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Water Resource Protection Plan & Site Management Plan for Kevin Murphy; APN 221-071-044

PREPARED FOR

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Table of Contents

1 SEDIMENT DISCHARGE BEST PRACTICAL TREATMENT OR CONTROL (BPTC) 1
1.1 Site Characteristics and Field Observations 1
1.1.1 Geology 1
1.1.2 Hydrologic and Hydraulic (H&H) Analyses for Crossing Structure Sizing 2
1.2 Sediment Erosion Prevention and Sediment Control BPTC Measures 5
1.2.1 Culvert Upgrades 5
1.2.2 Additional Crossing Upgrades ..... **Error! Bookmark not defined.**
1.2.3 Road Surface Treatments 7
1.2.4 Cultivation Area Treatments 7
1.2.5 Erosion Control BMPs (to be used at all sites where soil is disturbed) 8
2 FERTILIZER, PESTICIDE, HERBICIDE, AND RODENTICIDE BPTC MEASURES 8
2.1 Fertilizer 8
2.2 Pesticide, Herbicide, and Rodenticide 9
2.3 Irrigation Runoff 9
2.4 Spoils Management 9
3 PETROLEUM BPTC MEASURES 9
4 TRASH/REFUSE AND DOMESTIC WASTEWATER BPTC MEASURES 10
4.1 Trash/Refuse 10
4.2 Human Waste 10
4.3 Cultivation Waste 10
5 WINTERIZATION BPTC MEASURES & SCHEDULE 10
6 OTHER CULTIVATION SITE INFORMATION 10
6.1 Estimated Water Storage and Use 10
6.1.1 Water Sources 12
6.1.2 Water Storage 12
6.1.3 Water Use 12
7 REFERENCES 14

This document serves as the Water Resource Protection Plan and Site Management Plan on behalf of the discharger, Kevin Murphy, pursuant to Order No. R1-2015-0023 (Waiver of Waste Discharge Requirements and General Water Quality Certification for Discharges of Waste Resulting from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects in the North Coast Region), and/or Order WQ 2017-0023-DWQ (General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for discharges of Waste Associated with Cannabis Cultivation Activities) of the California Water Code Section 13260(a).

1 SEDIMENT DISCHARGE BEST PRACTICAL TREATMENT OR CONTROL (BPTC)

1.1 Site Characteristics and Field Observations

Stillwater Sciences has been contracted by the owners of APN 221-071-044 to perform a site assessment and develop a Water Resource Protection and Site Management Plan to decrease existing and potential future sediment delivery to tributaries of Salmon Creek and reduce other threats to water quality. The site map is included in Appendix B, hydrologic and hydraulic calculations were performed for each road/stream (Section 1.1.2), and site descriptions and recommendations are described in Section 1.2.

In August 2017, a site visit was conducted by Stillwater Sciences senior engineer/hydrologist (Joel Monschke). During the site visit, he conducted a road inventory and assessment of cultivation areas. There are four stream crossings on the property and two points of surface water diversion. The proposed project consists of two stream crossing culvert replacements and permitting of two points of diversion. All site locations are shown in Appendix B and each site is described below.

- Site C1 is a 48-inch diameter corrugated metal pipe stream crossing with downspout in good condition.
- Site C2 is a 36-inch diameter corrugated aluminum pipe stream crossing in fair condition.
- Site C3 is a 36-inch diameter corrugated metal pipe stream crossing in good condition.
- Site C4 is a 48-inch diameter corrugated metal pipe stream crossing in good condition.
- Site C5 is an armored ford crossing in good condition.
- Site D1 is an 8-inch diameter pipe ditch relief culvert.
- Site D2 is a 18-inch diameter pipe ditch relief culvert.
- Site SPRING HEAD is a spring point of diversion.
- Site POD is a point of diversion in an unnamed tributary.

Overall, the primary access roads on the property are in good condition. They are all surfaced with gravel and crowned.

1.1.1 Geology

The subject property is located in Southern Humboldt County, situated on the western slope South Fork Salmon Creek, a tributary to Salmon Creek in the Eel River Watershed near Miranda.

The property and surrounding vicinity is composed of Franciscan Complex geology consisting of Cretaceous and Jurassic sandstone with smaller amounts of shale, chert, limestone, and conglomerate as well as Franciscan mélange[1]. Based on NRCS soils map for the region[2], the the cultivation areas and proposed project components are in Yorknorth-Devilshole complex.

1.1.2 Hydrologic and Hydraulic (H&H) Analyses for Crossing Structure Sizing

To determine the appropriate sizing for each crossing structure, the Rational Method (also known as the Rational Formula) was used to calculate the design flow for the 100-year storm event. This method is appropriate for determining flow rates for relatively small drainage areas of less than 200 acres according to Cafferata et. al. (2004). The Rational Formula incorporates a combination of rainfall intensity, drainage area and runoff coefficient to estimate maximum flows and is defined as follows:

$$Q = CIA$$

Where:

Q = Flow Discharge
C = Runoff Coefficient
I = Rainfall Intensity
A = Area

1.1.2.1 Determining storm duration

For the Rational Method analysis, the total drainage area, slope, and longest flow path for the three crossings were determined based on field observations and analyses of a USGS topographic map. Based on these values (summarized on Table 1), the "Time to Concentration" was estimated using the Airport Drainage Formula. The "Time to Concentration" is defined as the time it takes runoff to travel along the longest flow path within the contributing watershed and arrive at a site crossing. Per Cafferata et. al., the "Time to Concentration" can be found with the following Airport Drainage Formula[3]:

$$T_c=((1.8)(1.1-C)(D^{0.5}))/(S^{0.33})$$

Where:

Tc=Time of Concentration (minutes)
C=Runoff Coefficient (dimensionless, 0<C<1.0)
D=Distance (in feet from the point of interest to the point in the watershed from which the time of flow is the greatest)
S = Slope (percent)

[1] California Department of Conservation, Geologic Map of California (2010), accessed online at: http://maps.conservation.ca.gov/cgs/gmc
[2] NRCS Watershed Boundary Dataset, Sub-region level, 2012.
[3] Note that two methods for determining Time to Concentration were described in Cafferata et. al. including (1) the Kirpich formula and (2) the Airport Drainage equation. The Kirpich Formula was developed in 1940 based on precipitation and runoff data from seven rural watersheds in Tennessee with average slopes ranging from 3% to 10%. We believe that the Kirpich Formula does not provide good estimates for Time to Concentrations on steeper northern California watersheds. Additionally, Yee (2004) recommends use of the Airport Drainage equation.

