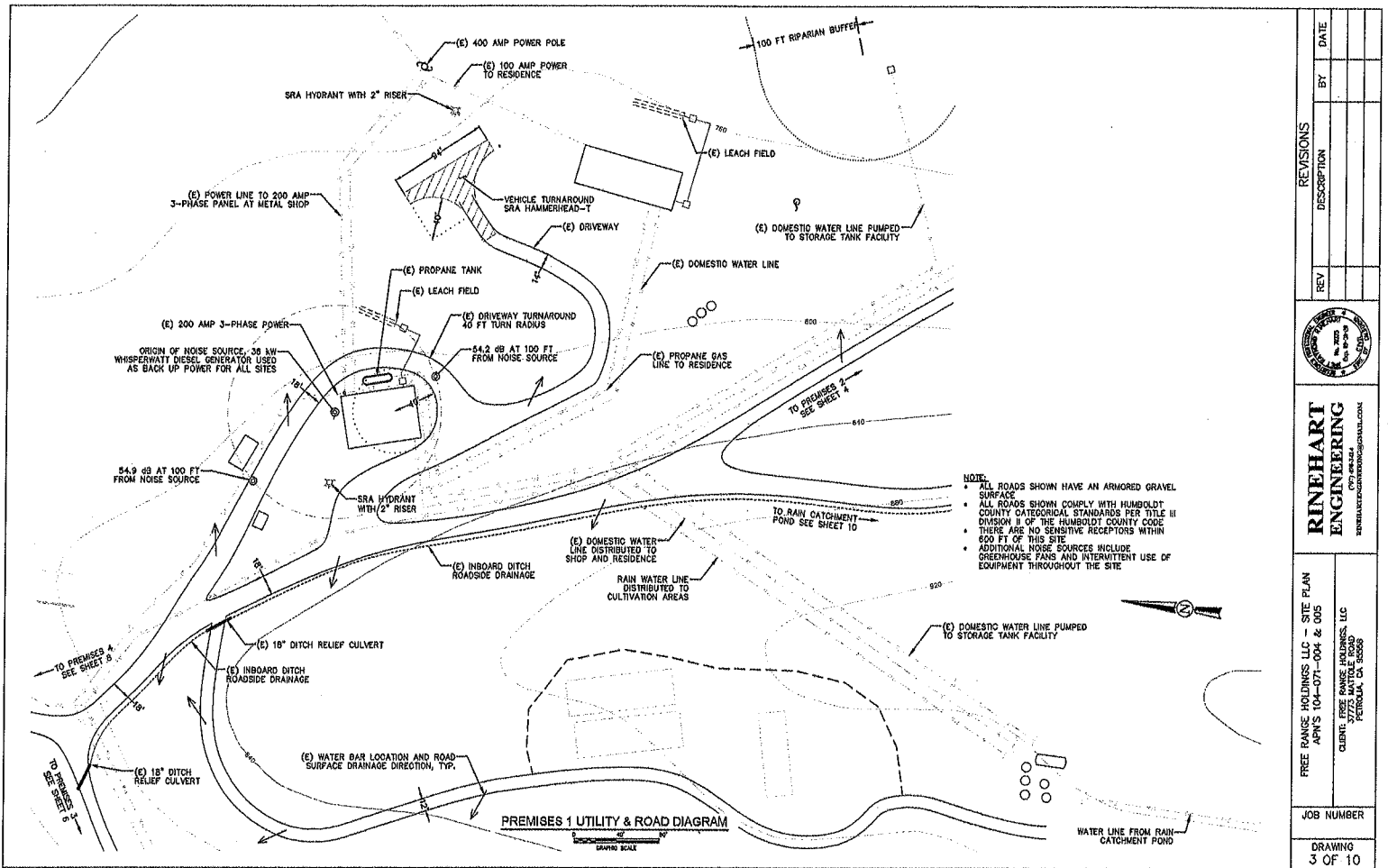
All bare soil resulting from site construction and road maintenance activities will be mulched and left to naturally re-seed within seven days of ceasing construction operations. Abandoned legacy cultivation sites will be mulched and allowed to naturally re-vegetate once the edges are re-graded.

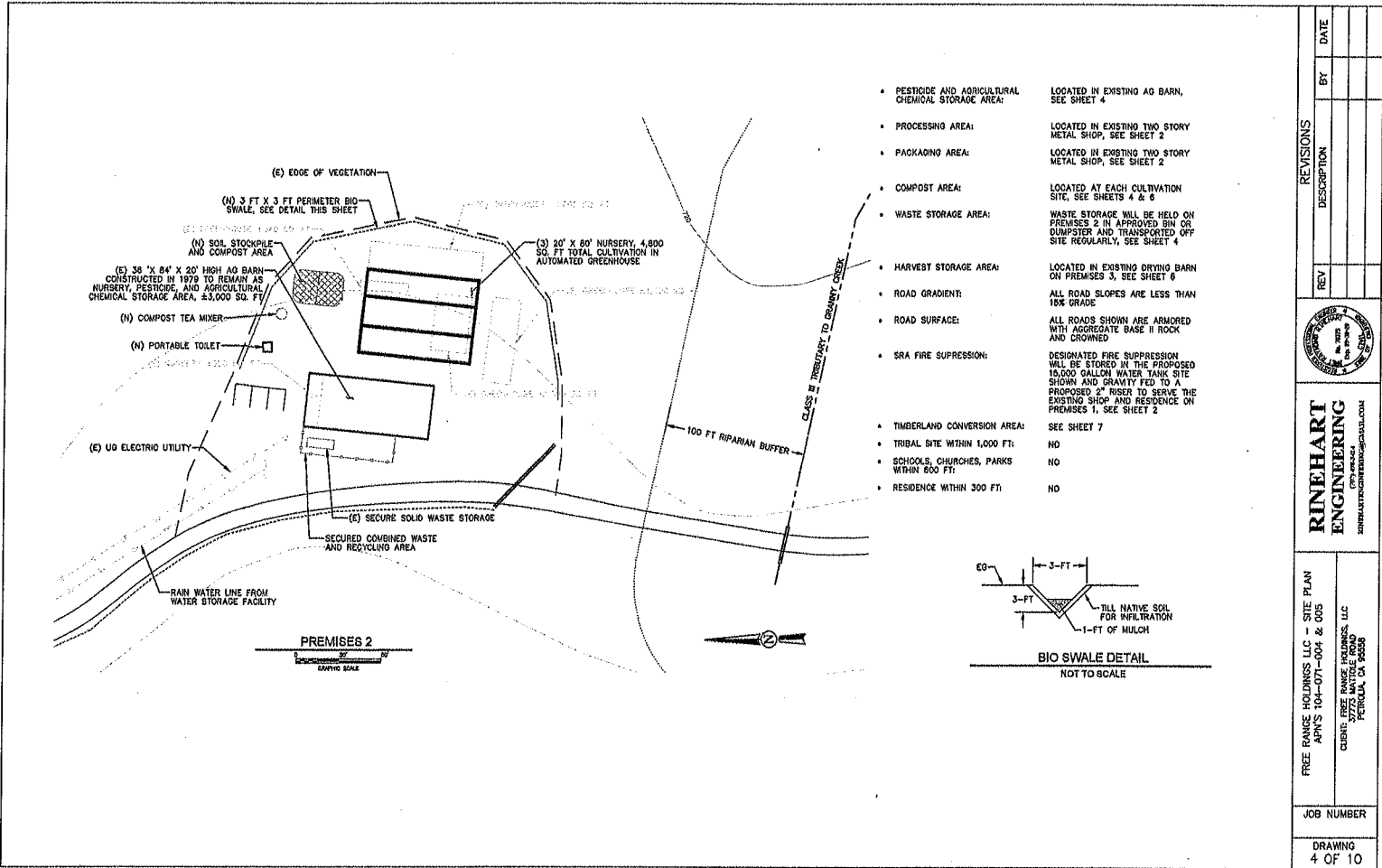
5.4. All BPTC measures will be completed before the onset of the winter season; the applicant will contact the Regional Water Board if an extension is required for any BPTC measures.

