

210-051-064



REC'D - SEPT 30, 2019
D. SUTIN
PLANNING
12170



CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
REGION 1 – NORTHERN REGION
619 Second Street
Eureka, CA 95501

STREAMBED ALTERATION AGREEMENT
NOTIFICATION No. 1600-2017-0395-R1

Unnamed Tributaries to Butte Creek, Tributary to the Little Van Duzen River, Tributary to the Van Duzen River, Tributary to the Eel River and the Pacific Ocean

Brian Mitchell
Mitchell Stream Crossings and Remediation Project
5 Encroachments

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and Brian Mitchell (Permittee).

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, the Permittee initially notified CDFW on June 27, 2017, with revisions received on July 9, 2018 and October 1, 2018, that the Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, the Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, the Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project to be completed is located within the Butte Creek and Van Duzen River watersheds, approximately 8 miles east southeast of the town of Bridgeville, County of Humboldt, State of California. The project is located in Section 13, T1N, R2E, Humboldt Base and Meridian; in the Larabee Valley U.S. Geological Survey 7.5-minute quadrangle; Assessor's Parcel Numbers 210-051-062, 210-051-063, 210-061-064, and 210-051-065; approximate latitude 40.4585 N and longitude 123.6829 W.

PROJECT DESCRIPTION

The project is limited to five encroachments (Table 1). The five proposed encroachments are to remediate road/stream crossings and graded areas adjacent to

streams. Work for these encroachments will include excavation, grading to restore or improve drainage, removal of a culvert and replacement of three culverts or road stream decommissioning at the three crossing locations, installation of a rocked ford, backfilling and compaction of fill, and rock armoring as necessary to minimize erosion.

Table 1. Project Encroachments with Description

ID	Latitude/Longitude	Description
Crossing-1 (SR-1)	40.4596, -123.6850	Remove 4" diameter culvert and associated fill from Class III stream, pull back graded fill within stream, wet area
Crossing-2 (CV-1)	40.4589, -123.6841	Replace undersized 12" diameter culvert with minimum 18" diameter culvert and rock armor as necessary to minimize erosion or decommission road/stream crossing
Crossing-3 (CV-2)	40.4589, -123.6839	Replace undersized 12" diameter culvert with minimum 18" diameter culvert and rock armor as necessary to minimize erosion or decommission road/stream crossing
Crossing-4 (CV-3)	40.4589, -123.6843	Install new 18" diameter culvert at dirt ford or decommission stream/road crossing
Crossing-5 (AC-1)	40.4589, -123.6833	Install rocked ford or decommission road/stream crossing

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon (*O. kisutch*), Steelhead Trout (*O. mykiss*), Pacific Giant Salamander (*Dicamptodon tenebrosus*), Foothill Yellow-legged Frog (*Rana boylei*), amphibians, reptiles, aquatic invertebrates, mammals, birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include:

Impacts to water quality:

temporary increase in fine sediment transport;

Impacts to bed, channel, or bank and direct effects on fish, wildlife, and their habitat:

loss or decline of riparian habitat;
 direct impacts on benthic organisms;

Impacts to natural flow and effects on habitat structure and process:

direct and/or incidental take;
 indirect impacts;
 impediment of up- or down-stream migration;
 water quality degradation; and
 damage to aquatic habitat and function.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

The Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. The Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. The Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of the Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.
- 1.3 Adherence to Existing Authorizations. All water diversion facilities that the Permittee owns, operates, or controls shall be operated and maintained in accordance with current law and applicable water rights.
- 1.4 Change of Conditions and Need to Cease Operations. If conditions arise, or change, in such a manner as to be considered deleterious by CDFW to the stream or wildlife, operations shall cease until corrective measures approved by CDFW are taken. This includes new information becoming available that indicates that the bypass flows and diversion rates provided in this agreement are not providing adequate protection to keep aquatic life downstream in good condition or to avoid "take" or "incidental take" of federal or State listed species.
- 1.5 Notification of Conflicting Provisions. The Permittee shall notify CDFW if the Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact the Permittee to resolve any conflict.
- 1.6 Project Site Entry. The Permittee agrees to allow CDFW employees access to any property it owns and/or manages for the purpose of inspecting and/or monitoring the activities covered by this Agreement, provided CDFW: a) provides 24 hours advance notice; and b) allows the Permittee or representatives to participate in the inspection and/or monitoring. This condition does not apply to CDFW enforcement personnel.
- 1.7 CDFW Notification of Work Initiation and Completion. The Permittee shall contact CDFW within the seven-day period preceding the beginning of work permitted by this Agreement. Information to be disclosed shall include Agreement number, and

the anticipated start date. Subsequently, the Permittee shall notify CDFW no later than seven (7) days after the project is fully completed.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, the Permittee shall implement each measure listed below.

- 2.1 **Permitted Project Activities.** Except where otherwise stipulated in this Agreement, all work shall be in accordance with the Permittee Notification received on June 27, 2017, with revisions received on July 9, 2018 and October 1, 2018, together with all maps, BMP's, photographs, drawings, and other supporting documents submitted with the Notification.
- 2.2 **Incidental Take.** This Agreement does not allow for the take, or incidental take of any state or federal listed threatened or endangered listed species.

Project Timing

- 2.3 **Work Period.** All work, not including diversion of water, shall be confined to the period **June 15 through October 15** of each year. Work within the active channel of a stream shall be restricted to periods of **dry weather**. Precipitation forecasts and potential increases in stream flow shall be considered when planning construction activities. Construction activities shall cease and all necessary erosion control measures shall be implemented prior to the onset of precipitation.
- 2.4 **Work Completion.** The proposed work shall be completed by no later than **October 1, 2019**. A notice of completed work, including photographs of each site, shall be submitted to CDFW within seven (7) days of project completion.
- 2.5 **Extension of the Work Period.** If weather conditions permit, and the Permittee wishes to extend the work period after October 15, a written request shall be made to CDFW at least 5-working days before the proposed work period variance. Written approval (letter or e-mail) for the proposed time extension must be received from CDFW prior to activities continuing past October 15.

Vegetation Management

- 2.6 **Minimum Vegetation Removal.** No native riparian vegetation shall be removed from the bank of the stream, except where authorized by CDFW. Permittee shall limit the disturbance or removal of native vegetation to the minimum necessary to achieve design guidelines and standards for the Authorized Activity. Permittee shall take precautions to avoid damage to vegetation outside the work area.
- 2.7 **Vegetation Management.** Permittee shall limit vegetation management (e.g., trimming, pruning, or limbing) and removal for the purpose of stream crossing or

diversion infrastructure placement/maintenance to the use of hand tools.
Vegetation management shall not include treatment with herbicides.

Diversion to Storage

- 2.8 **Water Storage.** All water storage facilities (WSFs) (e.g., reservoirs, storage tanks, mix tanks, and bladders tanks) must be located outside the active 100-year floodplain and outside the top of bank of a stream. Covers/lids shall be securely affixed to water tanks at all times to prevent potential entry by wildlife. Permittee shall cease all water diversion at the point of diversion when WSFs are filled to capacity.
- 2.9 **Water Storage Maintenance.** WSFs shall have a float valve to shut off the diversion when tanks are full to prevent overflow. The Permittee shall install any other measures necessary to prevent exorbitant use or waste of water. Water shall not leak, overflow, or overtop WSFs at any time. Permittee shall regularly inspect all WSFs and infrastructure used to divert water to storage and use and repair any leaks.
- 2.10 **Water Conservation.** The Permittee shall make best efforts to minimize water use, and to follow best practices for water conservation and management.

Stream Crossings

- 2.11 **Stream Protection.** No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other deleterious material from project activities shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the stream. All project materials and debris shall be removed from the project site and properly disposed of off-site upon project completion.
- 2.12 **Equipment Maintenance.** Refueling of machinery or heavy equipment, or adding or draining oil, lubricants, coolants or hydraulic fluids shall not take place within stream bed, channel and bank. All such fluids and containers shall be disposed of properly off-site. Heavy equipment used or stored within stream bed, channel and bank shall use drip pans or other devices (e.g., absorbent blankets, sheet barriers or other materials) as needed to prevent soil and water contamination.
- 2.13 **Hazardous Spills.** Any material, which could be hazardous or toxic to aquatic life and enters a stream (i.e. a piece of equipment tipping-over in a stream and dumping oil, fuel or hydraulic fluid), the Permittee shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550, and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours at 707-445-6493 and consulted regarding clean-up procedures.

2.14 Excavated Fill. Excavated fill material shall be placed in upland locations where it cannot deliver to a watercourse. To minimize the potential for material to enter the watercourse during the winter period, all excavated and relocated fill material shall be tractor contoured (to drain water) and tractor compacted to effectively incorporate and stabilize loose material into existing road and/or landing features.

2.15 Runoff from Steep Areas. The Permittee shall make preparations so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential or contained behind erosion control structures. Erosion control structures such as straw bales and/or siltation control fencing shall be placed and maintained until the threat of erosion ceases. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

2.16 Culvert Installation.

2.16.1 The project is located in a moderate to very high Fire Hazard Severity Zone as designated by CAL FIRE. Culvert materials should consist of corrugated metal pipe (CMP). Use of High Density Polyethylene (HDPE) pipe is not recommended.

2.16.2 Existing fill material in the crossing shall be excavated down vertically to the approximate original channel and outwards horizontally to the approximate crossing hinge points (transition between naturally occurring soil and remnant temporary crossing fill material) to remove any potential unstable debris and voids in the older fill prism.

2.16.3 Culvert shall be installed to grade (not perched or suspended), aligned with the natural stream channel, and extend lengthwise completely beyond the toe of fill. If culvert cannot be set to grade, it shall be oriented in the lower third of the fill face, and a downspout or energy dissipator (such as boulders, rip-rap, or rocks) shall be installed above or below the outfall as needed to effectively control stream bed, channel, or bank erosion (scouring, headcutting, or downcutting). The Permittee shall ensure basins are not constructed and channels are not be widened at culvert inlets.

2.16.4 Culvert bed shall be composed of either compacted rock-free soil or crushed gravel. Bedding beneath the culvert shall provide for even distribution of the load over the length of the pipe, and allow for natural settling and compaction to help the pipe settle into a straight profile. The crossing backfill materials shall be free of rocks, limbs, or other debris that could allow water to seep around the pipe, and shall be compacted.

2.16.5 Culvert inlet, outlet (including the outfall area), and fill faces shall be armored where stream flow, road runoff, or rainfall energy is likely to erode fill material and the outfall area.

2.16.6 Permanent culverts shall be sized to accommodate the estimated 100-year flood flow [i.e. ≥ 1.0 times the width of the bankfull channel width or the 100-year flood size, whichever is greater], including debris, culvert embedding, and sediment loads.

2.17 Fords, Armored Fill and Vented Crossings.

2.17.1 Fords, armored and vented crossings are considered permanent watercourse encroachments and shall accommodate the 100-year flood flow plus associated sediment and debris.

2.17.2 Hydrologically-connected road approaches to fords, armored and vented crossings shall be rocked and maintained to avoid delivery of fine sediment to the watercourse below.

2.17.3 Fords, armored and vented crossings shall be maintained as necessary to avoid delivery of fine sediment to the watercourse below.

2.17.4 Fords, armored and vented crossings shall be sufficiently outsloped to minimize aggradation of suspended sediments at the crossing.

2.17.5 The lowest point of fords, armored and vented crossings shall be constructed within or directly over the original stream channel, to the extent feasible, in order to contain high flows up to twice bank-full and to avoid diversion potential.

2.17.6 Armor material shall be comprised of durable angular screened quarry rock of sufficient size and placement to minimize mobilization during a 100-year storm event. Wood may be used for armoring if sound, tight-grained, redwood is applied and sufficiently keyed into the fillslope to resist movement during a 100-year storm event.

2.17.7 If maximum fill heights exceed 15 feet or fills exceed 500 cubic yards of fill, rock sizing, armoring thickness, chute width and chute depth shall be calculated and sized using the nomograph provided in Figure 23 of Cafferata et al (2017).

2.17.8 Stream crossing spillway fill slopes shall be armored from roadbed to the natural channel in a manner sufficient to prevent significant scour or removal of armor during high flows. Scour is expected through road surface rock cap.

2.18 Road Approaches. The Permittee shall treat road approaches to new or re-constructed permanent crossings *on Class I and II watercourses* to minimize erosion and sediment delivery to the watercourse. Permittee shall ensure road

approaches are hydrologically disconnected to the maximum extent feasible to prevent sediment from entering the crossing site, including when a Stream Crossing is being constructed or reconstructed. Road approaches shall be armored from the crossing for a minimum of 50 feet in both directions, or to the nearest effective water bar or point where road drainage does not drain to the crossing, with durable rock, compacted grindings, pavement, or chip-seal.

- 2.19 Project Inspection. The Project shall be inspected by Mother Earth Engineering or a licensed engineer to ensure that the stream crossings were installed as designed. A copy of the inspection report, including photographs of each site, shall be submitted to CDFW within 90 days of completion of this project.

Erosion Control and Pollution

- 2.20 Erosion Control. Permittee shall use erosion control measures throughout all work phases where sediment runoff threatens to enter a stream, lake, or other Waters of the State.

- 2.21 Erosion Control. Permittee shall use erosion control measures throughout all work phases where sediment runoff threatens to enter a stream, lake, or other Waters of the State.