Table 1. Summary of time-to-concentration analyses.

Site Number	Drainage Area (ac)	Longest flow Path (ft)	Maximum Elevation Change (ft)	Slope (%)	Time (min)	100 year intensity (in/hr)
C1	96.6	4100	850	21	30	2.0
C2	39.7	2527	720	28	21	2.4
C3	30.5	1657	377	23	18	2.5
C4	92.0	3600	800	22	27	2.1
C5	14.4	1600	600	38	15	2.8

1.1.2.2 Precipitation data

The intensity-duration-frequency (IDF) curve used for the Rational Method analysis came from National Oceanic and Atmospheric Administration's National Weather Service Hydrometeorological Design Studies Center Precipitation Frequency Data Server (PFDS).[4] Rainfall intensity was determined from the IDF curves for the 100-year recurrence interval for storm durations equivalent to the "Time to Concentration" for the project sites. The 100-year rainfall intensity from the PFDS for each site is also shown on Table 1.

1.1.2.3 Runoff coefficients

Cafferata et. al. suggests a runoff coefficient ranging from 0.30 to 0.45, depending on the specific location of the crossing. Per Buxton et. al. (1996), as cited in Cafferata et. al., a runoff coefficient value of 0.4 is recommended for North Coast California specifically. Additionally, a runoff coefficient of 0.4 reflects woodland with heavy clay soil, soil with a shallow impeding horizon, or shallow soil over bedrock per Figure 2 taken from Appendix A, Table A-1 of *The Handbook for Forest, Ranch and Rural Roads* (Weaver et. al. 2015).

For this property, we have used a Runoff Coefficient of 0.4 because the drainage areas consist of mostly woodland with soil with a shallow impeding horizon.

Soils	Land use or type	C value
Sandy and gravelly soils	Cultivated	0.20
	Pasture	0.15
	Woodland	0.10
Loams and similar soils without impeded horizons	Cultivated	0.40
	Pasture	0.35
	Woodland	0.30
Heavy clay soil or those with a shallow impeding horizon; shallow over bedrock	Cultivated	0.50
	Pasture	0.45
	Woodland	0.40

Figure 1. Runoff coefficients (adopted from Appendix A, Table A-1 of the *Handbook for Forest, Ranch and Rural Roads* [2015]).

[4] http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

1.1.2.4 Storm discharges

Discharges from the Rational Method calculations for 100-year storm events are shown on Table 2.

Table 2. 100-year discharges.

Site Number	100-year Discharge (cfs)
C1	77
C2	46
C3	22
C4	76
C5	16

1.1.2.5 Drainage structure sizing

Culvert crossings required to carry 100-year discharges were sized using the FHWA Culvert Capacity Inlet Control Nomograph (Figure A-1 of Weaver et. al. 2015) using an HW/D ratio of 0.67, as shown in Figure 2 below.

Specific upgrade recommendations for each culvert crossing are described in Section 1.2.

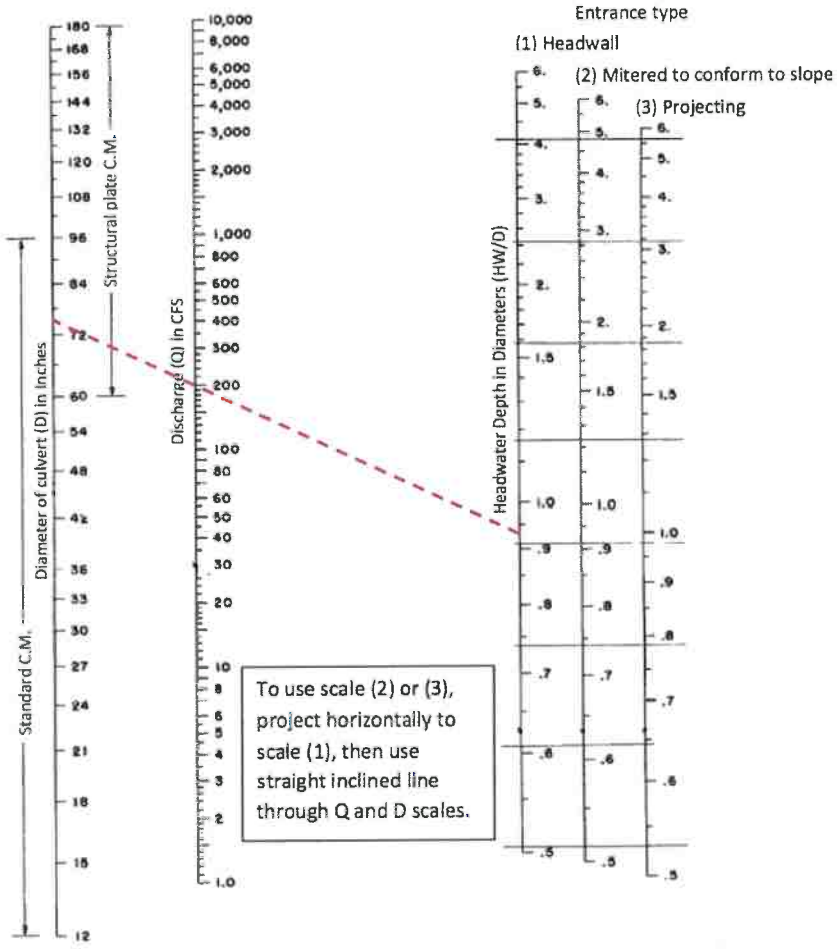

Figure 2. Culvert Capacity Inlet Control Nomograph (adopted from Appendix A, Table A-1 of *The Handbook for Forest, Ranch and Rural Roads* [Weaver et. al. 2015]).

1.2 Sediment Erosion Prevention and Sediment Control BPTC Measures

Based on the results of the field assessment/observations and H&H analyses, remediation actions are required on the property.

1.2.1 Culvert Upgrades

1.2.1.1 Culvert crossing upgrades

- Site C1 is functioning well, but undersized for 100-yr flows. H&H calculations require a 72" diameter pipe.
- Site C2 is functioning well, but undersized for 100-yr flows. H&H calculations require a 60" diameter pipe.
- Site C3 is slightly undersized for 100-yr flows (culvert is 36" diameter and H&H calculations require a 42" diameter). However, considering that the culvert is in good condition, was replaced relatively recently, and is installed at grade, a culvert upgrade is not recommended.

- Site C4 is functioning well, but undersized for 100-yr flows. H&H calculations require a 72" diameter pipe.