5.5. Potential legacy discharge issues exist from previous road construction and historic cannabis cultivation activities. Planned road upgrades designed to address legacy discharge issues include: adding ditch relief culverts above stream crossings to hydrologically disconnect road drainage ditches from the natural waterways, re-grading as needed to direct stormwater flows away from natural drainage systems, and armoring inlets and outlets as needed. Any unused roads will be abandoned and allowed to naturally re-vegetate. See the Road Assessment and Improvement Plan in Appendix B for road upgrade details.

Legacy discharges associated with historic cultivation will be addressed by re-grading and re-vegetating abandoned cultivation sites as described in section 1.2 above. These efforts along with the proposed runoff capture and detention measures described above will eliminate any potential for legacy discharges due to historic cultivation.

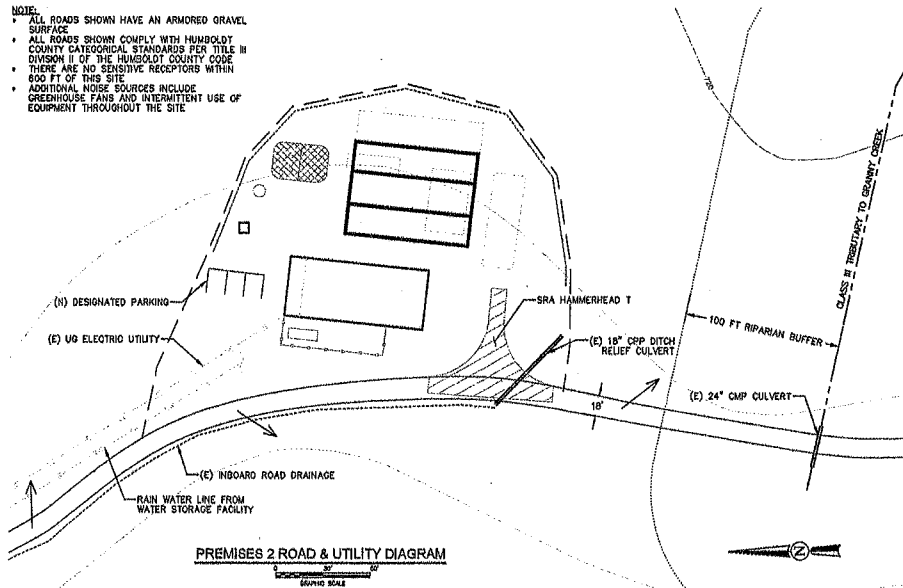






REVISIONS			
REV	DESCRIPTION	BY	DATE
			
RINEHART ENGINEERING RINEHARTENGINEERING@GMAIL.COM			
FREE RANGE HOLDINGS LLC - SITE PLAN APN'S 104-071-004 & 005		CLIENT: FREE RANGE HOLDINGS, LLC 3077 AVENUE 100 PETROLIA, CA 95828	
JOB NUMBER			
DRAWING 4 OF 10			

- NOTE:
- ALL ROADS SHOWN HAVE AN ARMORED GRAVEL SURFACE
 - ALL ROADS SHOWN COMPLY WITH HUMBOLDT COUNTY CATEGORICAL STANDARDS PER TITLE III DIVISION II OF THE HUMBOLDT COUNTY CODE
 - THERE ARE NO SENSITIVE RECEPTORS WITHIN 600 FT OF THIS SITE
 - ADDITIONAL NOISE SOURCES INCLUDE GREENHOUSE FANS AND INTERMITTENT USE OF EQUIPMENT THROUGHOUT THE SITE



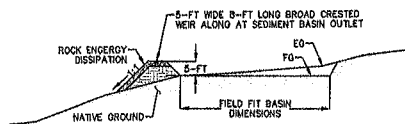
PREMISES 2 ROAD & UTILITY DIAGRAM

GRAPHIC SCALE
0 25 50



REVISIONS			
REV	DESCRIPTION	BY	DATE
RINEHART ENGINEERING <small>REGISTERED PROFESSIONAL ENGINEERS CALIFORNIA LICENSE NO. 104-071-004 & 005</small>			
FREE RANGE HOLDINGS, LLC - SITE PLAN APN'S 104-071-004 & 005 CLIENT: FREE RANGE HOLDINGS, LLC 3777 AVENUE 100 PETROLIA, CA 95568			
JOB NUMBER			
DRAWING			
5 OF 10			