- 2.22 Seed and Mulch. Upon completion of construction operations and/or the onset of wet weather, Permittee shall stabilize exposed soil areas within the work area by applying mulch and seed. Permittee shall restore all exposed or disturbed areas and access points within the stream and riparian zone by applying local native and weed free erosion control grass seeds. Locally native wildflower and/or shrub seeds may also be included in the seed mix. Permittee shall mulch restored areas using at least two to four inches of weed-free clean straw or similar biodegradable mulch over the seeded area. Alternately, Permittee may cover seeding with jute netting, coconut fiber blanket, or similar non-synthetic monofilament netting erosion control blanket.

- 2.23 Erosion and Sediment Barriers. Permittee shall monitor and maintain all erosion and sediment barriers in good operating condition throughout the work period and the following rainy season, defined herein to mean October 15 through June 15. Maintenance includes, but is not limited to, removal of accumulated sediment and/or replacement of damaged sediment fencing, coir logs, coir rolls, and/or straw bale dikes. If the sediment barrier fails to retain sediment, Permittee shall employ corrective measures, and notify the department immediately.

- 2.24 Prohibition on Use of Monofilament Netting. To minimize the risk of ensnaring and strangling wildlife, Permittee shall not use any erosion control materials that contain synthetic (e.g., plastic or nylon) monofilament netting, including photo- or biodegradable plastic netting. Geotextiles, fiber rolls, and other erosion control

measures shall be made of loose-weave mesh, such as jute, hemp, coconut (coir) fiber, or other products without welded weaves.

- 2.25 Site Maintenance. Permittee shall be responsible for site maintenance including, but not limited to, re-establishing erosion control to minimize surface erosion and ensuring drainage structures and altered streambeds and banks remain sufficiently armored and/or stable.
- 2.26 Cover Spoil Piles. Permittee shall have readily available erosion control materials such as wattles, natural fiber mats, or plastic sheeting, to cover and contain exposed spoil piles and exposed areas in order to prevent sediment from moving into a stream or lake. Permittee shall apply and secure these materials prior to rain events to prevent loose soils from entering a stream, lake, or other Waters of the State.
- 2.27 No Dumping. Permittee shall not deposit, permit to pass into, or place where it can pass into a stream, lake, or other Waters of the State any material deleterious to fish and wildlife, or abandon, dispose of, or throw away within 150 feet of a stream, lake, or other Waters of the State any cans, bottles, garbage, motor vehicle or parts thereof, rubbish, litter, refuse, waste, debris, or the viscera or carcass of any dead mammal, or the carcass of any dead bird.

3. Reporting Measures

- 3.1 Work Completion. The proposed work shall be completed by no later than **October 1, 2019**. A notice of completed work (condition 2.4), with supplemental photos, shall be submitted to CDFW **within seven (7) days** of project completion.
- 3.2 Project Inspection. The Permittee shall submit the **Project Inspection Report** (condition 2.19) to CDFW, LSA Program at 619 Second Street, Eureka, CA 95501.

CONTACT INFORMATION

Written communication that the Permittee or CDFW submits to the other shall be delivered to the address below unless the Permittee or CDFW specifies otherwise.

To Permittee:

Brian Mitchell
Happy Valley Farms
1617 Amaral Court
Fairfield, California 94534
415-336-0374
bmitchell007@gmail.com

To CDFW:

Department of Fish and Wildlife
Northern Region
619 Second Street
Eureka, California 95501
Attn: Lake and Streambed Alteration Program
Notification #1600-2017-0395-R1

LIABILITY

The Permittee shall be solely liable for any violation of the Agreement, whether committed by the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require the Permittee to proceed with the project. The decision to proceed with the project is the Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety this Agreement if it determines that the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide the Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide the Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to the Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against the Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 *et seq.* (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

The Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and the Permittee. To request an amendment, the Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by the Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, the Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), the Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, the Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If the Permittee fails to submit a request to extend the Agreement prior to its expiration, the Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (FGC section 1605(f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after the Permittee signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall **expire five years** from date of execution, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. The Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of the Permittee, the signatory hereby acknowledges that he or she is doing so on the Permittee's behalf and represents and warrants that he or she has the authority to legally bind the Permittee to the provisions herein.

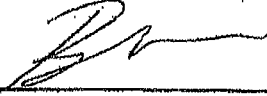
AUTHORIZATION

This Agreement authorizes only the project described herein. If the Permittee begins or completes a project different from the project the Agreement authorizes, the Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR Brian Mitchell



Brian Mitchell

10/22/18

Date

FOR DEPARTMENT OF FISH AND WILDLIFE



Scott Bauer

Senior Environmental Scientist Supervisor

5/20/19

Date



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Region 1 - Northern
619 2nd Street
Eureka, CA 95501
(707) 441-2075
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director



January 25, 2018

Certified Mail:

#7011 3500 0002 2331 2905

Brain Mitchell
1617 Amaral Court
Fairfield, CA 94534

Subject: Notice of Violation of Fish and Game Code Section 1602, 5650, and 5652 in
Conjunction with Marijuana Cultivation

Dear Mr. Mitchell:

On January 11, 2018, Department of Fish and Wildlife (Department) staff visited your parcels (APN# 210-051-062, 210-051-063, 210-051-064, and 210-051-065) located in the Butte Creek watershed in Humboldt County, CA. During this visit, Department staff observed the activities described below, which is subject to Fish and Game Code (FGC) Sections 1602, 5650, and 5652 (Table 1). Staff also observed evidence of marijuana cultivation in conjunction with this activity.

Fish and Game Code (FGC) Section 1602 requires a person to submit a written notification to the Department before: 1) substantially diverting or obstructing the natural flow of a river, stream, or lake; 2) substantially changing the bed, channel, or bank of a river, stream, or lake; 3) using any material from the bed, channel, or bank of a river, stream, or lake; and/or 4) depositing or disposing of debris, waste, material containing crumbled, flaked, or ground pavement where it may pass into a river, stream, or lake. Hence, any person who engages in an activity subject to FGC Section 1602 without first notifying the Department violates Section 1602.

In the Department's view, prior notification under FGC Section 1602 was required because these activities substantially changed the bed, bank, and channel of streams, and obstructed flow in unnamed tributaries to Butte Creek.

FGC sections 5650 and 5652 make it unlawful to pollute waters of the state. FGC section 5650 makes it unlawful to deposit in, permit to pass into, or place where it can pass into waters of the state any substance or material deleterious to fish, plant life, mammals, or bird life, including, but not limited to gasoline and oil, as well as sediment. FGC section 5652 makes it unlawful to deposit in, permit to pass into, or place where it

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can pass into waters of the state, or to abandon, dispose of, or throw away, within 150 feet of the high water mark of the waters of the state, any garbage, refuse, or waste, among other materials.

Table 1. Alleged FGC violations

Violation #	FGC Violation	Latitude/Longitude	Description
1	1602 (a)	40.4596, -123.6850	Substantial alteration of the bed, bank, and channel from installation of a 4" diameter culvert on a Class III stream
2	1602 (a)	40.4596, -123.6850	Substantial alteration of the bed, bank, and channel from grading, linear stream impacts for ~100 feet
3	5650 (a)(6)	40.4596, -123.6850	Sediment delivery to Waters of the State due to unpermitted grading for cannabis cultivation
4	5650 (a)(6)	40.4597, -123.6843	Sediment delivery to Waters of the State due to unpermitted grading for cannabis cultivation
5	1602 (a)	40.4589, -123.6842	Failure of a 12" diameter culvert at a road/stream crossing; new grading observed
6	5650 (a)(6)	40.4589, -123.6842	Sediment delivery to Waters of the State due to unpermitted grading for cannabis cultivation
7	1602 (a)	40.4588, -123.6842	Road grading and failure at Class III road/stream crossing
8	5650 (a)(6)	40.4588, -123.6842	Sediment delivery to Waters of the State due to unpermitted grading for cannabis cultivation
9	5652	40.4588, -123.6842	Nutrient delivery due to soil stockpile erosion to Waters of the State
10	1602 (a)	40.4589, -123.6839	Unpermitted 12" diameter culvert at road/stream crossing that drains Class III stream and road ditch
11	5650 (a)(6)	40.4589, -123.6839	Sediment delivery to Waters of the State due to unpermitted grading for cannabis cultivation
12	1602 (a)	40.4589, -123.6832	Spring/seep intercepted by road, flowing down road to inside ditch
13	5650 (a)(6)	40.4589, -123.6832	Sediment delivery to Waters of the State due to unpermitted grading for cannabis cultivation

A person who violates FGC sections 1602, 5650, and 5652 in conjunction with the cultivation or production of marijuana is subject to significant penalties or fines. Specifically, the Department may impose civil penalties administratively against any person found by the Department to have violated these FGC sections in connection with the production or cultivation of marijuana following a complaint and, if requested, a hearing.

The Department may request a maximum civil penalty of \$8,000 for each violation of FGC section 1602, and \$20,000 for each violation of FGC section 5650 or 5652. Each

Brian Mitchell
January 25, 2018
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day the violation occurs or continues to occur constitutes a separate violation. (Fish & G. Code, § 12025, subs. (b)(1)(A), (2); (e).) Also, the District Attorney or the Attorney General may enforce a violation of FGC section 1602 and FGC section 5650 civilly. Specifically, under FGC sections 1615 and 5650.1, a person who violates FGC section 1602 or 5650 is subject to a maximum civil penalty of \$25,000 for each violation. The District Attorney or the Attorney General may also enforce a violation of FGC sections 1602, 5650, and 5652 criminally. Under FGC section 12000, each violation is a misdemeanor.

As a first step to address this matter, the Department requests you contact the Wildlife Warden assigned to this case at kyle.shaw@wildlife.ca.gov or the Watershed Enforcement Scientist assigned to this case at david.manthorne@wildlife.ca.gov or 707-441-5900 within 14 days of the date of this letter. The Department may propose certain actions to protect fish and wildlife resources that have been or could be affected by the activities described above, and may ask you to submit a written notification and fee for the activities. While the Department, District Attorney, or Attorney General may still decide to initiate an enforcement action against you if they determine these activities are in violation of FGC sections 1602, 5650, or 5652, we encourage you to respond to this notice so that we may better assess the activity and limit any damage to resources.

The Department appreciates your cooperation.

Sincerely,

R. Mennel #730

FOR LT WHITE

Lieutenant Steve White
Watershed Enforcement Team

cc: California Department of Fish and Wildlife

Kyle Shaw, Scott Bauer, Laurie Harnsberger, Curt Babcock, Jeremy Valverde, David Manthorne

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Northcoast Regional Water Quality Control Board

Diana Henriouille-Henry, Kason Grady, and Adona White

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January 25, 2018
Page 4 of 4

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bbowes@co.humboldt.ca.us, cfielder@co.humboldt.ca.us,
barwood@co.humboldt.ca.us

WORK PLAN
FOR
APNs 210-051-062, 210-051-063, 210-051-064, AND 210-051-065
FOR RESOLUTION OF
CDFW NOTICE OF VIOLATION
DATED JANUARY 25, 2018

Prepared For:

Brian Mitchell
Happy Valley Farms
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Fairfield, CA 94534
(415) 336-0374

Prepared by:



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July 2018

MEE PROJECT # 17024

1 Introduction

The purpose of this work plan is to resolve the Notice of Violation (NOV) received from CDFW on January 25, 2018 for parcels 210-051-062, 210-051-063, 210-051-064, and 210-051-065.

The NOV notes unpermitted grading resulting in delivery of sediment to Class III streams, alteration of channels from culvert installation, stockpile erosion, and stream crossings interrupted by unpermitted grading.

This work plan addresses the following:

- Implementation of measures to correct the violations enumerated in the NOV letter.
- Revisions and implementation of the LSAA notification previously submitted to CDFW July 2017.
- Implementation of stream restoration and enhancement measures to 1) remediate effects of sediment delivery due to the violations; and 2) provide compensatory mitigation.
- Ongoing monitoring for quality assurance and project effectiveness.

2 Project Location

This project is located in the Larrabee Valley on the Lower Van Duzen River watershed. The site approximately 8 miles east of Bridgeville, CA off of State Highway 36 in the County of Humboldt. This project affects unnamed tributaries to the Butte Creek which tributary to the Little Van Duzen River.

- APNs: 210-051-062, 210-051-063, 210-051-064, 210-051-065.
 - Please note that -062, -063, and -065 were merged into one parcel (2018 Notice of Merger, Humboldt County Planning Dept). Official APN of merged parcel pending.
- Site Address: 1700 Larabee Valley Road, Bridgeville, CA 95526
- Site Lat/Long: 40.4630, -123.6823
- Township + Range: Section 13, T1N, R4E, Humboldt Meridian
- USGS 7.5-minute quadrangle: Larabee Valley

3 Relevant Local, State, and Federal Permits

To accomplish this project, permits/approval will be sought from the following agencies:

- CDFW LSAA
- Regional Water Board - Appendix D per Order R1-2015-0023
- Humboldt County Planning and Building Department
 - Grading Plan: existing unpermitted grading, proposed grading- recontouring to remediate decommissioned cannabis sites, road improvements, channel restoration.
 - Engagement for resolution of violations in conjunction with existing cannabis permit application.

4 Background

The subject parcels were acquired by the current owner in March 2016. Prior to 2016 the property served as a hunting retreat/vacation home with some cannabis activity. The project area and vicinities- the entire Larrabee Valley- is known to have been important lands and resources for Native Americans, and post-European contact, an area of historic homesteads and settlements.