Specifications for each new culvert is described on Table 3, general culvert upgrade specifications are described in Section 1.2.1.3, and site specific design plan and profile views are shown in Appendix C.

Table 3. Site-specific culvert upgrade specifications.

Site #	Culvert Diameter (inches)	Culvert Length (ft)	Headwall rock (cubic yards)	Outlet rock volume (cubic yards)	Rock size range (ft)*
C1	72	60	3	27	1.5-3
C2	60	50	3	17	1.5-3
C4	72	30	3	7	1.5-3

* Approximate rock size to weight conversion:
- 2–3 ft rock = 1 to 2 ton
- 1.5–2 ft rock = ¼ to ½ to

1.2.1.2 General culvert upgrade specifications

Typical culvert installation and rock armor placement is depicted on Figure 4. Additionally, the following specification should be followed when constructing the culvert:

- Remove existing culvert (if applicable) and excavate a trench at the original channel gradient to place the culvert. Note that on steep channels (as seen on this project) culverts may be installed at a more gentle slope with extensive rock armoring placed under the outlet for channel armoring and energy dissipation as shown on Figure 4.
- If extensive rock armoring is necessary downstream from the culvert, the rock should be placed prior to the installation of the culvert to allow for best equipment access. Begin to place rock from the downstream extent of the culverts spillway with the first row of rock firmly keyed in to the bench at the bottom of the spillway.
- Upon completion of the spillway near to the elevation of the culvert outlet, finalize the trench where the culvert shall be placed. The base of the trench shall be well compacted (minimum 90% RC) and shall be constructed at an even gradient with a minimum width of 4' greater than the culvert diameter to allow for compaction along the sides of the culvert.
- Place culvert (with dimensions shown on Table 3 in the trench. Compaction around the culvert should occur in 6-inch to 1-foot lifts using a Wacker or other approved method. Soils should be wetted or dried for maximum compaction (minimum 90% RC).
- After culvert is covered with fill, begin rebuilding road prism in 1' lifts. Compaction should occur with a Sheepsfoot or other approved method.
- Place final rock armoring around culvert outlet, culvert inlet, and upstream channel as described in Table 4 and in the site-specific specifications. A critical dip will be constructed over new fill. The dip will be constructed of rock armoring that extends from the top of the culvert to the road surface.
- Insure that road surface drainage is controlled with rolling dips upslope from the crossing and armored inboard ditches as necessary.

- Place a minimum of 6-inch road rock on all disturbed area adjacent to the crossing.
- All sites subject to changes based on field conditions and/or as directed by engineer or watershed scientist.

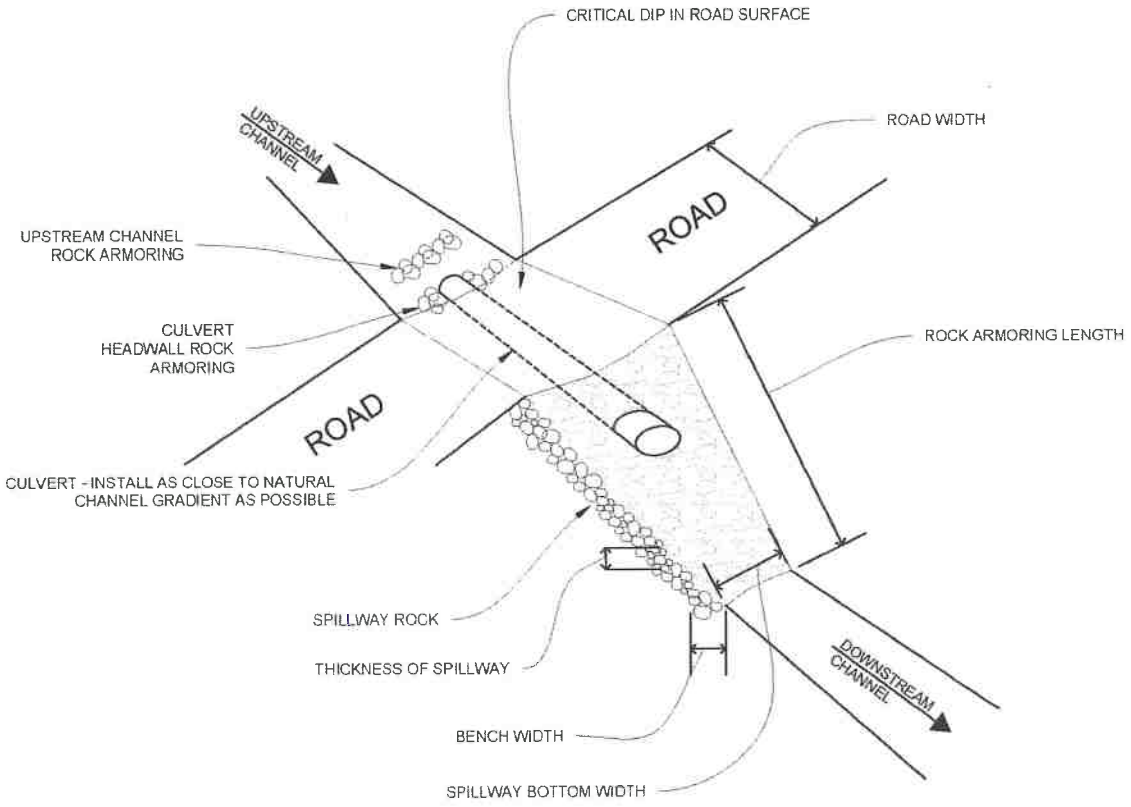

Figure 3. Culvert installation schematic.

1.2.2 Armored Ford Upgrades

Site C5 is an armored ford crossing on a seasonal road that it used to access tanks that provide domestic water supply. It is generally functioning well with minimal erosion, but could use ~5 CY of small rock armoring placed in the road surface and along the spillway area to promote future stability Also, install one rolling dip on northern approach to reduce runoff concentration on road surface.

1.2.3 Road Surface Treatments

All roads on the property are in good conditions. No significant road maintenance is needed except for standard graveling and installation of one ditch relief culvert.

1.2.4 Cultivation Area Treatments

All cultivation sites have appropriate setbacks from watercourses.

1.2.5 Erosion Control BMPs (to be used at all sites where soil is disturbed)

- Erosion and sediment control best management practices (BMPs) shall be installed prior to the wet season (1 October through 30 April).
- Sensitive areas and areas where existing vegetation is being preserved shall be protected with construction fencing; fencing shall be maintained throughout construction activities.
- All areas disturbed during grading activities shall be seeded with native grass seed and mulched with rice straw.
- Prior to seeding and straw, disturbed areas should be roughened by track walking with a dozer.
- Straw shall be applied at a uniform rate of approximately 4,000 lbs per acre by hand.
- At the completion of the project, straw wattles shall be placed as directed by the engineer or geologist.
- All sediment control BMPs shall be maintained throughout the wet season until new vegetation has become established on all graded areas.