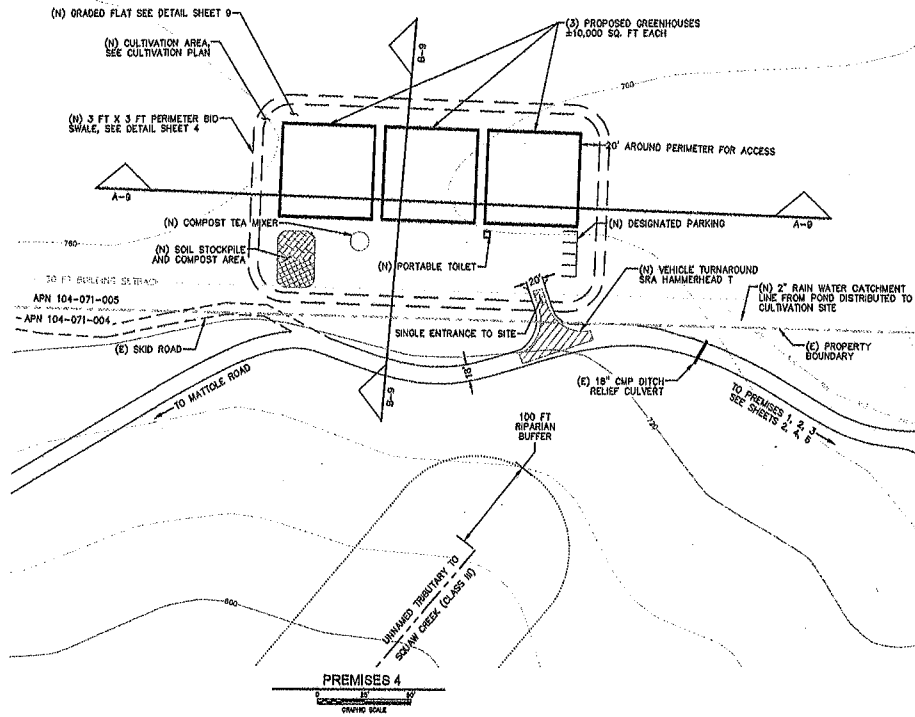
- ALL ROADS SHOWN HAVE AN ARMORED GRAVEL SURFACE
- ALL ROADS SHOWN COMPLY WITH HUMBOLDT COUNTY CATEGORICAL STANDARDS PER TITLE II DIVISION II OF THE HUMBOLDT COUNTY CODE
- THERE ARE NO SENSITIVE RECEPTORS WITHIN 800 FT OF THIS SITE
- ADDITIONAL NOISE SOURCES INCLUDE GREENHOUSE FANS AND INTERMITTENT USE OF EQUIPMENT THROUGHOUT THE SITE



NOT TO SCALE

FREE RANGE HOLDINGS LLC - SITE PLAN AYN 104-07-004 & 005 CLIENT: FREE RANGE HOLDINGS, LLC 37773 MATTHEW ROAD PETERDALE, CA 95568 RINEHARTENGINEERING@GMAIL.COM (970) 494-5643			REVISIONS	
	REV	DESCRIPTION	BY	DATE
DRAWING 7 OF 10	JOB NUMBER			

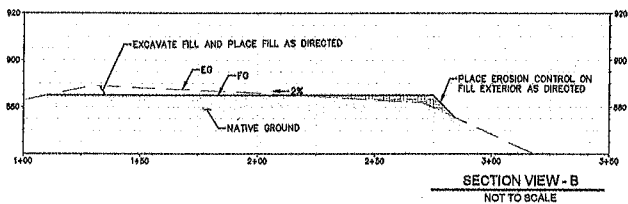
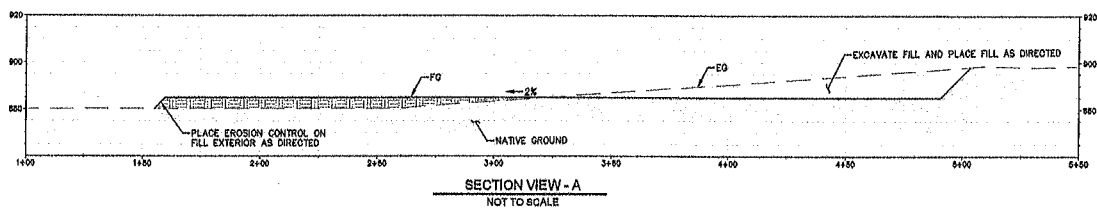
- PESTICIDE AND AGRICULTURAL CHEMICAL STORAGE AREA: LOCATED IN EXISTING AG BARN, SEE SHEET 4
- PROCESSING AREA: LOCATED IN EXISTING TWO STORY METAL SHOP, SEE SHEET 2
- PACKAGING AREA: LOCATED IN EXISTING TWO STORY METAL SHOP, SEE SHEET 2
- COMPOST AREA: LOCATED AT EACH CULTIVATION SITE, SEE SHEETS 4 & 6
- WASTE STORAGE AREA: WASTE STORAGE WILL BE HELD ON PREMISES 2 IN APPROVED BIN ON DUMPSITE AND TRANSPORTED OFF SITE REGULARLY, SEE SHEET 4
- HARVEST STORAGE AREA: LOCATED IN EXISTING DRYING BARN ON PREMISES 3, SEE SHEET 6
- ROAD GRADIENT: ALL ROAD SLOPES ARE LESS THAN 15% GRADE
- ROAD SURFACE: ALL ROADS SHOWN ARE ARMORED WITH AGGREGATE BASE II ROCK AND CROWNED
- SRA FIRE SUPPRESSION: DESIGNATED FIRE SUPPRESSION WILL BE STORED IN THE PROPOSED 15,000 GALLON WATER TANK SITE SHOWN AND GRAVITY FED TO A PROPOSED 2" RISER TO SERVE THE EXISTING SHOP AND RESIDENCE ON PREMISES 1, SEE SHEET 2
- TIMBERLAND CONVERSION AREA: SEE SHEET 7
- TRIBAL SITE WITHIN 1,000 FT: NO
- SCHOOLS, CHURCHES, PARKS WITHIN 500 FT: NO
- RESIDENCE WITHIN 300 FT: NO