The dominant vegetation of the area is native grasses, characteristic open oak woodland with less than 20% canopy coverage. The topography is mostly rolling hills with slopes less than 15% and some steeper areas of slopes less than 30%. Site has typical prairie/grassland soils - loose and gravelly with low organic content/thin topsoil layer. There are also several prevalent areas onsite with boulders and large rocky outcroppings.

Watercourses on the property are generally upland/headwater episodic drainages – grassy channels that drain toward the valley floor. There are also seasonal springs and seeps (typically emanating from hillsides) that flow during the rainy season.

When the current owner took possession of the property in early 2016, Pacific Watershed Associates was contracted for cannabis compliance consulting and Regional Water Board enrollment/preparation of Water Resources Protection Plan (August 2016).

In late spring/early summer 2017, a high-profile, retired CDFW game warden was hired for consulting services to visit the site and assess the property/operations with respect to environmental/CDFW compliance. This consultant prepared the original LSAA notification that was submitted July 2017.

On January 11, 2018, a CDFW site visit was conducted pursuant to the July 2017 LSAA submission, and the resulting violations enumerated in the NOV letter were cited.

5 Site Visit 05/04/2018 – Summary of Observations/ Violation Points

Please refer to the attached Project Maps in conjunction with this document.

MEE staff conducted field investigation on May 4, 2018. The following were observed:

- Erosion control measures had been implemented on exposed/disturbed soils at all cultivation sites. Straw wattles were installed on cut banks and low points of cultivation areas. Straw mulch was covering areas exposed soil. Wood chips had been placed on walkways and landings around cultivation areas.
- The cultivation area #3 had been decommissioned.
- The 4” culvert (Violation #1) had been removed.
- Cultivation area #4 had been decommissioned.
- All debris and cultivation related materials had been removed from the decommissioned cultivation areas 3 and 4. Erosion control measures had been installed.

Table 1: Existing conditions of Notice of Violation points from 05/04/18 site visit.

NOV #	Lat/Long	Map ID	Conditions per Site Visit 05/04/2018	Further Remediation Measures Required
1	40.4596, -123.6850	SR-1	The 4" culvert and the access road prism removed from the Class III stream channel. Decommissioned road and site of removed prism have been covered in straw.	Install enhanced erosion control prior to October 1 st . Stream channel restoration and plantings per agency/biologist recommendations. Continue monitoring and maintenance.
2	40.4596, -123.6850	SR-1	Road fill has been removed from the Class III stream channel.	Install silt fence. Stream channel restoration and plantings per agency/biologist recommendations. Install enhanced erosion control prior to October 1 st . Continue monitoring and maintenance.
3	40.4596, -123.6850	CA-3	Cultivation area decommissioned. Straw wattles and straw mulch have been installed on the cut slopes of the graded area.	Install enhanced erosion control prior to October 1 st . Recontour area to natural slopes per forthcoming grading plan. Replant with native species. Continue monitoring and maintenance.
4	40.4597, -123.6843	EC-1	Erosion control measures have been installed throughout the graded area with exception of an exposed cut bank in the NW corner of Area#3.	Install jute cloth or other appropriate erosion control measure immediately. Install enhanced erosion control prior to October 1 st . Continue monitoring and maintenance.
5	40.4589, -123.6842	CV-1	The 12" culvert is still in place. Inlet of culvert is hydrologically connected to the road surface.	Install 18" stream crossing culvert. Install rolling dips and hydrologically disconnect road per PWA Road Manual.
6	40.4589, -123.6842	CV-1	Hydrologically connected road. Road lacks adequate drainage.	Hydrologically disconnect road per PWA Road Manual. Install enhanced erosion control prior to October 1 st .
7	40.4588, -123.6842	CV-3	No conveyance structure at the site of drainage and ditch relief crossing on road. Erosion at the outlet of roadway.	Install 18" culvert. Install rolling dips and hydrologically disconnect road per PWA Road Manual.
8	40.4588, -123.6842	CV-3	Cultivation area decommissioned. Erosion control measures installed. Hydrologically connected road. Signs of sediment transport at outlet of dip.	Recontour area to natural slopes per forthcoming grading plan. Replant with native species. Hydrologically disconnect road per PWA Road Manual. Install enhanced erosion control prior to

				October 1 st . Continue monitoring and maintenance.
9	40.4588, -123.6842	RS-1	Soil stockpile removed. Small mound of sidecast perched near the outlet of the dip at CV-3.	Install enhanced erosion control prior to October 1 st . Continue monitoring and maintenance.
10	40.4589, -123.6839	CV-2	The 12" culvert is still in place. Inlet of culvert is hydrologically connected to the road surface. Insufficient road drainage.	Install 18" stream crossing culvert. Install rolling dips and hydrologically disconnect road per PWA Road Manual.
11	40.4589, -123.6839	CV-2	Road lacks sufficient ditch relief and drainage. Evidence of sediment transport at outlet of dip.	Install rolling dips and hydrologically disconnect road per PWA Road Manual. Install enhanced erosion control prior to October 1 st .
12	40.4589, -123.6832	AC-1	Spring intercepts roadway with no conveyance structure.	Investigate superior alternate road alignment. If feasible, cut new access road and decommission existing. If not feasible, install rocked crossing at on existing road and hydrologically disconnect segment per PWA Road Manual.
13	40.4589, -123.6832	AC-1	Spring intercepts roadway with no conveyance structure.	Investigate superior alternate road alignment. If feasible, cut new access road and decommission existing. If not feasible, install rocked crossing at on existing road and hydrologically disconnect segment per PWA Road Manual.

6 Project Description

Based on site visit, four main types of further remediation work are required:

1. Improvements to road segments.
2. Improvements to stream crossings.
3. Enhanced erosion control of existing cannabis cultivation sites.
4. Enhanced remediation of decommissioned cannabis cultivation sites.

Additional compensatory measures are also proposed.

Table 2 summarizes the corrective actions proposed resolve the NOV. Further detail is provided in the sections below.

Table 2: Work Plan Corrective Actions

Map ID	Latitude, Longitude (DD)	Corrective Action	Schedule for Completion
Cultivation Area 3	40.4596, -123.6850	Recontour graded area and replant	2019 Work Season
Cultivation Area 4	40.4589, -123.6842	Recontour graded area and replant	2019 Work Season
RD-1	40.4608, -123.6852	Rolling Dip	October 1, 2018
RD-2	40.4604, -123.6853	Rolling Dip	October 1, 2018
RD-3	40.4587, -123.6843	Rolling Dip	October 1, 2018
RD-4	40.4589, -123.6841	Rolling Dip	October 1, 2018
RD-5	40.4589, -123.6837	Rolling Dip	October 1, 2018
RS-1	40.4589, -123.6843	Remove sidecast, install erosion control	October 1, 2018
AC-1	40.4589, -123.6833	Install armored crossing or alternate road alignment	2019 Work Season
CV-1	40.4589, -123.6841	Replace 12" Culvert with 18" diameter and rock armor.	October 1, 2018
CV-2	40.4589, -123.6839	Replace 12" Culvert with 18" diameter and rock armor	October 1, 2018
CV-3	40.4589, -123.6843	Install New 18" Culvert	October 1, 2018
SF-1	40.4598, -123.6827	Silt Fence	October 1, 2018
SF-2	40.4599, -123.6857	Silt Fence	October 1, 2018
SF-3	40.4574, -123.6857	Silt Fence	October 1, 2018
SF-4	40.4573, -123.6808	Silt Fence	October 1, 2018
SR-1	40.4596, -123.6850	Stream Restoration and plantings at decommissioned Cultivation Area 3	2019 Work Season
EC-1	40.4597, -123.6843	Erosion Control	October 1, 2018

6.1 Road Improvements

RD-1 to RD-5

The southern access road, particularly the road segment in the vicinity of decommissioned Cultivation Area 4, is hydrologically connected and lacks adequate drainage. The locations of rolling dips to be installed (RD-1 to RD-5) have been specified to improve road drainage and minimize sediment transport. The entire road segment shall be improved per the guidelines of the PWA Roads Manual.

RS-1

The perched sidecast noted in the 5/4/18 visit at the site NOV violation #9 shall be removed and compacted to nearby flat. Appropriate erosion control measures will be installed on all disturbed areas.

AC-1

Installation of an armored crossing is proposed for the point where a seepage spring flows out of the slope bank (Violations 12+13). Flow was observed on the roadway and discharging to vegetation downslope. The BMPs for constructing an armored crossing are included in Attachment 2.

The proposed installation of the armored crossing AC-1 shall be evaluated in conjunction with evaluation of an alternate road alignment. CDFW staff has advised evaluation of an alternate access road to Cultivation Area 6 to avoid using the access road where it intercepts watercourses at several points.

If a superior road alignment is found, the corresponding portion of the existing road segment will be decommissioned per the PWA Roads Manual.

If an alternate road alignment is not feasible, AC-1 will be installed and the road will be improved per Roads Manual guidelines.

All access roads on property are seasonal. The property is operated March to early/mid-November. No traffic, road use, or other activities currently occur or are proposed to occur onsite during the winter months (November to March).

6.2 Stream Crossings

Existing stream crossings, CV-1 and CV-2, shall be replaced with 18" diameter culverts per the original July 2017 notification submission.

Installation of a new 18" culvert (CV-3) is proposed at the site of NOV Violation #7.

Culvert construction BMPs and specifications are found in Attachment 3.

6.3 Enhanced Erosion Control of Existing Cannabis Cultivation Sites

SF-1 to SF-4

Silt fences shall be installed at downslope perimeters of existing cultivation areas 1,2, 5, and 6. Silt fence installation shall be in conjunction with ongoing reseeding/revegetation and monitoring. Straw mulch and wattles have already been implemented. The silt fences shall remain until revegetation of exposed soils has achieved 70% coverage or greater.

6.4 Enhanced Remediation of Decommissioned Cannabis Cultivation Sites

EC-1

Jute cloth, wattles, or similar shall be installed on the exposed cut bank at the NW corner of Cultivation Area 3.

Cultivation Area 3

The decommissioned cultivation area will be recontoured and replanted with native species.

Per CDFW staff request, a qualified biologist shall conduct an assessment of the areas of violation and impacted stream channel. The biological assessment shall address the following:

- Identification of wetland species/wetland delineation if applicable
- Stream channel restoration recommendations
- Planting plan - species recommendations and locations

The recommendations of the biologist will be presented to CDFW and will be implemented contingent upon CDFW approval.

Cultivation Area 4

The decommissioned cultivation area will be recontoured and replanted with native species.

6.5 Compensatory Measures

The following additional compensatory measures shall be implemented:

- Removal of all legacy trash at stockpile located east of Cultivation Area 2.
- Native species plantings at additional locations per biologist's recommendations.
- Development of Oak Woodland Management Plan to assure and enhance the health of the oak woodlands onsite.

6.6 Total Estimated Disturbance

The table below summarizes the tentative disturbances estimates for the project.

MAP ID	Impact Description	Earthwork Disturbance to Complete Project			Temporary Impact to		Permanent Impact to	
		Linear (ft)	Area (ft ²)	Vol (yd ³)	Linear (ft)	Area (ft ²)	Linear (ft)	Area (ft ²)
Cultivation Area 3	Recontouring	-	12,000	TBD	-	12,000	-	-
Cultivation Area 4	Recontouring	-	4,000	TBD	-	4,000	-	-
CV-1	Culvert Replacement	25	88	8	14	41	9	27
CV-2	Culvert Replacement	25	88	8	14	41	9	27
CV-3	Culvert Installation	25	88	10	14	41	9	27
AC-1	Armored Crossing	30	300	11	20	200	15	150
SR-1	Channel Restoration	175	TBD	TBD	175	TBD	-	-
SF-1	Silt Fence	80	80	2	80	80	-	-
SF-2	Silt Fence	80	80	2	80	80	-	-
SF-3	Silt Fence	80	80	2	80	80	-	-
SF-4	Silt Fence	80	80	2	80	80	-	-
PROJECT TOTAL		600	16,884	43	557	16,643	42	231

6.7 Project Schedule

The following project schedule is proposed:

- July/early Aug 2018
 - Follow up site visit with CDFW. Incorporation of CDFW feedback to Work Plan as required.
- August 1 – October 1, 2018
 - Work period. Installation and completion of project components that do not require instream work or have been approved.
- August 2018
 - Biological Assessment.
- September 2018
 - Road improvements. Culvert installation (CV-1, CV-2, CV-3) contingent upon approval.
 - Survey for grading plan and restoration plan with biologist recommendations.
- By October 1, 2018
 - Installation of enhanced erosion control and winterization measures to all decommissioned cultivation sites and problem areas not yet fully remediated.
- After first rains 2018
 - Road assessment to evaluate access road alternative alignment.
- Fall 2018
 - After road assessment, finalize and submit grading and restoration plans to agencies for approval.
- Winter 2018
 - Wet weather monitoring of site per Regional Water Board Guidelines.
- December 31, 2018
 - Submit monitoring to CDFW.
- Work Season 2019
 - Per agency approval, implementation of all outstanding work plan elements
 - Grading/ recontouring
 - Replanting, Enhanced planting, Channel restoration
 - Other additional Biologist recommendations
 - Installation of AC-1 or alternate road alignment and road decommissioning.