2 FERTILIZER, PESTICIDE, HERBICIDE, AND RODENTICIDE BPTC MEASURES

2.1 Fertilizer

Fertilizers, potting soils, compost, and other soils and soil amendments are 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.

If the landowner wishes to keep fertilizers and soil amendments on the Project Site, they should continue to be stored fully under cover, off the ground, and in a stable location not exposed to the elements. If stored outdoors, they should be fully tarped, off the ground, and in a stable location with no chance of nutrient leaching or delivery to surface waters. Fertilizers, potting soils, compost, and other soils and soil amendments should not be stored with petroleum products as they may be incompatible and could potentially react.

Applicant is required to keep detailed records of the type, timing and volume of fertilizers and/or other soil amendments you use in your operations. Observe and monitor soil moisture so watering, fertilizer and chemical applications are made only when necessary and overwatering and excess infiltration is avoided.

To prevent nutrient leaching from cultivation areas, continue to plant dense cover crops in spent pots, holes and beds to enrich soil and lock up nutrients or; 1) fully tarp any exposed soils and growing mediums in beds, pots, holes or piles; or 2) move spent soils and amendments inside or under cover to temporarily store them during the wet season (November 1 – May 15). If dense cover crops cannot be kept alive, all planted areas should be tarped to protect them from rainfall, snowmelt and subsequent infiltration and leaching of nutrients. Winterize all cultivation areas and all disturbed areas on the Project Site by placing straw wattles with biodegradable wrapping on the downslope perimeter and/or by mulching/seeding any bare soil areas on cultivation sites.

Applicant currently uses the following fertilizer:

Table 3. Fertilizer use summary.

Product (N-P-K if applicable)	Annual Total
Stutzman Chicken Manure (3-2-2)	2000 lbs
Oyster Shell	40 lbs
Azomite	100 lbs
Bonemeal	200 lbs
Fish Emulsion	4 gallons

2.2 Pesticide, Herbicide, and Rodenticide

To be compliant with the Order, all pesticides, herbicides and related materials (e.g., fungicides) must be used and applied consistent with product labeling. Pesticide and herbicide storage and use on the Project Site must be closely monitored and recorded. Landowner is required to keep records (logs) of the type, timing and volume of pesticides and herbicides used in your operations.

When present, pesticides and herbicides should be stored within enclosed buildings in such a way they cannot enter or be released into surface or ground waters. They should not be stored with petroleum products as they may be incompatible and could potentially react.

Every year, the applicant uses approximately 2.5 gallons Peppermint Oil and Rosemary oil and about one-quart Neem Oil.

2.3 Irrigation Runoff

Irrigation water is applied to cultivation areas at agronomic rates, so runoff is not an issue.

2.4 Spoils Management

All spoils generated by the operations are reused on site. All soil is contained in the beds and amended on site. No soil is stored, discarded, or sidecast in locations that could enter waters.

3 PETROLEUM BPTC MEASURES

All small fuel cans, generators, fuel tanks, gasoline powered garden equipment and any other items containing petroleum products in adequate secondary containment basins and store in a safe, covered, secure location (e.g. away from slopes and outside of riparian buffers).

Operator should obtain one or more spill prevention cleanup kits and keep readily available to clean up small spills. Spill kits should be located where fuel is stored and refueling occurs.

4 TRASH/REFUSE AND DOMESTIC WASTEWATER BPTC MEASURES

4.1 Trash/Refuse

All refuse is stored in trash containers in a secure location. It is important to utilize storage facilities which prevent animals from accessing or disturbing garbage or refuse. Garbage is removed from the property and hauled to approved County collection location at least once per month.

4.2 Human Waste

Human waste is directed from the residence to the existing septic and leach field system. It is recommended that the applicant begin to work with a professional to start the permit process retroactively permit the existing septic system.

4.3 Cultivation Waste

We encourage you to chip or shred your plant stalks and compost them after harvest. Any additional cultivation-related waste can be easily contained by keeping soils and garbage greater than 200 feet from drainage areas and on gentle slopes, tarping or otherwise covering soil piles, and/or by placing straw wattles or other containment structures around the perimeter of spoil piles. Organic cultivation-related waste should be recycled if possible, and inorganic wastes and garbage should be removed from the property on a regular basis and disposed of at an appropriate facility.

5 WINTERIZATION BPTC MEASURES & SCHEDULE

The applicant should conduct the following activities prior to the onset of measurable rainfall:

1) Ensure that the cultivation areas are either tarped or planted with thick cover crop
2) Make sure that all cultivation related supplies and equipment are in a secure covered location per Sections 2-4 above
3) Perform yearly maintenance on drainage features as applicable to reduce runoff concentration (i.e. handwork or small equipment work to maintain water bars, ditches, sediment catchment areas, etc.)

6 OTHER CULTIVATION SITE INFORMATION

6.1 Biological Resources

The California Department of Fish and Wildlife California Natural Diversity Database (CNDDB) QuickView tool in BIOS[5] was used to identify potential for special status fish, wildlife and plants in the project area. The special status species documented in the Ettersburg Quadrangle are listed in Table 4. Since CNDDB is a CDFW tool to identify locations of previously documented species, the results from the tool may not capture all special-status species that may be present. The query was run by quadrangle, therefore many of the listed species may not be present on the property. This assessment did not include a site visit by a biologist.