REVISIONS		DATE
REV	DESCRIPTION	BY

RINEHART ENGINEERING
RINEHARTENGINEERING.COM

FREE RANGE HOLDINGS LLC - SITE PLAN APN'S 104-071-004 & 005 CLIENT: FREE RANGE HOLDINGS, LLC 10000 RINEHART DRIVE, SUITE 100 PETROLIA, CA 95858	JOB NUMBER DRAWING 8 OF 10
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GRADED FLAT DETAIL SECTION VIEWS

- NOTES:
- LOOSE MATERIAL SHALL BE REMOVED, TRACKED, AND WAGDOLE AS DIRECTED.
 - ALL CORRECTIVE GRADING SHALL CONFORM TO HUMBOLDT COUNTY TITLE III, DIVISION 3, SECTION 331-12.
 - SLOPES NOT TO EXCEED 1:1 UNLESS SPECIFIED.
 - ALL DISTURBED SLOPES SHALL BE STAKED WITH WADDLES EVERY 10-FT, SPREAD WITH STRAW, AND RE-SEED WITH APPROVED NATIVE GRASS MIX.
 - ALL FINISHED GRADE SHALL MAINTAIN POSITIVE DRAINAGE.

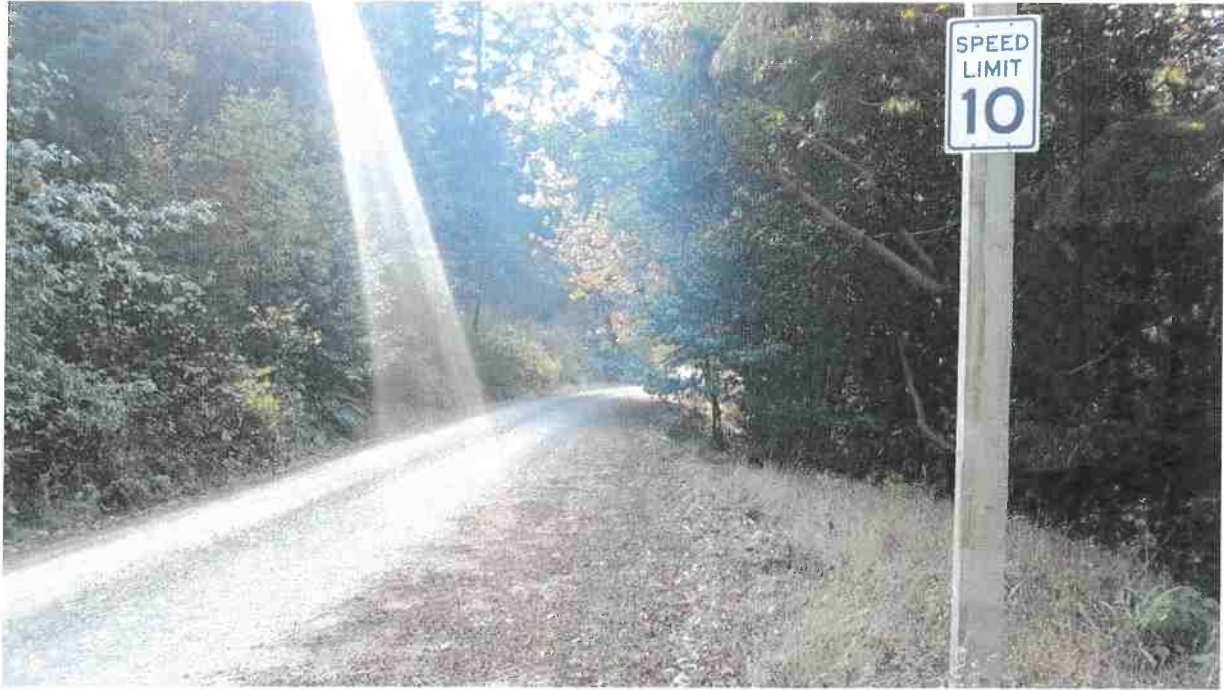
REVISIONS		DATE
REV	DESCRIPTION	BY

RINEHART ENGINEERING
ENGINEERING & ARCHITECTURE
10000 RINEHART DRIVE
PERRIS, CA 92408

FREE RANGE HOLDINGS LLC - SITE PLAN APN'S 104-071-004 & 005	CLIENT: FREE RANGE HOLDINGS LLC 10000 RINEHART DRIVE PERRIS, CA 92408
JOB NUMBER	
DRAWING 9 OF 10	

Road System Assessment & Improvement Plan

**37773 Mattole Road
Petrolia, CA 95558
APNs 104-071-004 and 104-071-005
Freerange Holdings, LLC
7.17.2019**



Prepared By:

**Rinehart Engineering
Bret Rinehart, PE
559 Howard Heights Rd
Eureka, CA 95503
707-498-3414
rinehartengineering@gmail.com**

Overview

The purpose of this road assessment report is to summarize current road conditions leading to the Freerange Holdings, LLC cultivation project (Project) sites, and identify corrective measures needed for compliance with the Humboldt County road systems performance standards as well as the General Order requirements of the State Water Resources Control Board Division of Water Quality (Water Board). All road segments were evaluated for their drainage features as well as their capacity to support expected volumes of 4-12 additional vehicles per day related to cultivation activities. The following assessment will be presented in Road Segments A through F.

The Project site is accessed via Reynolds Road, a 1.1 mile road that connects to the County-owned Mattole Road. Reynolds Road is a 20 ft wide, crowned gravel road that meets Cal Fire standards and Category 4 standards as outlined in the Appendix to Title III, Division II of the Humboldt County Code (Title III). Reynolds Road terminates on the Freerange Holdings, LLC property where it branches into access roads that meet the Category 3 and Category 1 standards of Title III. The access roads to the Project cultivation and processing sites meet all performance standards required by Humboldt County Code 314-55.4.12.1.8 including Dead End Road Length and Functional Capacity, and are expected to accommodate cultivation related traffic.