7 Mitigation, Monitoring, and Maintenance

Following the completion of the projects outlined above, a comprehensive monitoring program shall be conducted for a minimum of five years. Photo points established for the monitoring plan will be mapped and listed for each monitoring point including Latitude and Longitude, direction of camera, and a sample photo. Maintenance will be ongoing at road stream crossings.

Decommissioned cultivation area CV-3

- Observe revegetation of disturbed features
- Vegetation density
- Invasive plant species

Decommissioned cultivation area CV-4

- Observe revegetation of disturbed features
- Vegetation density
- Invasive plant species

All active cultivation areas

- Observe revegetation of disturbed features
- Effectiveness of silt fence at downslope perimeter

Improved road sections

- Observation points will include pre-improvement problem areas in addition to outlets of all drainage improvements- rolling dips, water bars, inboard ditches, armoring, etc.

Armored crossing at AC-1

- Effectiveness of inlet and outlet
- Conveyance across the road
- Signs of spilling onto the road
- Signs of erosion on the downslope side

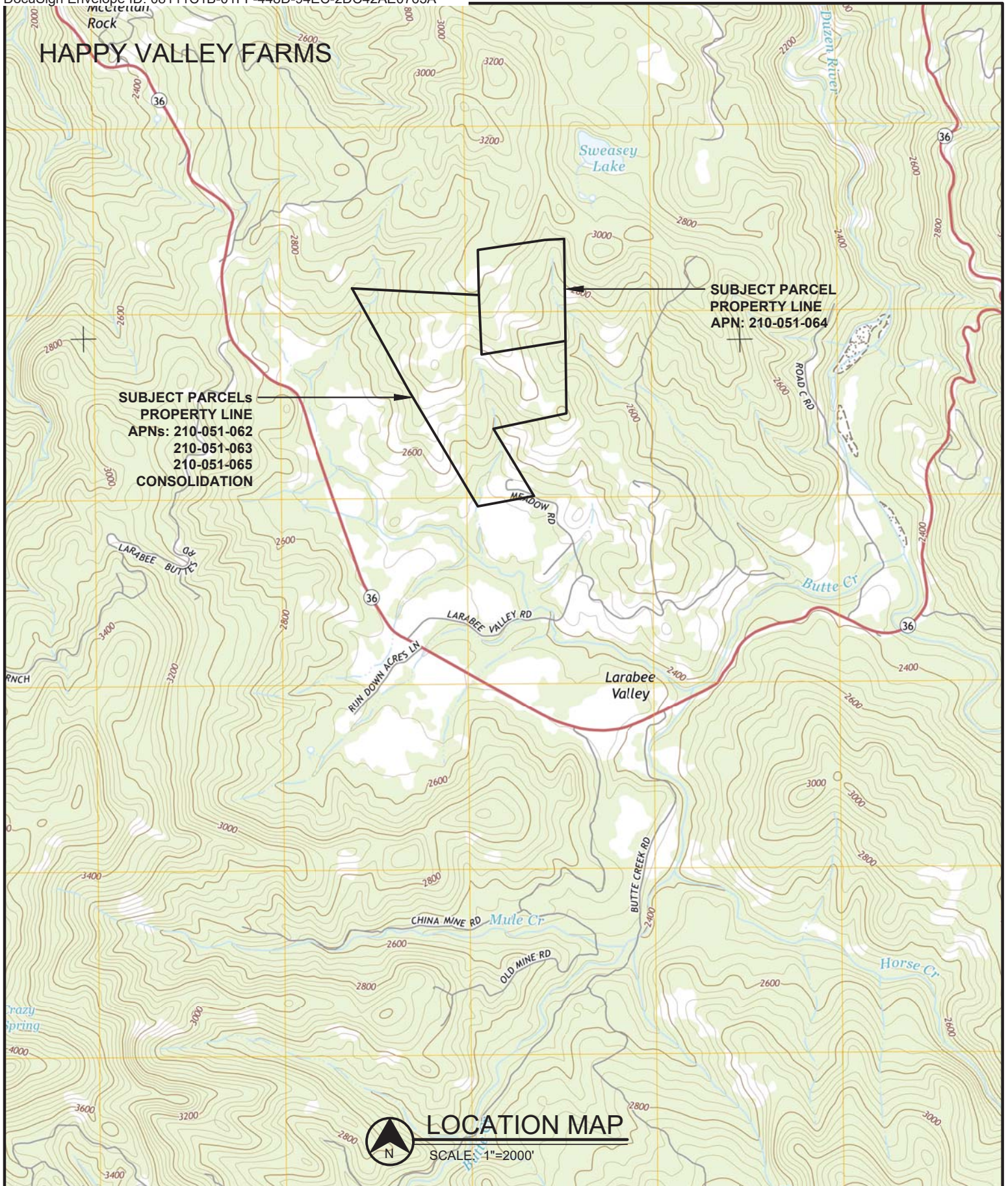
Replaced culvert crossing CV-1 and CV-2, new crossing CV-3

- Check inlet for erosion, aggradation, and debris
- Note and remove debris found at inlet
- Check outlet and downstream slope for erosion and gullyng

7.1 Reporting

Monitoring reports will be submitted annually to CDFW and Regional Water Board before December 31 each year or per agency requirements and schedule.

Attachment 1: Project Maps



1600 PERMIT

OWNER: BRIAN MITCHELL, HAPPY VALLEY FARMS
 PROJECT ADDRESS: 33061 ST HWY 36, BRIDGEVILLE, CA 95526
 PROJECT APNS: 210-051-062 ; 210-051-063 ; 210-051-064 ; 210-051-065

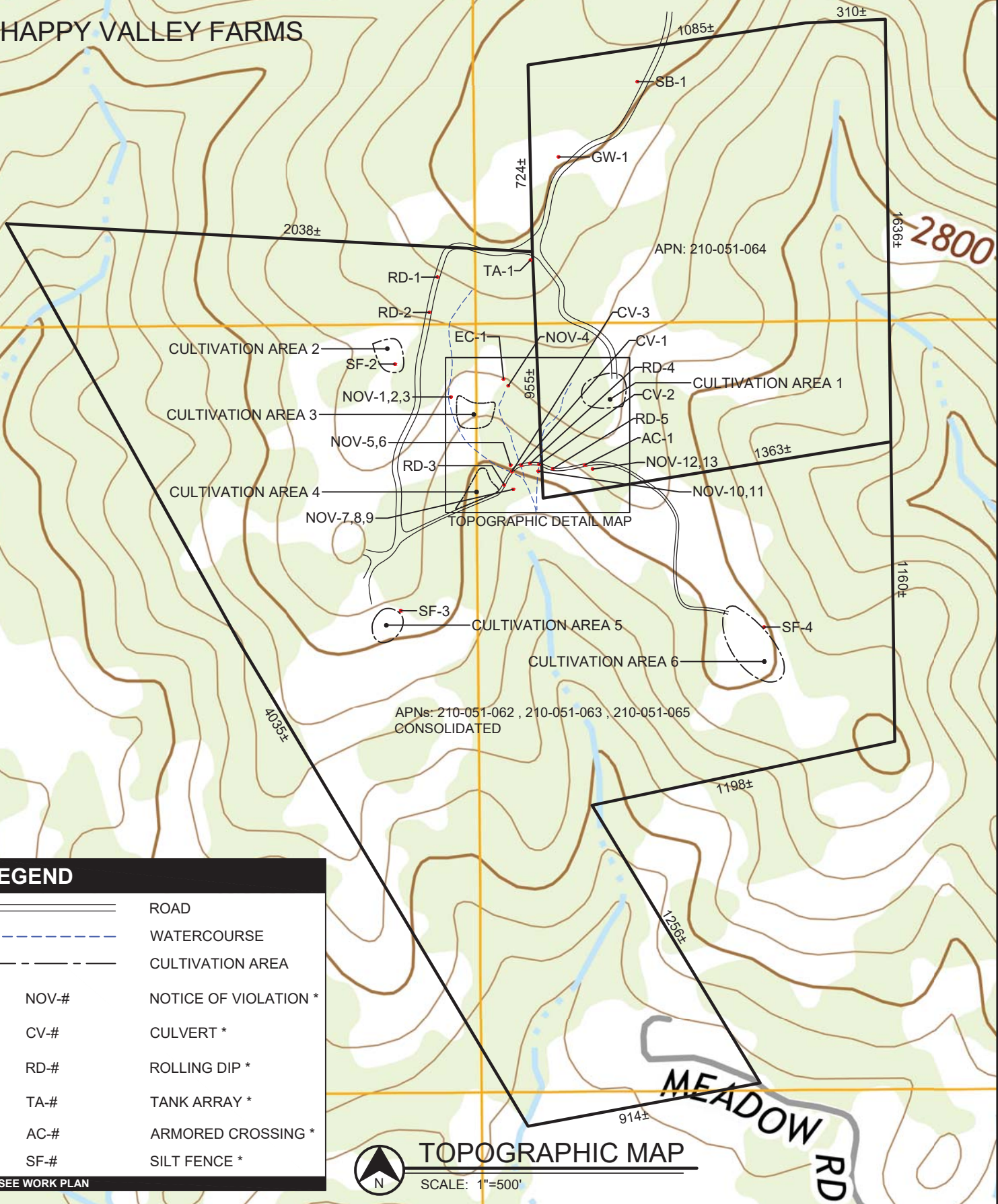
MOTHER EARTH

ENGINEERING
 920 SAMOA BLVD, SUITE 210
 ARCATA, CA 95521, 707-633-8321

LOCATION MAP

TOPOGRAPHICAL MAP (USGS, 7.5 MIN, LARABEE VALLEY, QUADRANGLE)

HAPPY VALLEY FARMS



APN: 210-051-064

APNs: 210-051-062, 210-051-063, 210-051-065
CONSOLIDATED

LEGEND

	ROAD
	WATERCOURSE
	CULTIVATION AREA
NOV-#	NOTICE OF VIOLATION *
CV-#	CULVERT *
RD-#	ROLLING DIP *
TA-#	TANK ARRAY *
AC-#	ARMORED CROSSING *
SF-#	SILT FENCE *

* SEE WORK PLAN



TOPOGRAPHIC MAP

SCALE: 1"=500'

1600 PERMIT

OWNER: BRIAN MITCHELL, HAPPY VALLEY FARMS
PROJECT ADDRESS: 33061 ST HWY 36, BRIDGEVILLE, CA 95526
PROJECT APNS: 210-051-062 ; 210-051-063 ; 210-051-064 ; 210-051-065

MOTHER EARTH

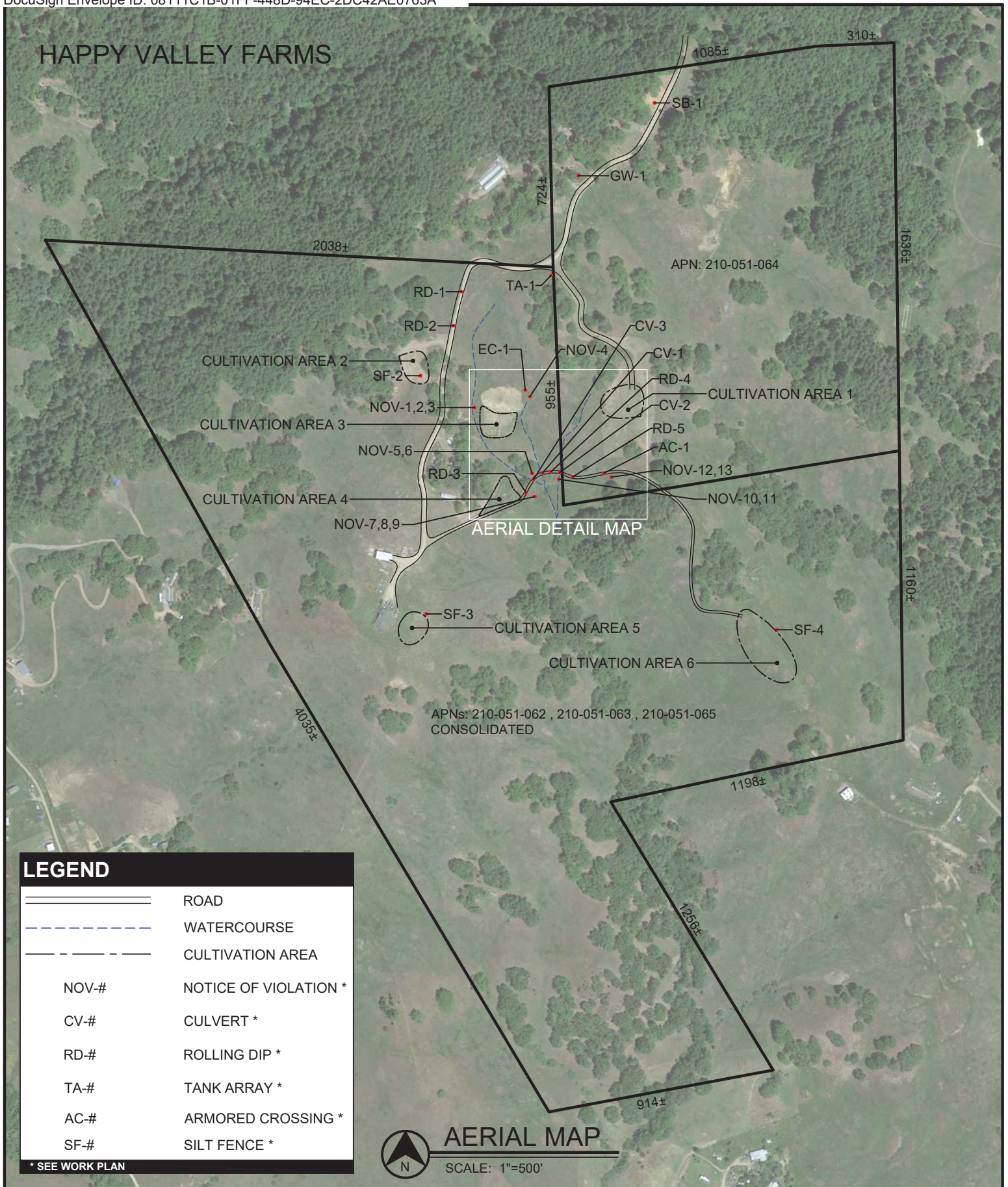


ENGINEERING
920 SAMOA BLVD, SUITE 210
ARCATA, CA 95521, 707-633-8321

TOPOGRAPHIC MAP

TOPOGRAPHICAL MAP (USGS, 7.5 MIN, LARABEE VALLEY, QUADRANGLE)