[5] California Department of Fish and Wildlife BIOS, CNDDB QuickView Tool, 2016, accessed online at: https://map.dfg.ca.gov/bios/?tool=cnddbQuick

Table 4: CNDDB Species List for Ettersburg Quadrangle

Scientific Name	Common Name	Federal Status	State Status	CDF W Status	CA Rare Plant Rank	Data Status	Taxonomic Sort
Rana boylii	foothill yellow-legged frog	None	Candidate Threatened	SSC	-	Mapped	Animals - Amphibians - Ranidae - Rana boylii
Rhyacotriton variegatus	southern torrent salamander	None	None	SSC	-	Mapped	Animals - Amphibians - Rhyacotritonidae - Rhyacotriton variegatus
Taricha rivularis	red-bellied newt	None	None	SSC	-	Mapped	Animals - Amphibians - Salamandridae - Taricha rivularis
Oncorhynchus kisutch pop. 2	coho salmon - southern Oregon / northern California ESU	Threatened	Threatened	-	-	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus kisutch pop. 2
Oncorhynchus mykiss irideus pop. 16	steelhead - northern California DPS	Threatened	None	-	-	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 16
Oncorhynchus mykiss irideus pop. 36	summer-run steelhead trout	None	None	SSC	-	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 36
Erethizon dorsatum	North American porcupine	None	None	-	-	Unprocessed	Animals - Mammals - Erethizontidae - Erethizon dorsatum
Emys marmorata	western pond turtle	None	None	SSC	-	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Upland Douglas Fir Forest	Upland Douglas Fir Forest	None	None	-	-	Mapped	Community - Terrestrial - Upland Douglas Fir Forest
Usnea longissima	Methuselah's beard lichen	None	None	-	4.2	Unprocessed	Plants - Lichens - Parmeliaceae - Usnea longissima

Erythronium oregonum	giant fawn lily	None	None	-	2B.2	Mapped	Plants - Vascular - Liliaceae - Erythronium oregonum
Erythronium revolutum	coast fawn lily	None	None	-	2B.2	Mapped	Plants - Vascular - Liliaceae - Erythronium revolutum

6.2 Estimated Water Storage and Use

6.2.1 Water Sources

There is a spring and a creek diversion on the property labeled as SPRING HEAD and POD respectively on the site plan in Appendix A. The spring is used to meet domestic water needs and the creek diversion is used to top off the rainwater catchment pond during dry years.

6.2.2 Water Storage

The landowner currently has approximately 18,800 gallons of poly tank water storage, 5,500 gallons in a concrete tank, and 350,000 gallons storage capacity in the rainwater catchment pond. The landowner has a Small Irrigation Use Certificate (H100053) to top of the pond during dry years. The pond provides irrigation water for cultivation during the summer months. Surface water diversions in the summer are limited to the spring and are for domestic use only.

6.2.3 Water Use

Domestic use is estimated at 200 gallons per day for up to four residents on the property.

Agricultural activities on the property consist of ~10,000 square feet of full sun cultivation. Irrigation water use as estimated by the landowner is described in Table 7 below. Based on these estimates, ~145,000 gallons of water will be used during the 2019 growing season. The 350,000 gallons pond provides ample water for cultivation needs.

Table 4. Agricultural water use estimates per month.

Source	J	F	M	A	M	J	J	A	S	O	N	D
Rainwater catchment pond (gallonsx1,000)	0	0	0	9.0	14.9	24.1	33.1	33.2	29.8	10.4	0	0

6.3 Construction Cost Estimates for Sites Requiring CDFW LSAA

Table 6. Summary of approximate construction costs.

Site Number	Culvert and other materials	Rock armoring (delivered)	Heavy equipment and labor	Total construction cost	Total DFW permit fee
C1	$1,400	$1,500	$2,000	$4,900	$596.00
C2	$1,200	$1,500	$2,000	$4,700	$596.00
C3	$0	$0	$0	$0	$596.00
C4	$1,200	$500	$2,000	$3,700	$596.00
C5		$250	$500	$750	$596.00
SPRING HEAD	$0	$0	$0	$0	$596.00
CREEK POD	$0	$0	$0	$0	$596.00
Cannabis Remediation Fee	$0	$0	$0	$0	$3,187.75
Total	$3,800	$3,750	$6,500	$14,050	$7,359.75

6.3.1 Remediation Fee Description

The four major culvert crossings on the property are along main community roads that access numerous properties within the Salmon Creek community and are maintained by the road association and neighbors. Therefore, they should not be considered "cannabis remediation sites". The two PODs and Site C5 are directly related to cannabis cultivation activities on the property. The two PODs represent areas of ~20 SF each and the proposed remediation at site C5 consists of disturbance of approximately 4' width x 30' length of Class III drainage channel area. Therefore, total disturbed area is 160 SF and the $3,187.75 cannabis remediation fee applies to this application.

6.4 Proposed Construction Schedule

Considering that the culverts requiring replacement are all currently functioning adequately, and are along major community trunk roads or along a neighbor's driveway, we are asking for the following extended implementation schedule:

- Site C5: 2020
- Site C2: 2021
- Sites C1 and C4: 2023

This will allow the applicant time to work with the neighbor (who uses the driveway crossing site C4) and the local road association to negotiate cost-sharing approach for the crossing upgrades.

6.5 Site Location Table

Table 7. Latitude and Longitude for LSAA sites.

Site number	Latitude	Longitude
C1	40.2122°	-123.9243°
C2	40.2114°	-123.9226°
C3	40.2113°	-123.9225°
C4	40.2115°	-123.9258°
C5	40.2103°	-123.9252°
Creek POD	40.2103°	-123.9250°
SPRING HEAD	40.2101°	-123.9254°

7 REFERENCES

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Appendix A

Photos

Photo 1. Creek POD - inlet looking downstream

Photo 2. Creek POD - looking upstream from diversion.


Photo 3 & 4. Spring POD. Looking at buried intake and upslope(left) and downslope(right).

Photo 5. Rainwater Catchment Pond.

Photo 6. Site C1 Culvert inlet.

Photo 7. Site C1 downstream channel.

Photo 8. Site C1 Culvert outlet and downspout.

Photo 9. Site C2 Culvert inlet.

Photo 10. Site C2 downstream channel

Photo 11. Site C2 Culvert outlet.

Photo 12. Site C3 Culvert inlet.