During construction of the road improvements prescribed herein, best management practices and standard designs presented in Appendix B of the Five Counties *'Water Quality and Stream Habitat Protection Manual for County Road Maintenance in Northwestern California Watersheds'* (Five Counties Road Manual) will be employed to appropriately handle runoff and increase longevity of service.

Road Maintenance Association (RMA) Information

The Applicant will be the only permit holder on Reynolds Road, and therefore the formation of a Road Maintenance Association is not required (per section 314-55.4.12.1.8). The Applicant will be solely responsible for maintaining the roads on APNs 104-112-007, 104-071-004 and 104-071-005. Further, the applicant will make arrangements with the neighboring easement holders to ensure regular maintenance of Reynolds Road up to their respective termini.

Road Segment A

Mattole Road to Main Project Site - 1.1 miles

Summary

The Project properties are accessed from Mattole Road via Reynolds Road, a private Category 4 roadway (Road Segment A) per Title III. Road Segment A passes through one parcel before continuing through the 3 parcels owned by Free Range Holdings, LLC.

Road Segment A begins with a 15 ft wide gate with a large turnout at the entrance. The road is approximately 20 ft wide with slopes no greater than 15%. The road surface is an armored and crowned road with numerous functional drainage features. Twelve culverts exist along Road Segment A, four of which convey to Class II/Class III drainages, with the remainder of the culverts serving as inboard ditch relief. Crossing each drainage from mile zero to mile 1.1 along Road Segment A, the corrugated metal pipe (CMP) culvert diameters are 36 inches, 60 inches, 60 inches, and 18 inches, respectively. These crossings are near the top of a ridge and are tributaries to Squaw Creek. All ditch relief culverts are 18" CMP's that are appropriately sized and spaced evenly along the road.

Between the inboard ditch relief culverts, several rolling dips are installed on the outboard side of the road crown and spaced appropriately along the road. There was no evidence of overtopping or erosion at the time of inspection. Road Segment A is a safe and stable road with functioning drainage features that require only routine maintenance.

Recommendations

Upon inspection, the stream crossing culverts appear to under-sized, and may require being replaced pending a California Department of Fish & Wildlife (CDFW) notification LSAA 1600-2019-0326-R1. The following recommendations are therefore subject to change. Corrective measures as part of the notification may include, but not limited to, disconnecting road drainage features from drainage channels. Each outlet, at minimum, requires the addition of rock at the outlets to dissipate energy and eliminate the existing drop to prevent further incision that could lead to a projected outlet or culvert failure. Energy dissipation, and downs spouts (where appropriate), should be placed according to design standards shown in Appendix B-3.6 and 3.7 in the Five Counties Road Manual on the four stream crossings. Rock used at the outlets will be sized for each culvert using the design standards in Appendix B-7.9 of the Five Counties Road Manual. These steep drainages are also prone to passing debris and routine maintenance at the culvert inlets will be required to maintain proper function. At the end of the design life, or at the time of failure, new appropriately sized culverts should be placed on grade with the channel to prevent major grade breaks in the flow path. This will reduce the risk of incision and reduction of capacity caused by plugging. To further decrease the risk of a plugged culvert, the head water to diameter ratio should be verified to be ± 0.6 at the time of installation.

Each ditch relief culvert also requires routine maintenance and energy dissipation at the outlets as specified in Appendix B-3.6 and 3.7 of the Five Counties Road Manual. Downspouts should be added to any ditch relief culvert that discharges onto the road prism.

As of the date of this inspection, all rolling dips are smooth and stable, and do not require any major repair. Routine maintenance should be continued. In some areas, spoils from the last road grading, line the edge of the road preventing runoff from being shed. These spoils should be spread out and stabilized. Spoils also exist at the outlet of some of the rolling dips. These outlets should be stabilized with energy dissipation mechanisms as per the design standards in Appendix B-8.6 of the Five Counties Road Manual.

Road Segment B

End of Road Segment A to Proposed Rain Catchment Pond Site - 0.5 miles

Summary

Road Segment B is a continuation of Reynolds Road (Road Segment A), which sees less use. One other parcel can be accessed through an easement on Reynolds Road, but it is not known how often this access is used. The road climbs up to a ridge along a cut bank road approximately 16 ft wide at slopes no greater than 15%. The road has been armored and has surface drainage features and inboard ditch culverts toward the beginning of the road segment. The inboard ditch continues under the entrance of Road Segment D and Road Segment E through 24" corrugated plastic pipe (CPP) culverts before being discharged. The surface drainage features have been overtopped which has caused localized erosion on the lower portion of the road, overwhelming the inboard ditch. The remaining armor appears to be native rock embedded into the road surface. Once the grade becomes less steep, the surface drainage functions better from the out-sloped nature of the road. The road continues beyond the 0.5 mile marker shown on Figure 3 and terminates on the adjacent property. It is seldom used and is not expected to be subject to increased use due to cultivation. The width and use of the road meets Category 3 road standards per Title III.

Recommendations

The following recommendations are also subject to change per pending CDFW LSAA 1600-2019-0326-R1. Corrective measures as part of the notification may include, but not limited to, disconnecting road drainage features from drainage channels. Road Segment B requires the addition of imported aggregate rock to be used on the road surface. At road sections along a cut bank, the road should be crowned to allow out sloped drainage as well as inboard drainage. Currently, the rolling dips in place have been eroded in spots and need to be improved per the standard designs in Appendix B-8.6 of the Five Counties Road Manual. Rolling dips should be spaced in a way to effectively discharge inboard drainage to prevent further disturbance to the road. The inboard ditch can be lined with check dams to slow water before being discharged by the rolling dip, minimizing surface erosion. When appropriate, a grade reversal may occur at a rolling dip to alternate the road drainage from inboard/crowned to an out sloped road. Beyond the entrance to the proposed rain catchment pond site (0.5 miles), the road is still subject to review by CDFW and the North Coast Water Quality Control Board (NCWQCB) and may require corrective actions.