HAPPY VALLEY FARMS



LEGEND

	ROAD
	WATERCOURSE
	CULTIVATION AREA
NOV-#	NOTICE OF VIOLATION *
CV-#	CULVERT *
RD-#	ROLLING DIP *
TA-#	TANK ARRAY *
AC-#	ARMORED CROSSING *
SF-#	SILT FENCE *

* SEE WORK PLAN



AERIAL MAP

SCALE: 1"=500'

1600 PERMIT

OWNER: BRIAN MITCHELL, HAPPY VALLEY FARMS
 PROJECT ADDRESS: 33061 ST HWY 36, BRIDGEVILLE, CA 95526
 PROJECT APNS: 210-051-062 ; 210-051-063 ; 210-051-064 ; 210-051-065

AERIAL MAP

AERIAL BACKGROUND (GOOGLE EARTH, 2018)

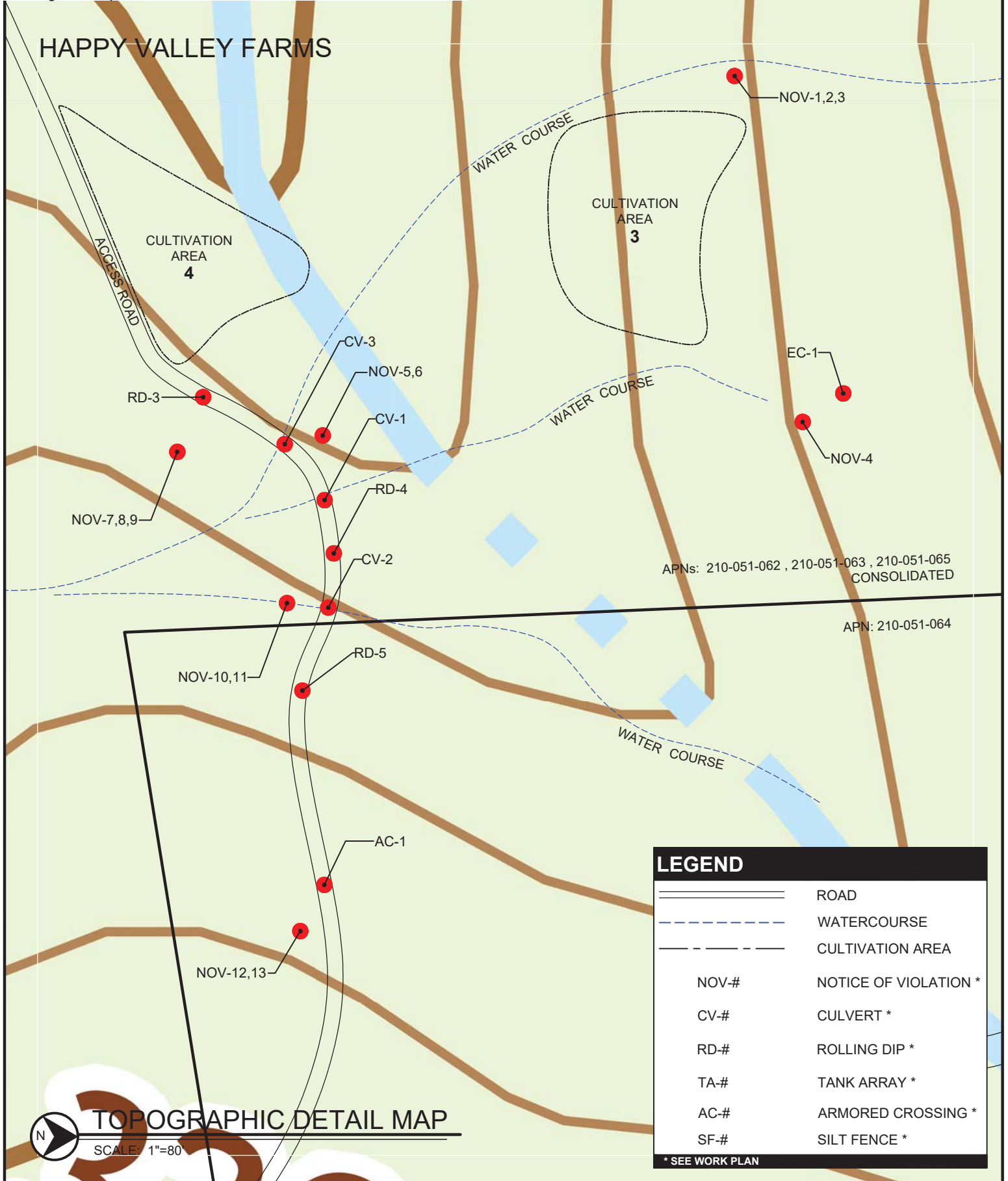
MOTHER EARTH



ENGINEERING

920 SAMOA BLVD, SUITE 210
 ARCATA, CA 95521, 707-633-8321

HAPPY VALLEY FARMS



LEGEND	
	ROAD
	WATERCOURSE
	CULTIVATION AREA
NOV-#	NOTICE OF VIOLATION *
CV-#	CULVERT *
RD-#	ROLLING DIP *
TA-#	TANK ARRAY *
AC-#	ARMORED CROSSING *
SF-#	SILT FENCE *
* SEE WORK PLAN	



TOPOGRAPHIC DETAIL MAP

SCALE: 1"=80'

1600 PERMIT

OWNER: BRIAN MITCHELL, HAPPY VALLEY FARMS
 PROJECT ADDRESS: 33061 ST HWY 36, BRIDGEVILLE, CA 95526
 PROJECT APNS: 210-051-062 ; 210-051-063 ; 210-051-064 ; 210-051-065

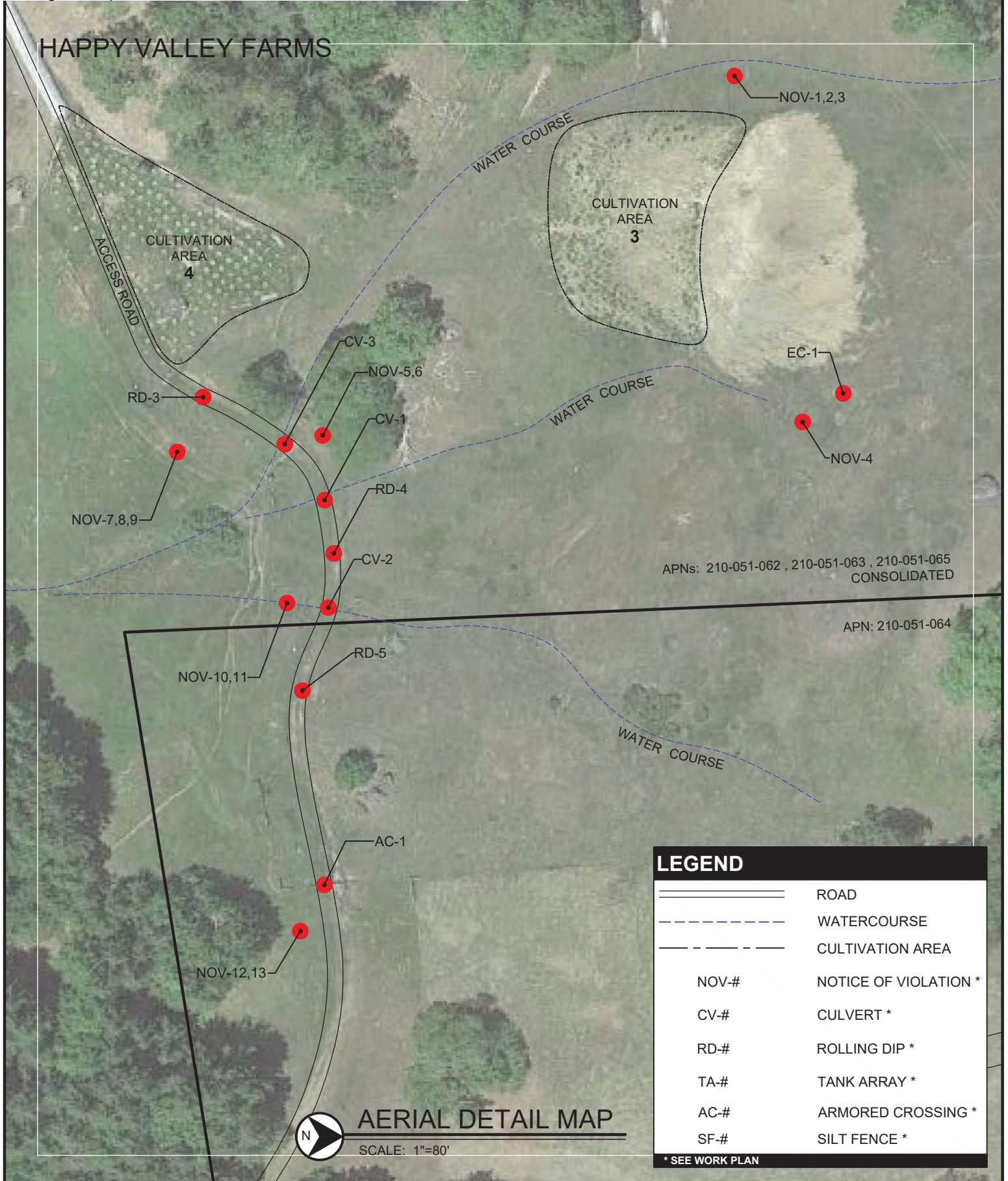
MOTHER EARTH

ENGINEERING
 920 SAMOA BLVD, SUITE 210
 ARCATA, CA 95521, 707-633-8321

TOPOGRAPHIC DETAIL MAP

TOPOGRAPHICAL MAP (USGS, 7.5 MIN, LARABEE VALLEY, QUADRANGLE)

HAPPY VALLEY FARMS



LEGEND	
	ROAD
	WATERCOURSE
	CULTIVATION AREA
NOV-#	NOTICE OF VIOLATION *
CV-#	CULVERT *
RD-#	ROLLING DIP *
TA-#	TANK ARRAY *
AC-#	ARMORED CROSSING *
SF-#	SILT FENCE *

* SEE WORK PLAN

AERIAL DETAIL MAP



SCALE: 1"=80'

1600 PERMIT

OWNER: BRIAN MITCHELL, HAPPY VALLEY FARMS
 PROJECT ADDRESS: 33061 ST HWY 36, BRIDGEVILLE, CA 95526
 PROJECT APNS: 210-051-062 ; 210-051-063 ; 210-051-064 ; 210-051-065

MOTHER EARTH

ENGINEERING
 920 SAMOA BLVD, SUITE 210
 ARCATA, CA 95521, 707-633-8321

AERIAL DETAIL MAP

AERIAL BACKGROUND (GOOGLE EARTH, 2018)

Attachment 2: Road Construction BMPs

Rolling Dips

Rolling dips are installed to minimize hydrological connectivity between roadway and water crossings. Rolling dips placed at regular intervals will also minimize road surface erosion. The recommended spacing and dimensions for the rolling dips are provided below.

Soil erodibility	Road gradient (%) and drainage structure spacing (feet)				
	0-3	4-6	7-9	10-12	>12
High to moderate	250	160	130	115	100
Low	400	300	250	200	160

¹Based on Keller and Sherar, 2003. Also suggested by California Board of Forestry and Fire Protection in Technical Rule Addendum No. 5 (see Appendix C).

²Table distances are designed to prevent ditch erosion, not to eliminate hydrologic connectivity. If road surface drainage is hydrologically connected to a stream crossing, install first a rolling dip and/or ditch relief culvert close to the crossing, but such that it drains onto the fill slope or hillslope and will not deliver runoff to the watercourse. The next (second) drainage structure should be placed so that it too will not discharge to the stream. Add additional drainage relief treatments along the road according to the approximate spacing recommended in this table.