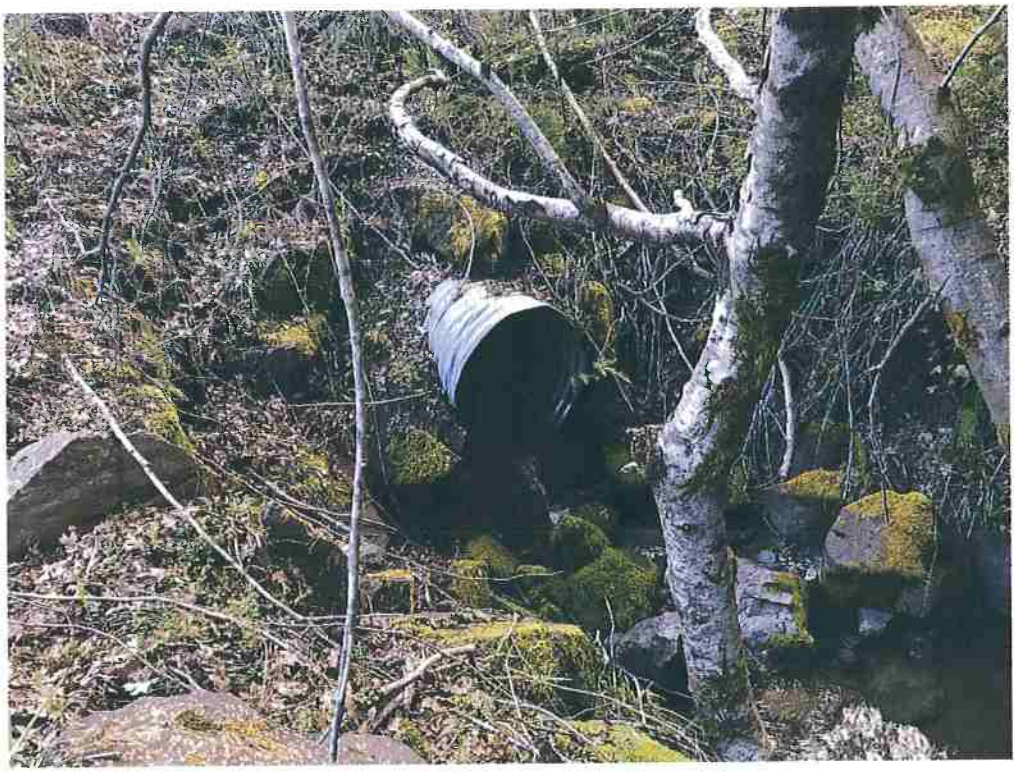


Photo 13. Site C1 Culvert outlet.

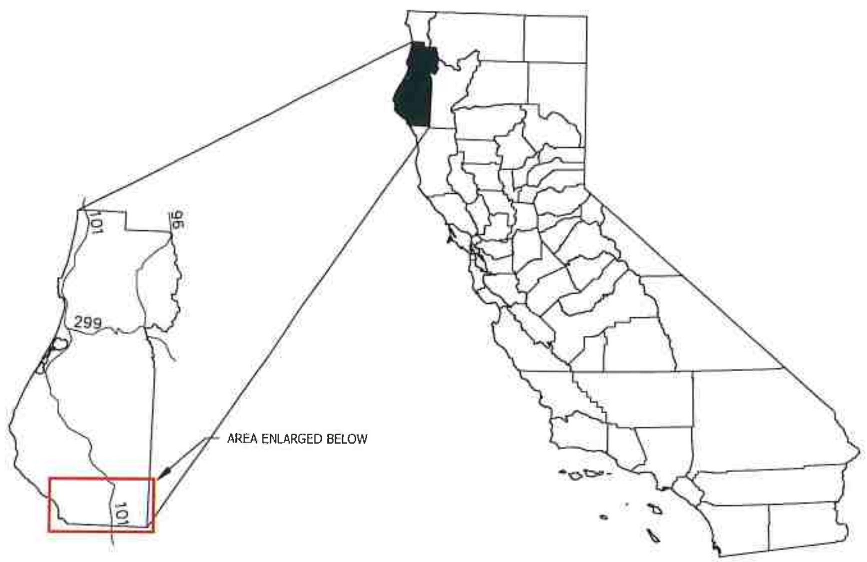
Photo 14. Site C4 Culvert inlet.

Photo 15. Site C1 Culvert outlet and downstream channel.

Photo 16. Site C5 ford crossing.

GRADING PLAN
HUMBOLDT COUNTY, CA

CALIFORNIA LOCATION MAP



HUMBOLDT COUNTY MAP
NTS

CALIFORNIA MAP
NTS

OWNER:
KEVIN & CAROL MURPHY
P.O. BOX 594
MIRANDA, CA 95553
707-358-5714
MKEVINJ@GMAIL.COM

AGENT:
JOEL MONSCHKE PE
STILLWATER SCIENCES
850 G STREET, SUITE K
ARCATA, CA 95521
707-496-7075
JMONSCHKE@STILLWATERSCI.COM

PROJECT DESCRIPTION:

RETROACTIVE GRADING PERMIT FOR 350,000 GALLON RAINWATER CATCHMENT POND; 1,200 CY CUT/FILL BALANCED ON SITE.

1. WATER SOURCE TO FILL NEW POND: RAINWATER CATCHMENT & SIUR
2. WATER USE FOR PROPOSED POND: IRRIGATION & FIRE SUPPRESSION

ENGINEER'S APPROVAL REQUIRED:

UPON COMPLETION OF THE PROJECT, ENGINEER OF RECORD WILL SUBMIT A LETTER OF CERTIFICATION TO THE HUMBOLDT COUNTY BUILDING DEPARTMENT CONFIRMING THAT THE PROJECT MEETS ALL OF THE REQUIREMENTS DETAILED IN THE APPROVED R2 SOILS REPORT, AS WELL AS THE GRADING, EROSION AND SEDIMENT CONTROL PLANS

ADDITIONAL NOTES:

1. PARCEL EXTENT TAKEN FROM HUMBOLDT COUNTY GIS AND ASSESSORS PARCEL MAPS; MODIFIED BASED ON FIELD CONDITIONS; APPROXIMATE ONLY.
2. SLOPE DIRECTION AND GRADIENT CAN BE DETERMINED USING SCALE BAR AND UNDERLYING USGS TOPO MAP (40' CONTOUR INTERVALS); SLOPES TYPICALLY RANGE FROM 0% TO 40%.
3. ALL ROADS AND PARKING AREAS SURFACED WITH GRAVEL, MAIN COMMUNITY ROAD THROUGH PROPERTY ~20' WIDTH, 0-16% GRADE; PRIVATE DRIVEWAYS ~14' WIDTH 0-16% GRADE.