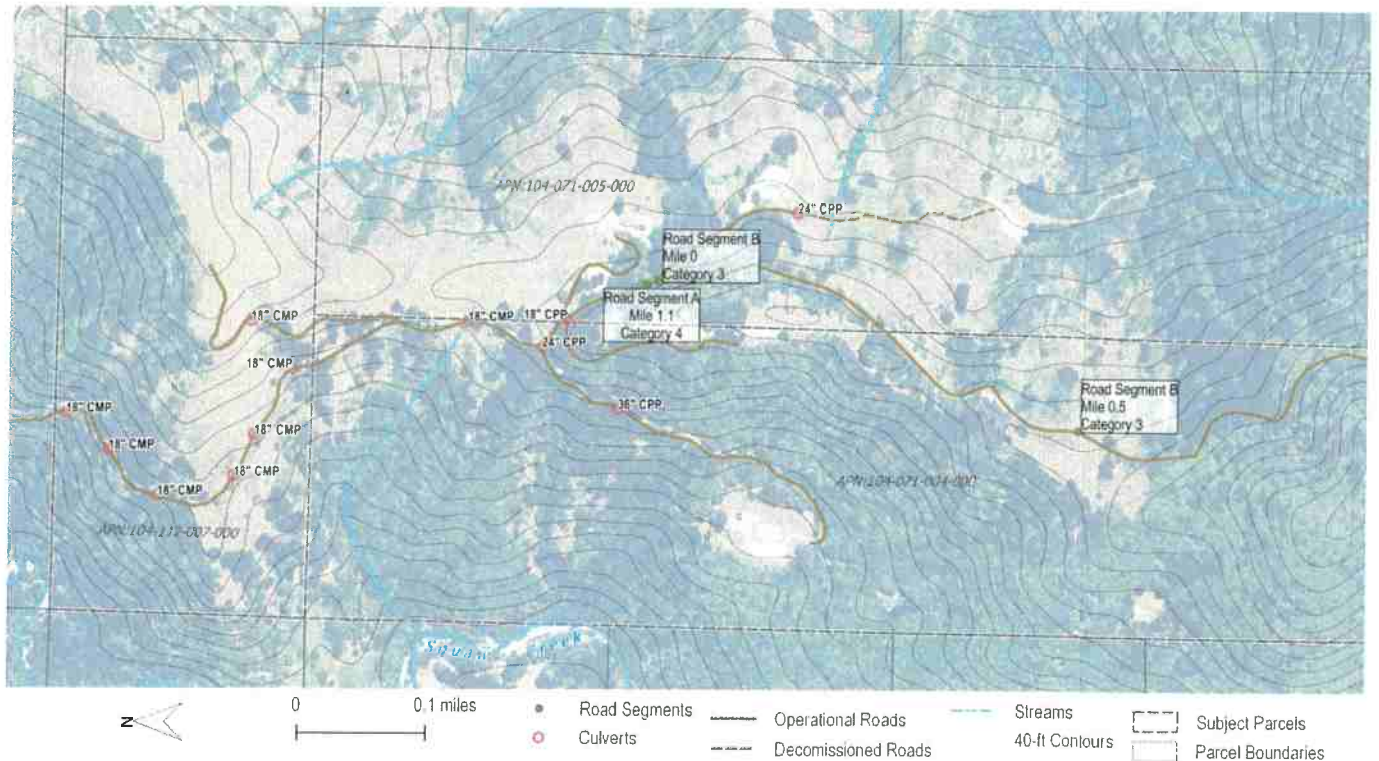


Figure 3: Road Segment B Overview



Figure 4: Current Condition of Road Segment B

Road Segment C

End of Road Segment A to Abandoned Cultivation Site and AG Storage Area - 0.1 miles

Summary

Road Segment C is an approximately 18 ft wide road with slopes less than 15%. The road leads to a barn and an abandoned cultivation site. A defined inboard ditch captures road surface runoff before discharging through an 18" CPP culvert that directs flow toward a seasonal drainage. Evidence of poor drainage exists due to the adjacent graded flat with signs of standing water in some areas. The road continues across the seasonal drainage that is conveyed through a 24" CMP culvert. The crossing is at the headwaters of a seasonal tributary to Granny Creek. This section of the road was used to access a legacy cultivation site, that is not currently in use, as well other property features that are not used for commercial activity. Up to the seasonal drainage crossing, the width and use of the road meet Category 3 road requirements per Title III. From the seasonal drainage to beyond the legacy cultivation site, the road meets Category 1 requirements per Title III.

Recommendations

The following recommendations are subject to change per pending CDFW LSAA 1600-2019-0326-R1. Corrective measures as part of the notification may include, but not limited to, disconnecting road drainage features from drainage channels. Additional road armor should be imported and placed to crown the road allowing for out sloped drainage and inboard drainage. Where appropriate, the road should be completely out sloped to relieve the inboard ditch as much as possible. At the 18" CPP inboard ditch relief culvert, an armored sediment basin that meets the design standards of Appendix B-3.8 in the Five Counties Road Manual should be installed. A downspout and energy dissipators that meet the design standards of Appendix B-3.6 and 3.7 should also be installed. In addition to the road improvements, the graded area should be brought up to grade with armored material to improve site drainage. The perimeter of the flat should be out sloped to 2% maximum and lined with a vegetated bio swale to treat runoff.

Cultivation will not continue on the graded area of the legacy site, and the graded area shall be stabilized and seeded as necessary. The 24" CMP culvert shall remain. The road shall be maintained to meet Category 1 requirements per Title III and may require corrective action pending the referenced CDFW notification.