Recommended spacing for rolling dips based on soil erodibility and road gradient. (Image source: Weaver et al. , "Handbook for Forest, Ranch & Rural Roads")

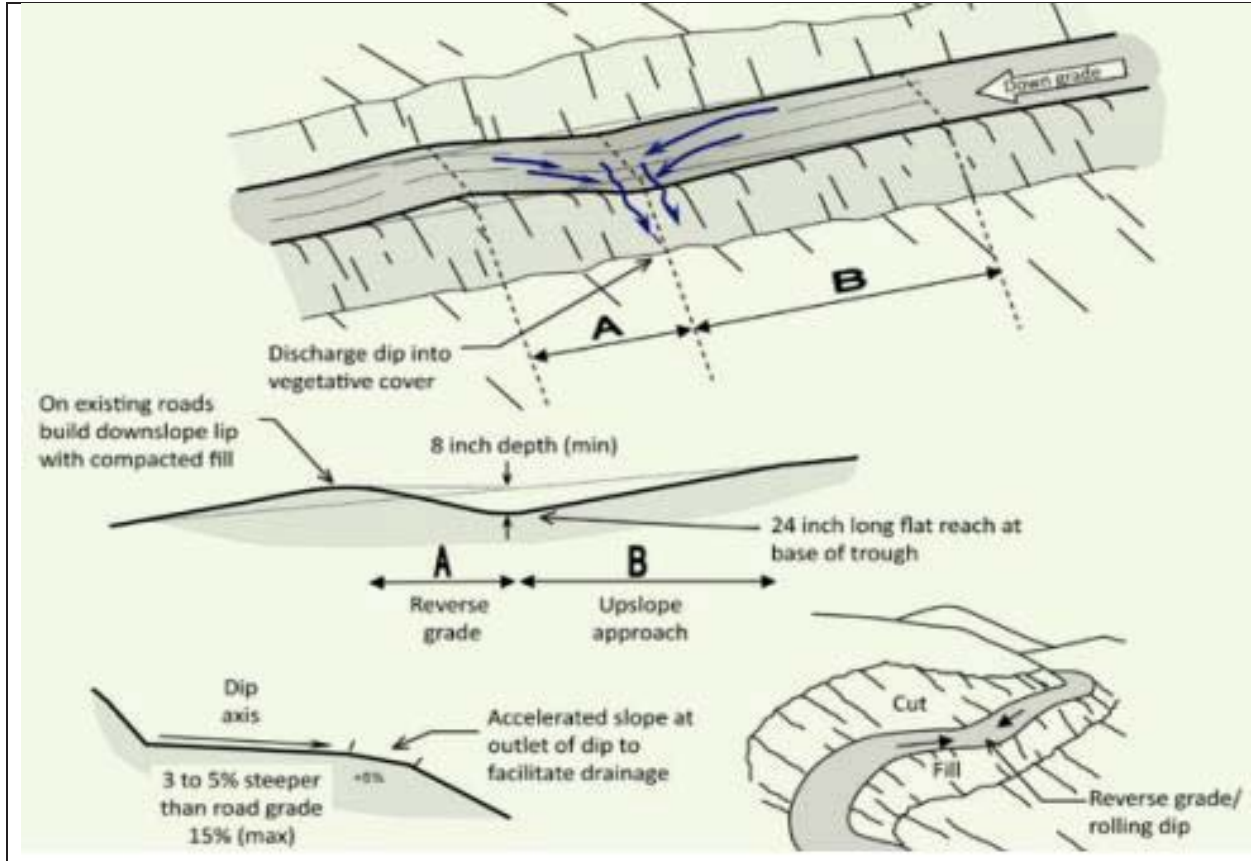
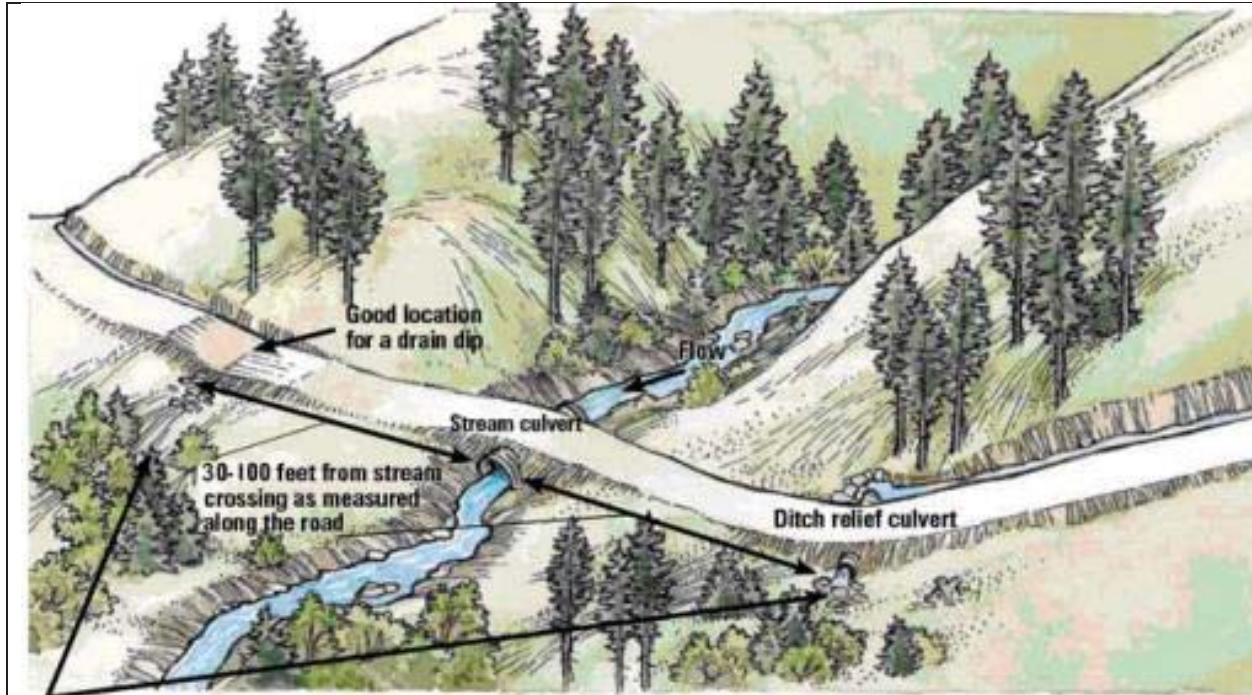


Figure depicting the upslope approach section “B” and the reverse grade section “A”, the profile of the dip, and the dip axis created by height differential between the upslope and downslope ends of the trough. (Image modified from: Best, 2013)

Road grade (%)	Upslope approach ² (distance from up-road start of rolling dip to trough) (ft)	Reverse grade ² (distance from trough to crest) (ft)	Depth below average road grade at discharge end of trough ² (ft)	Depth below average road grade at upslope end of trough ² (ft)
<6	55	15-20	0.9	0.3
8	65	15-20	1.0	0.2
10	75	15-20	1.1	0.1
12	85	20-25	1.2	0.1
>12	100	20-25	1.3	0.1

Recommended dimensions for rolling dips based on road grade. (Image source: Weaver et al. , “Handbook for Forest, Ranch & Rural Roads”)



Rolling dips, ditch relief culverts, and other road and ditch drainage structures should be installed between 30 to 100 feet from stream crossings. This minimizes the hydrologic connectivity between the road and the watercourse. (Weaver et al., 2015)

Rocked Ford Crossing

A wide U-shaped dip should be at the low point of the road, which should also be where the watercourse crosses the roadway. Riprap is used to armor the outlet side of the dip. Angular rock should be used for constructing the ford. Outboard edge of the armored ford should be 5 times the estimated design peak flow wetted perimeter in the upstream watercourse and the depth should be at least 1.5 times deeper than the average flood depth of the watercourse (Weaver et al. , 2015).

Rolling dips should be built 75' on the roadway on both sides of the rocked ford. The rolling dips should drain into stable areas and minimize any hydrologic connectivity between the roadway and the rocked ford.

FIGURE 121A. The following photos depict the typical steps for constructing an armored fill. The original undersized, perched culvert on this intermittent stream was prone to inlet plugging and outlet erosion and it was located on a road that received only intermittent maintenance.



FIGURE 121B. In the first step, the stream crossing culvert is removed and the fill is broadly dipped out in a U-shape using a dozer. The dip must have enough capacity to pass the 100-year design flow without diverting. Spoil material is either endhailed to a stable disposal site, or it is bladed down the road approach(s) where it will not erode and enter the stream. Some fill is left in the crossing so vehicles will have a level roadbed to cross the channel.



FIGURE 121C. An excavator or backhoe is used to dig a broad keyway across the base of the fill, where the fill intersects the natural channel, and another broad keyway at the top of the fill, where the top edge of the road surface is planned. The largest rock goes in the lower keyway, and coarse armor is also placed in the upper keyway across the full width of the design spillway where streamflow will flow over the fill and down the armored fill slope. Filter fabric, or a filter layer of small rock, is placed on the underlying soil to prevent erosion or winnowing of soil beneath the armor.



Typical steps for installing a rocked ford (Handbook for Forest, Ranch, & Rural Roads, Weaver, 2014)



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



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



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

Typical steps for installing a rock ford (Handbook for Forest, Ranch, & Rural Roads, Weaver, 2014)



Rocked ford should be oriented perpendicular to the watercourse (1). Rolling dips installed 75' from watercourse (2). Angular rip-rap used to construct ford with angular gravel used for the approaches. (Image: Kroese)

Attachment 3: Culvert Construction BMPs and Specifications

There are two existing culverts onsite. This project proposes to upsize the two existing ones and install a new culvert where a Class III watercourse intercepts the road. Table 1 lists the proposed development of culverts within this project.

Table 1: Proposed Culvert Development

Map Point	Latitude	Longitude	Proposed Development
CV-1	40.4589	-123.6842	Remove 12" culvert. Install 18" culvert following Culvert Construction BMPs.
CV-2	40.4589	-123.6839	Remove 12" culvert. Install 18" culvert following Culvert Construction BMPs.
CV-3	40.4588	-123.6842	No existing culvert. Install 18" culvert following Culvert Construction BMPs.

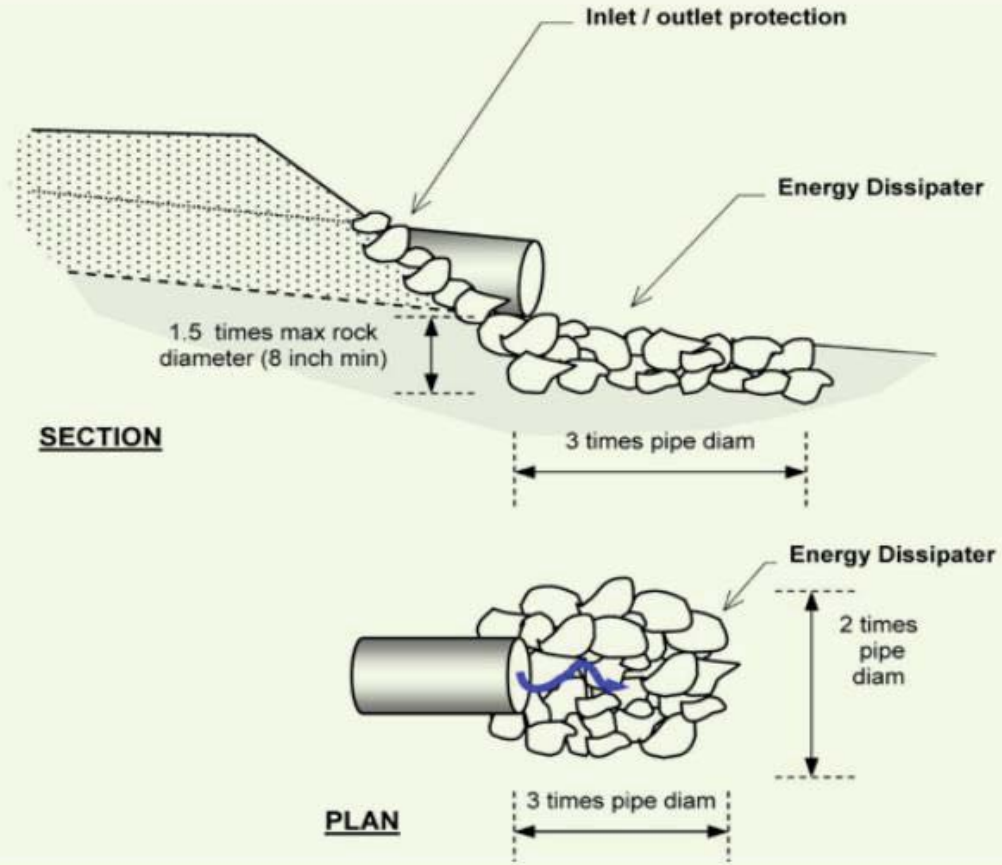
Culverts were sized using the rational method. Watersheds contributing to these culverts are under 100 acres. Precipitation data were taken from NOAA Atlas 14 Point Frequency Estimates for the 100 year interval, 10 minute duration design storm. The culvert sizing assumes a 0.67/1.0 HW/D ratio. Results are presented in Table 2.