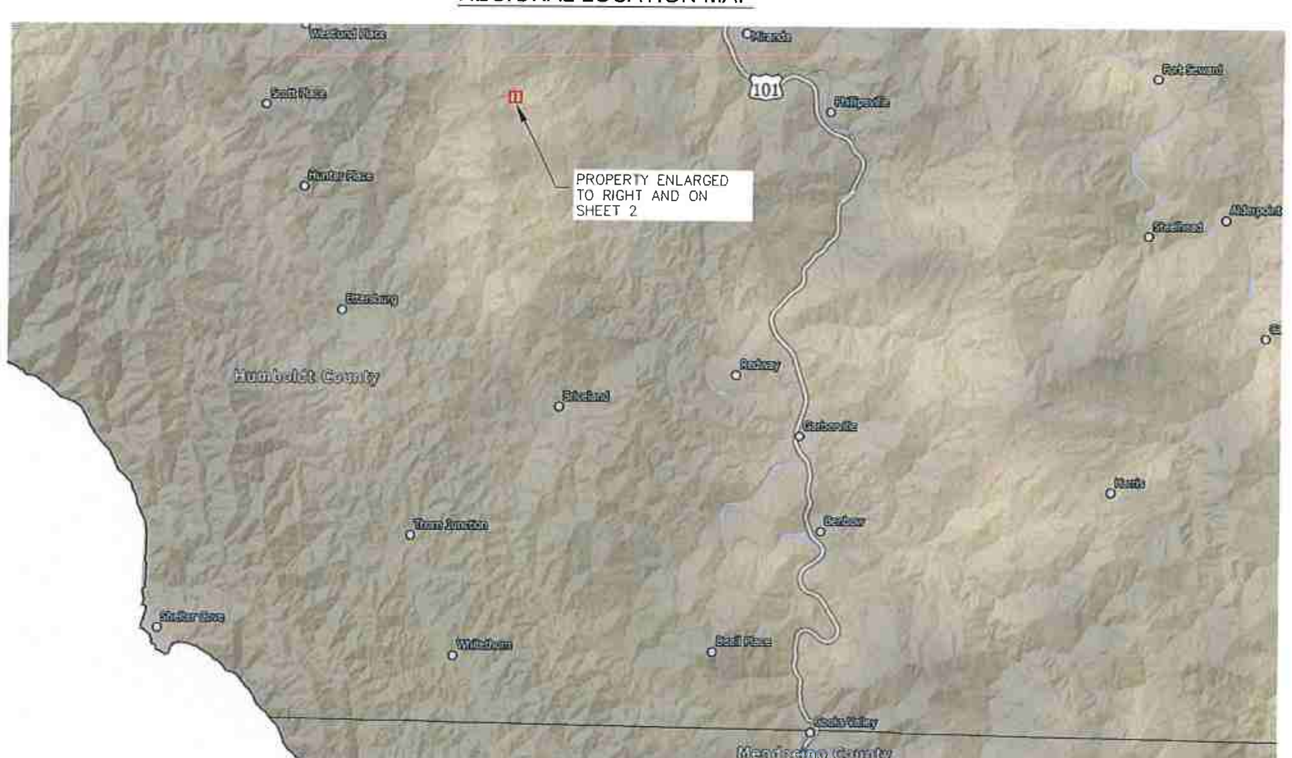
Sheet List Table	
Sheet Number	Sheet Title
1	TITLE SHEET
2	GRADING PLAN

SYMBOL AND ABBREVIATION KEY:

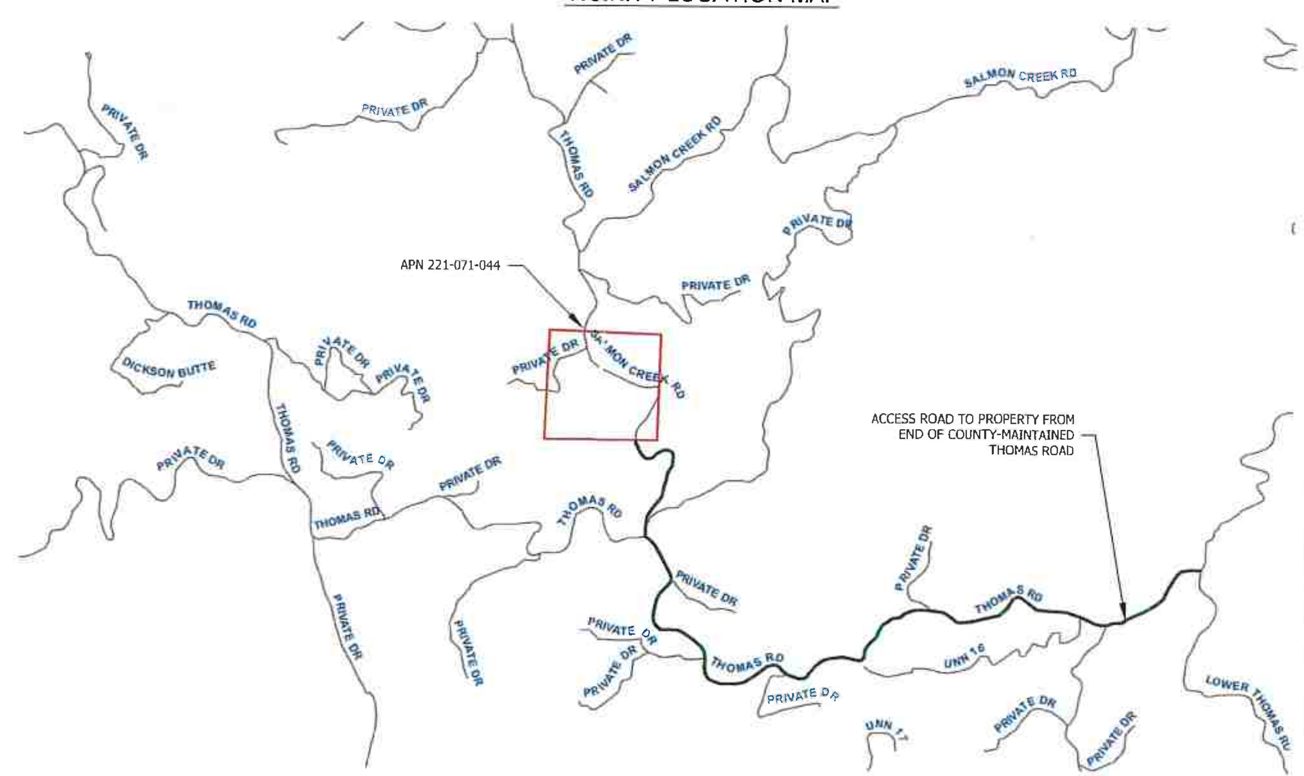
(#/#) — DETAIL NUMBER / SHEET NUMBER

<P> = PROPOSED
<E> = EXISTING

REGIONAL LOCATION MAP



VICINITY LOCATION MAP



GRADING PLAN
APN 221-071-044

HUMBOLDT COUNTY, CA

Stillwater Sciences
2855 TELEGRAPH AVENUE, SUITE 400
BERKELEY, CA 94705 P: (510) 848-8098