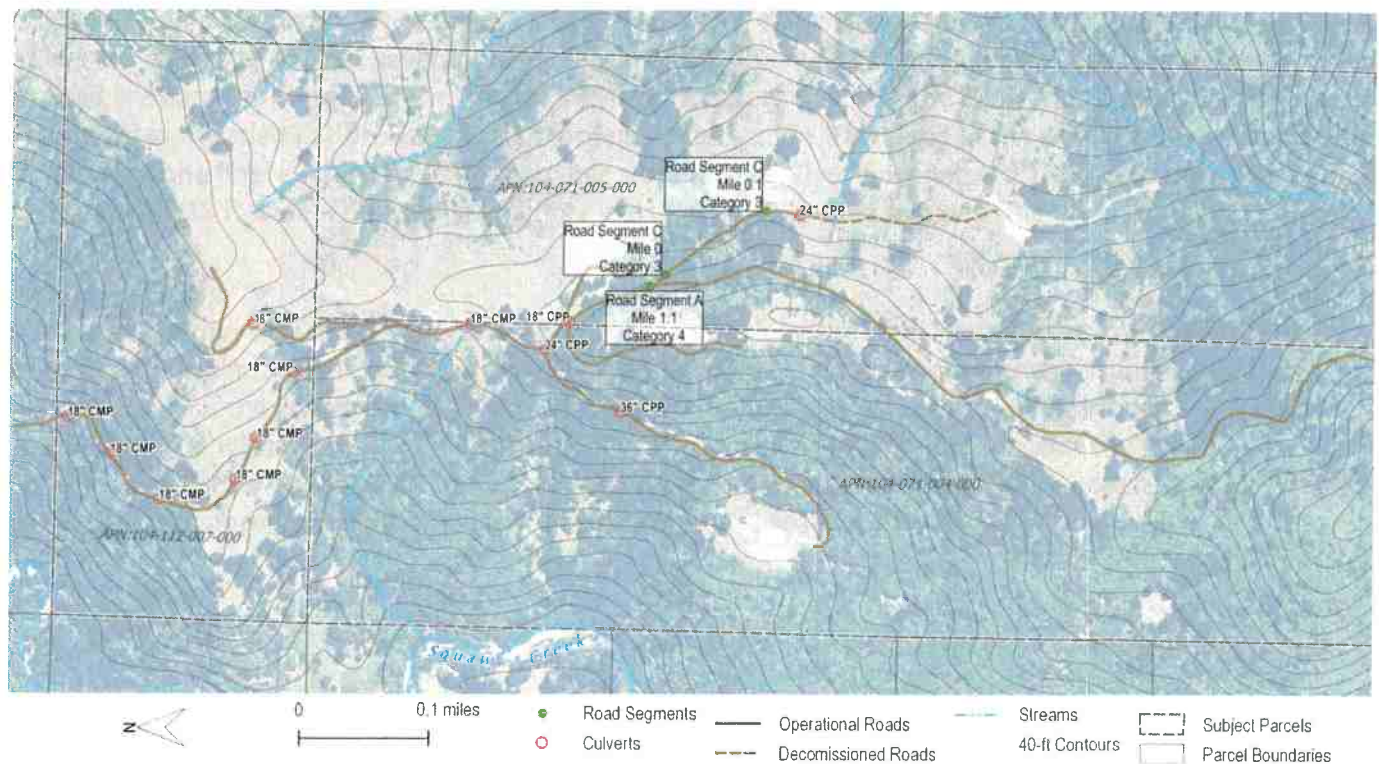


Figure 5: Road Segment C Overview

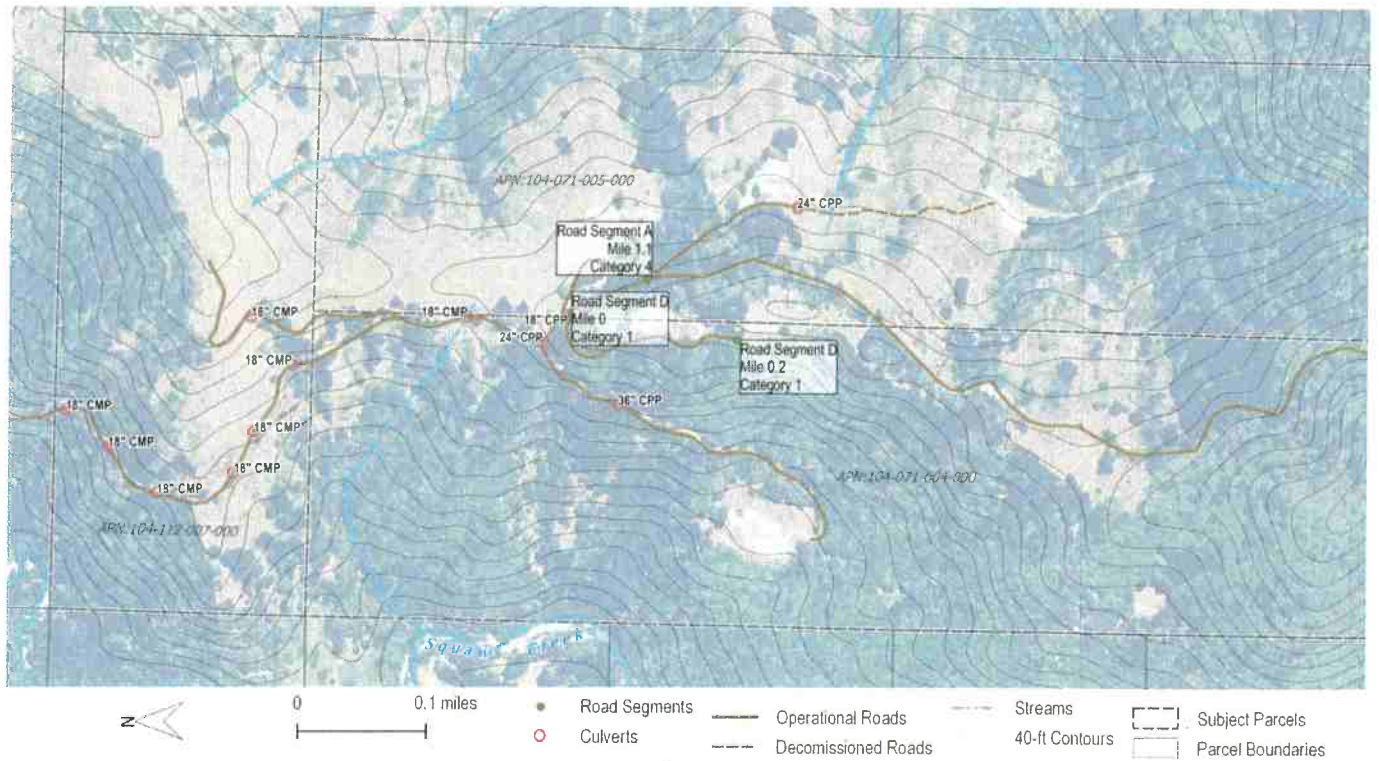


Figure 7: Road Segment D Overview



Figure 8: Existing Condition of Road Segment D

Road Segment E

End of Road Segment A to Existing Cultivation Area - 0.3 miles

Summary

This segment travels downhill from Road Segment A to an existing cultivation area. It immediately crosses a 24" CPP inboard ditch culvert that discharges the Road Segment B inboard ditch. The road has been recently armored with numerous functioning rolling dips spaced appropriately. There are no slopes greater than 15% and the road maintains an approximate width of 16 ft. An inboard ditch runs along the road before being conveyed by a 36" CPP ditch relief culvert. This culvert also conveys runoff from a short and steep drainage area that begins from Road Segment D's surface drainage. The culvert inlet is an excavated bowl that effectively drains both sources. The culvert outlet has ample rock energy dissipation. Along the final curve of the road before reaching the cultivation flat, the road is crowned and an inboard ditch conveys surface runoff to a seasonal tributary that flows into Squaw Creek. The current conditions of the road meet Category 3 Standards of Humboldt County Title III.

Recommendations