Table 2: Culvert Sizing Analysis Results

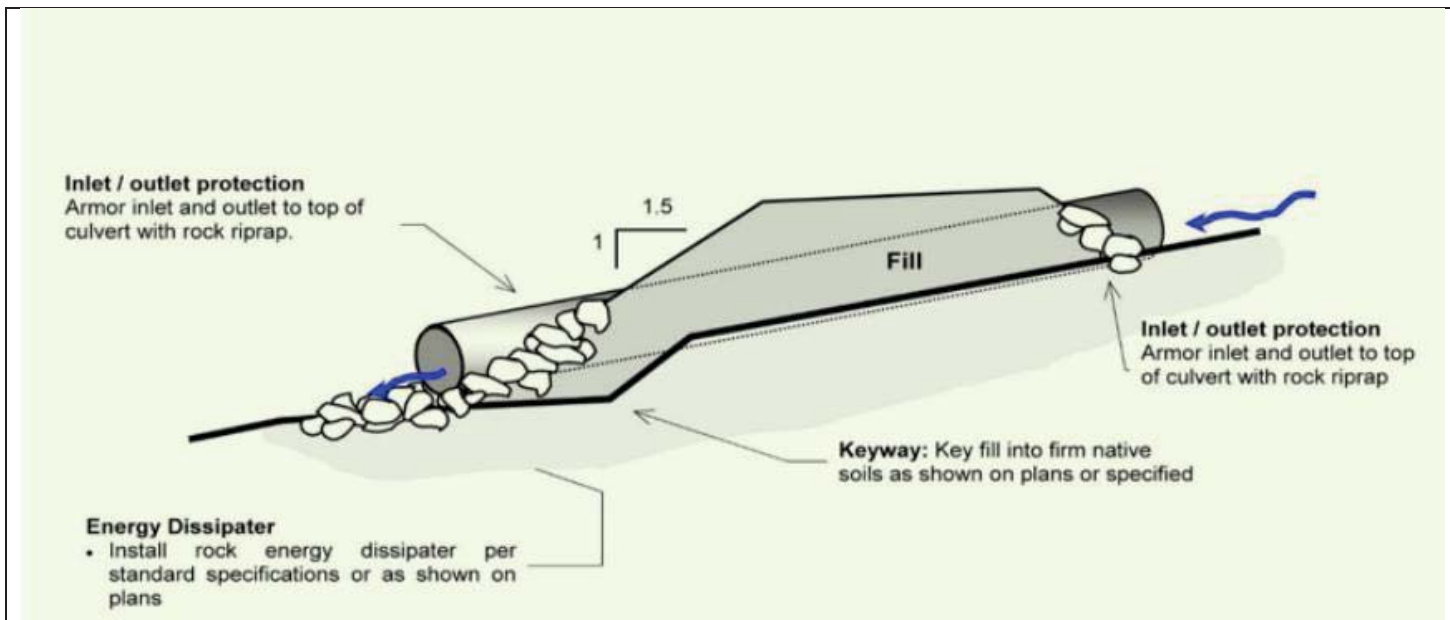
Map Point	Runoff Coefficient "C"	Precipitation Intensity [in/hr]	Contributing Watershed (Acres)	Q100 (in/hr)	Watershed Delineation Method	Result
CV-1	0.3	3.8	1.3	1.5	ArcGIS	Does not pass Q100. Replace with 18" per standard guidelines.
CV-2	0.3	3.8	2	2.3	ArcGIS	Does not pass Q100. Replace with 18" per standard guidelines.
CV-3	0.3	3.8	2	2.3	ArcGIS	Install 18" per standard guidelines

Culvert Construction Best Management Practices

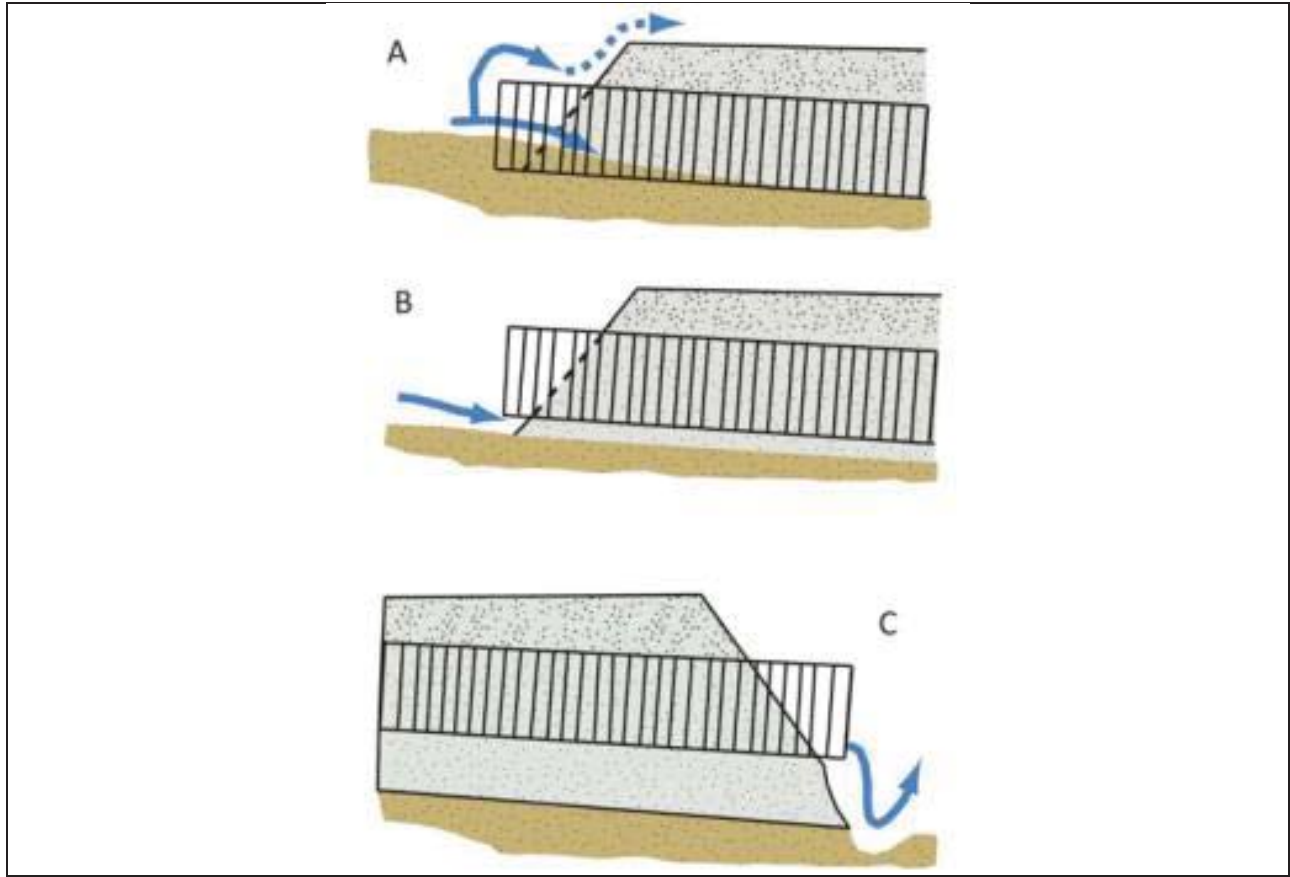
- Temporal Conditions:
 - Construction can only take place between May 1st and October 15th.
 - A 48-hour forecast of rain shall trigger a halt to project.
- Channel Condition: There should be no water flowing in the channel during construction.
- Culvert installation for culverts 60" and under:
 - Thickness of fill above culvert should be $\frac{1}{2}$ the diameter of the culvert with 1 foot being the minimum.
 - The fill above the culvert should be rock free.
 - Set the culvert in a groove that is 1/10 the diameter deeper than the native fill.
 - Fill over culvert should be introduced in 3-4 inch layers and compacted.
 - Large drain rock (4" to 8") should be used to armor inlet of culvert. Large drain rock and/or riprap (8" and larger) should be used for armoring the outlet and to provide energy dissipation.
- Culverts should be installed at the gradient of the ground slope.
- Culvert should follow the same orientation of the stream channel.
- Larger Culverts require construction plans specific to each site.
- Temporary erosion control measures shall be implemented during and after the construction period.
 - Wattles, silt fence, fiber rolls, jute mat, straw and seed shall be applied as required.
 - Straw and seeded areas shall utilize native erosion control seed mix and will be irrigated to maintain vegetation until established.
 - Barriers and temporary BMPs shall be removed when they have served their useful purpose but not before exposed areas have been permanently protected and stabilized.



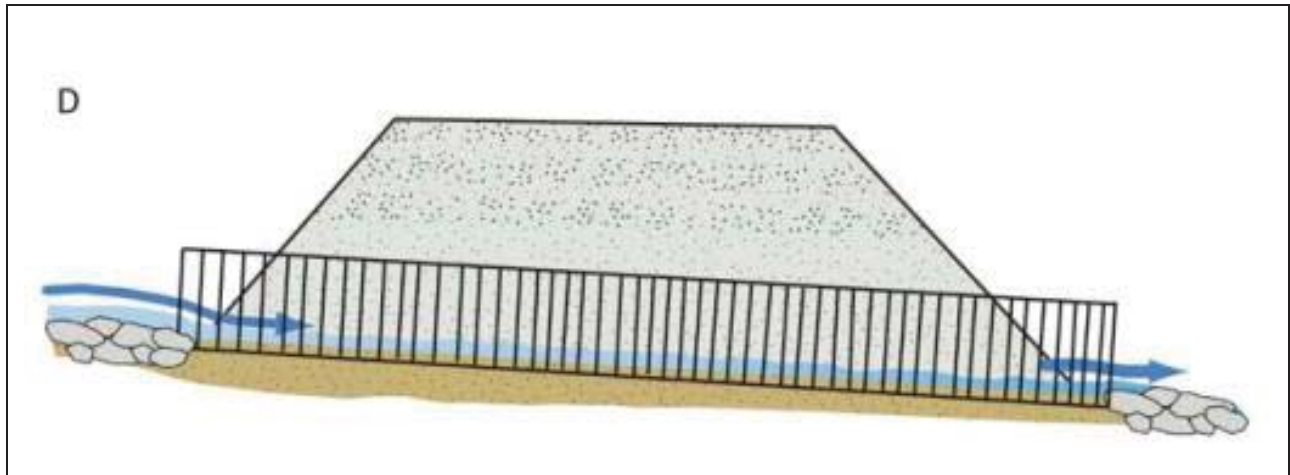
Rip-rap for energy dissipation at the outlet of the culvert. Rip-rap should be 8 inch diameter minimum. The general length, width, and thickness of the rip-rap apron are shown in this diagram, the specific values for each culvert are given in the Design Specifications table below. (Image source: Best, 2013)



Inlet and outlet should be armored to protect fill from erosion, trap sediment already in transport, and to dissipate energy of watercourse. (Image source: Best, 2013)



Setting the culvert inlet too low in the channel leads to inundation and possible failure of the conveyance (A). Setting the culvert inlet too high will result in erosion under the culvert and a loss of roadfill (B). Setting the culvert outlet too high causes shotgunning, erosion to the channel bed (C).
(Image source: MDSL, 1991)



Culvert set at correct height, orientation, and proper armoring of the inlet and outlet (D). (Image source: MDSL, 1991)

Culvert Specifications

Using the guidelines stated in the Culvert Construction BMPs the culverts should be built with the specifications in Table 3.

Table 3: Proposed Culvert Specifications

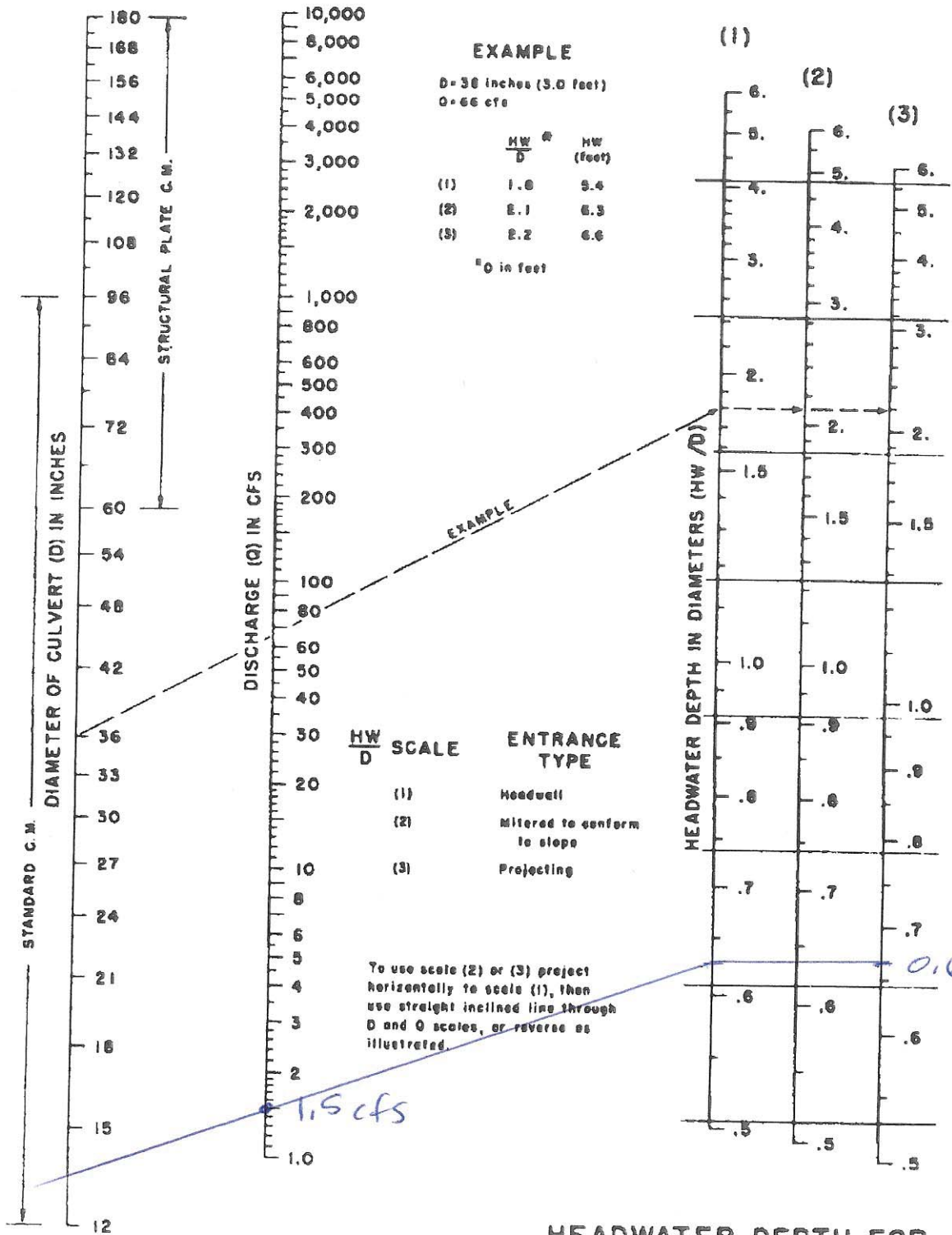
Map Point	Culvert Diameter (Inches)	Fill Above Culvert (Minimum, in Feet)	Rip-rap Size (Minimum, Diameter in Inches)	Outlet Rip-rap Apron Length (Feet)	Outlet Rip-rap Apron Width (Feet)	Outlet Rip-Rap Apron Thickness (Minimum, in Feet)
CV-1	18	1	8"	4.5	3	1
CV-2	18	1	8"	4.5	3	1
CV-3	18	1	8"	4.5	3	1