REGISTERED PROFESSIONAL ENGINEER JOEL MONSCHKE C 79688 EXP. 9/20 CIVIL STATE OF CALIFORNIA

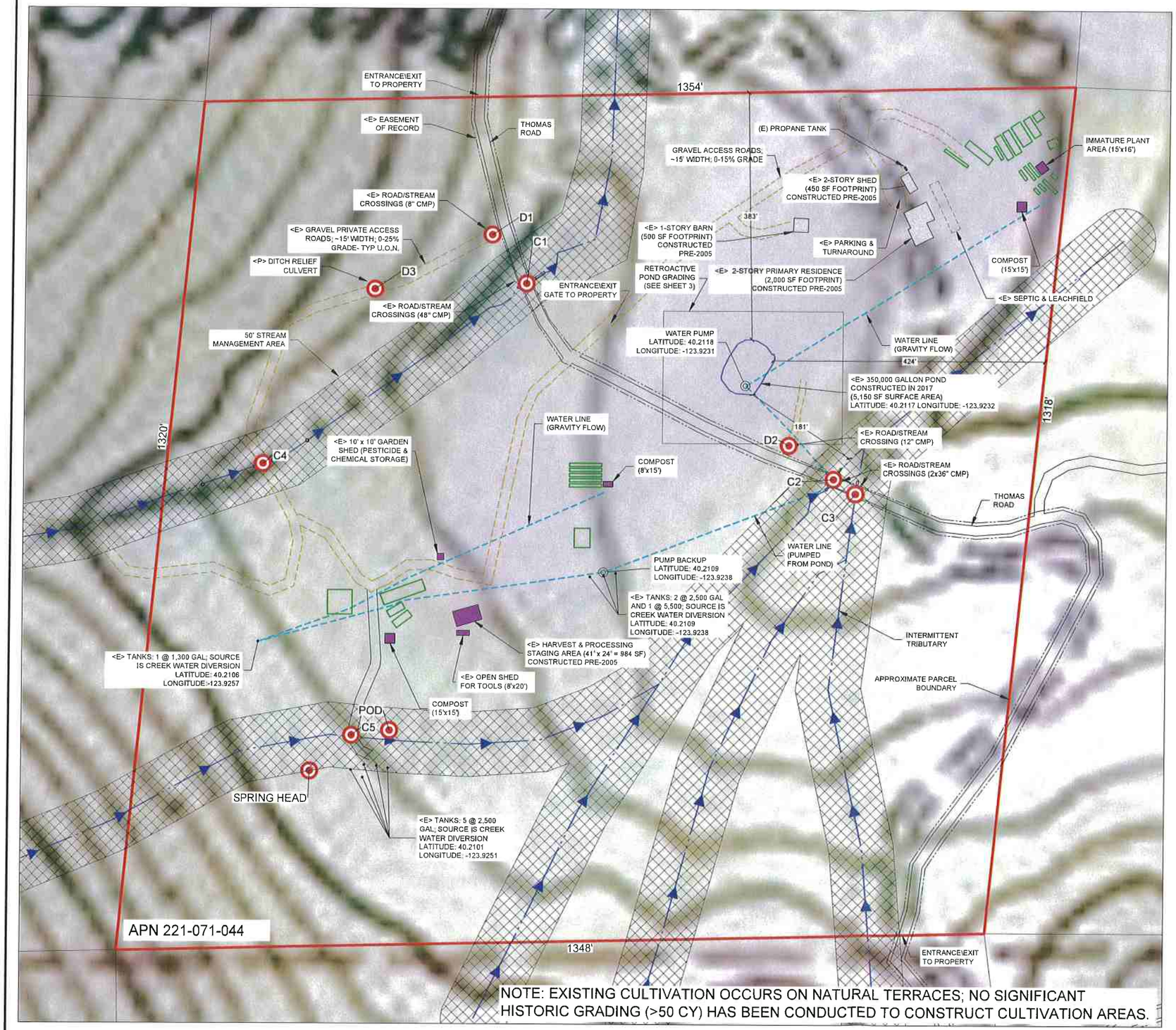
JUN 18 2019
Humboldt County Cannabis Svcs.

PROJECT NUMBER: 546.21
SCALE: AS NOTED
DATE: 6/14/2019

DESIGN: JM
DRAWN: RT
CHECKED: CL
APPROVED: JM

TITLE SHEET

SHEET 1 OF 2



NOTE: EXISTING CULTIVATION OCCURS ON NATURAL TERRACES; NO SIGNIFICANT HISTORIC GRADING (>50 CY) HAS BEEN CONDUCTED TO CONSTRUCT CULTIVATION AREAS.

LEGEND

- PROPERTY LINE
- PUBLIC ROADWAY, COUNTY MAINTAINED
- PRIVATE ROADWAY
- CULTIVATION AREA
- USED FOR CULTIVATION RELATED ACTIVITIES
- NOT USED FOR CULTIVATION RELATED ACTIVITIES
- CLASS 2 TRIBUTARY
- <E> EXISTING
- <P> PROPOSED
- CROSSING/POINT OF DIVERSION
- 50' STREAM MANAGEMENT AREA

NOTES:

1. ALL FEATURE LOCATIONS ARE APPROXIMATE ONLY

0 80 160 FEET

CROSSING/POINT OF DIVERSION POINT TABLE

DESCRIPTION	LATITUDE	LONGITUDE
C1	40.2122	-123.9243
C2	40.2114	-123.9226
C3	40.2113	-123.9225
C4	40.2114	-123.9258
C5	40.2102	-123.9252
D1	40.2124	-123.9245
D2	40.2115	-123.9228
D3	40.2121	-123.9252
POD	40.2103	-123.9250
SPRING HEAD	40.2101	-123.9254

GRADING PLAN
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HUMBOLDT COUNTY, CA

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REGISTERED PROFESSIONAL ENGINEER JOEL MONSCHKE C 79688 EXP. 9/20 CIVIL STATE OF CALIFORNIA

RECEIVED JUN 18 2019 Humboldt County Cannabis Svcs.

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SCALE: AS NOTED
DATE: 6/14/2019

DESIGN: JM
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CHECKED: CL
APPROVED: JM

REGISTERED PROFESSIONAL ENGINEER JOEL MONSCHKE No. 79688 9-30-20 EXPIRES CIVIL STATE OF CALIFORNIA

GRADING PLAN

SHEET 2 OF 2

PLOT DATE: 6/17/2019 PLOT STYLE: ---- LAST SAVED: 6/17/2019 Z:\DATA\546.21_NC_APPLICATION\ACAD\546.21_GRADING PLAN_APN 221-071-044.DWG