The following recommendations are subject to change per CDFW LSAA 1600-2019-0326-R1. Corrective measures as part of the notification may include, but not limited to, disconnecting road drainage features from drainage channels. The road surface is in stable condition and requires no additional material at the time of inspection. Routine work should be carried out to maintain the surface and functionality of the rolling dips. On the inboard ditch, check dams and a sediment basin shall be installed near the culvert inlet that meets the design standards in Appendix B-3.8 and B-9.1 of the Five Counties Road Manual. The bowl that has been excavated for the steep drainage should be laid back to blend in with the native slope and to accommodate the reshaped inlet bowl. Stabilization and erosion control methods shall be incorporated into the reshaped inlet bowl to meet design standards in Appendix B-4.2 in the Five Counties Road Manual. The inboard ditch culvert was not placed on grade with the steep and short drainage and is subject to plugging due to the current excavated inlet bowl. As a result, the culvert outlet is discharged near the road surface onto a rock energy dissipator to spread the flow. In order to improve overall performance and address the existing poor culvert alignment, the culvert shall be replaced at the end of design life or at the time of failure with a longer segment to be placed on grade with the steep slope and discharge lower onto the road prism to meet the design standards of Appendix B-3.6 of the Five Counties Road Manual.

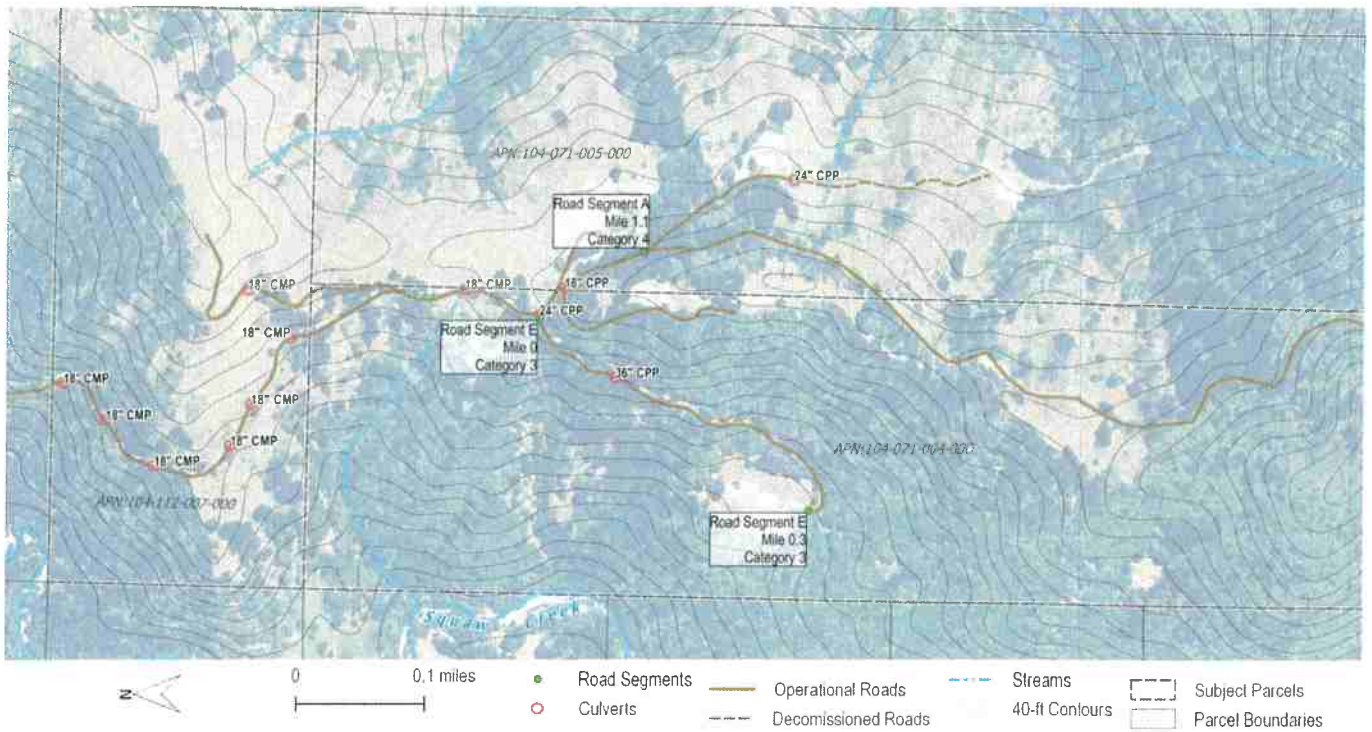


Figure 9: Road Segment E Overview



Figure 10: Existing Conditions of Road Segment E



Figure 11: Current Conditions of 36" CPP inboard relief culvert