Construction Order of Operations

1. Using an excavator remove the undersized culvert.
2. Channel should be deep enough to allow for the culvert diameter and the minimum required fill as well as allow watercourse to maintain its original elevation. Channel should be constructed to allow a foot of clearance on each side of the culvert. Length of channel should be determined by road width with 2:1 slopes from road edge to water course channel.
3. Culvert should be placed in channel, with its midsection at the center of the roadway.
4. Removed fill should be placed back in channel on and around culvert in 3-4" lifts and then compacted in place.
5. Lifts should be layered continually until there is a minimum of 1' of fill above culvert.
6. A critical dip should be installed in parallel to the run of the culvert, on the side of the road that is lower grade.
7. All remaining excavated fill after installation and roadwork is complete should be removed from the area. This fill should be spread and compacted at a nearby graded flat.
8. Large drain rock (4" to 8") should be used to armor the inlet of the culvert.
9. Rip-rap (8" minimum) should be used to create a rock-armor apron at the outlet using the dimensions in the Design Specifications Table.
10. All fill not used in covering culvert should be spread and compacted on nearby graded flats.
11. All disturbed earth on the roadway should be seeded and covered with straw. Waddles, silt fences, and/or jute cloth should be used to create a buffer between the disturbed areas and the watercourse.

HAPPY VALLEY
CV-1

CHART 2B

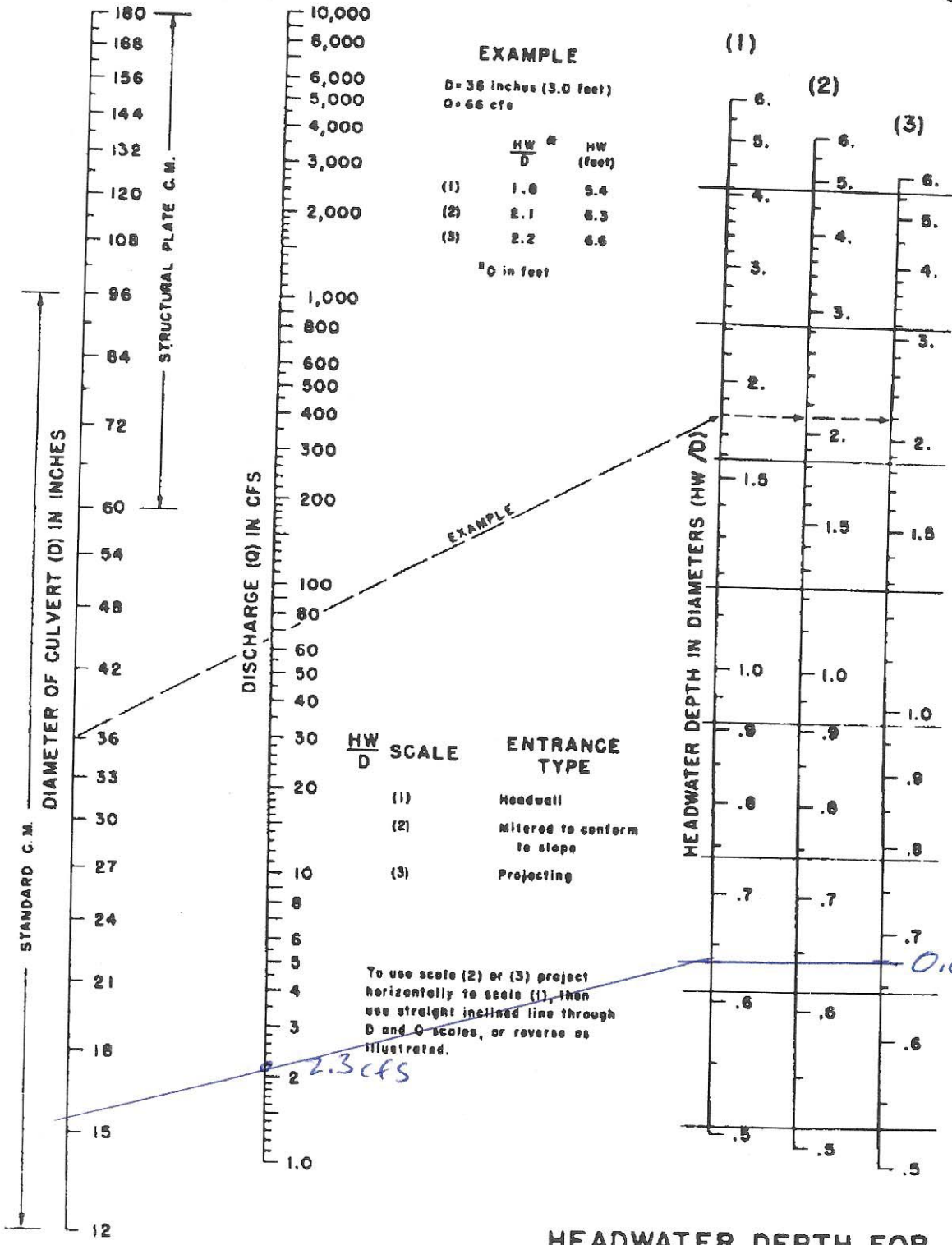


HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

HAPPY VALLEY

CV-2
CV-3

CHART 2B

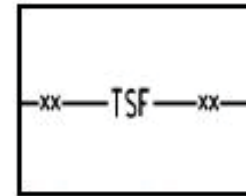


HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

Attachment 5: Silt Fence BMPs

(Sourced from CalTrans Construction Site BMP Manual, 2017)

Temporary Silt Fence

SC-1


Standard Symbol

BMP Objectives	
Soil Stabilization	<input type="checkbox"/>
Sediment Control	<input checked="" type="checkbox"/>
Tracking Control	<input type="checkbox"/>
Wind Erosion Control	<input type="checkbox"/>
Non-Stormwater Management	<input type="checkbox"/>
Materials and Waste Management	<input type="checkbox"/>

Definition and Purpose A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

- Below the toe of exposed and erodible slopes.
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along streams and channels.
- Along the perimeter of a project.

Limitations

- Not effective unless trenched and keyed in.
- Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
- Must be maintained.
- Must be removed and disposed of.
- Don't use below slopes subject to creep, slumping, or landslides.
- Don't use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Don't use silt fences to divert flow.
- Don't use in locations where ponded water may cause a flooding hazard.

Standards and Specifications *Design and Layout*

- The drainage area above any fence should not exceed a quarter of an acre, (100-feet of silt fence per 10,000 square feet of DSA).
- Slope of area draining to silt fence should be less than 1:1 (H:V).
- Silt fences must be placed parallel to the slope contour.

Temporary Silt Fence

SC-1

- Silt fences rely on temporary ponding to encourage sediment deposition and achieve water quality benefits. Limit application to areas where ponding and deposition may occur on the uphill side of the silt fence.
- Temporary silt fence fabrics generally have life spans ranging between five and eight months. Projects with longer durations may require replacing silt fence fabric.
- Silt fences constructed across concentrated flows are susceptible to washout. Silt fences shall not be installed across concentrated flows.
- For slopes adjacent to water bodies or Environmentally Sensitive Areas (ESAs), additional temporary soil stabilization BMPs should be used.
- For any 50 foot section of silt fence, the elevation of the base of the fence may not vary by more than 1/3 of the fence height.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- Join separate sections to form reaches not more than 500 feet without openings. Ensure there are no gaps between posts.

Reinforced Silt Fence

- Temporary reinforced silt fence is typically used in areas affected by high winds. They are also often used on slopes steeper than 2:1 (H:V) that contain a high number of rocks or large dirt clods that tend to dislodge, or where area draining fence contains moderate sediment loads.
- Temporary reinforced silt fence (type 2) may also be used to provide sediment control and delineate ESAs.

Materials

- Silt fence fabric should be a woven or unwoven geosynthetic textile that complies with Section 96-1.02E of the Standard Specifications. The Contractor must submit a certificate of compliance for silt fence fabric in accordance with Standard Specifications Section 6-2.03C.
- Wood posts should be untreated fir, redwood, cedar, or pine lumber. Each silt fence post should be at least 4 feet long, except reinforced silt fence posts should be at least 6 feet for Type 1 and 5 feet for Type 2 installations. Posts should be free from decay, splits or cracks longer than the thickness of the post or other defects that would weaken the posts and cause the posts to be structurally unsuitable. Steel posts may be used as well. Posts should comply with the requirements in Standard Specifications sections 16-2.03B and 13-10.02C.
- Anchors may be used. Anchors consist of a number 4 steel reinforcing bar. End protection shall be provided for any exposed bar reinforcement.
- Staples used to fasten the fence fabric to the posts and to join adjacent silt fence sections shall be U-shaped and have 1/2-inch legs and a 1-inch crown.

Temporary Silt Fence

SC-1

Staples should be 1/16-inch in diameter. At least four staples should be installed on each silt fence post for adequate fastening, with a maximum of 8-inches between each staple.

Installation

- Install in accordance with Pages 5 and 6 of this BMP (Standard Plans T51 “Temporary Silt Fence” and T60 “Temporary Reinforced Silt Fence”).
 - Generally, silt fences should be used in conjunction with soil stabilization source controls up slope to provide effective erosion and sediment control.
 - Excavate a trench that is 6-inches deep and 6-inches wide with a length consistent with the project design plans. Place the bottom of the silt fence fabric in the trench. Backfill the trench with soil over the base of the silt fence fabric. Compact the backfill soil by hand or mechanical methods.
 - Construct the length of each reach so that the change in base elevation along any 50-foot reach does not exceed 1/3 the height of the barrier; in no case should any reach of temporary silt fence exceed 500 feet in length.
 - Construct silt fences with a set-back of at least 3 feet from the toe of a slope. Where a silt fence is determined to be not practical with a 3 foot set-back from the toe due to specific site conditions, the silt fence may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practical.
- Maintenance and Inspection
- Repair undercut silt fences.
 - Repair or replace split, torn, slumping, or weathered fabric.
 - Inspect silt fence when rain is forecast. Perform necessary maintenance, or maintenance required by the Engineer.
 - Inspect silt fence following rain events. Perform maintenance as necessary, or as required by the Engineer.
 - Maintain silt fences to provide an adequate sediment holding capacity. Sediment should be removed when the sediment accumulation reaches one-third (1/3) of the barrier height.
 - Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of outside the highway right-of-way in conformance with the Standard Specifications, and replaced with new silt fence barriers.
 - Holes, depressions or other ground disturbance caused by the removal of the temporary silt fences should be backfilled and repaired in conformance with the Standard Specifications.
 - Remove silt fence when no longer needed. Fill and compact post holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.
 - Silt Fence placement is to be shown in the WPCDs along with other BMPs.

Temporary Silt Fence

SC-1

- SWPPP or WPCP ■ Temporary Silt Fence or Reinforced Silt Fence must be discussed in Section 500.3.3 of the SWPPP or Section 30.2.2 of the WPCP.

Attachment 5: Photographs



Cultivation area 1 looking at northernmost hoophouse.



Cultivation Area 1



CA-1, closeup on channelized runoff



Downslope of CA-1 showing waddles and native vegetation



CA-1



CA-1



Vegetated slopes between terraces in CA-1



NE corner of CA-2 showing adequate installation of straw and waddles.



View of CA-2 from NE corner



Close up of wattle installed in CA-2



Outlet of channelized flow along the western edge of CA-2



Outlet at SW corner of CA-2 and sediment deposition. Silt fences to be installed as a protective measure until further revegetation is achieved.



View from the SW corner of CA-2



Retake of OP-1 (original photo from 1-11-18) View of CA-3 from main road



Class III drainage that formerly had a 4" culvert installed at access driveway. Culvert has been removed and road has been decommissioned. Retake of OP-3



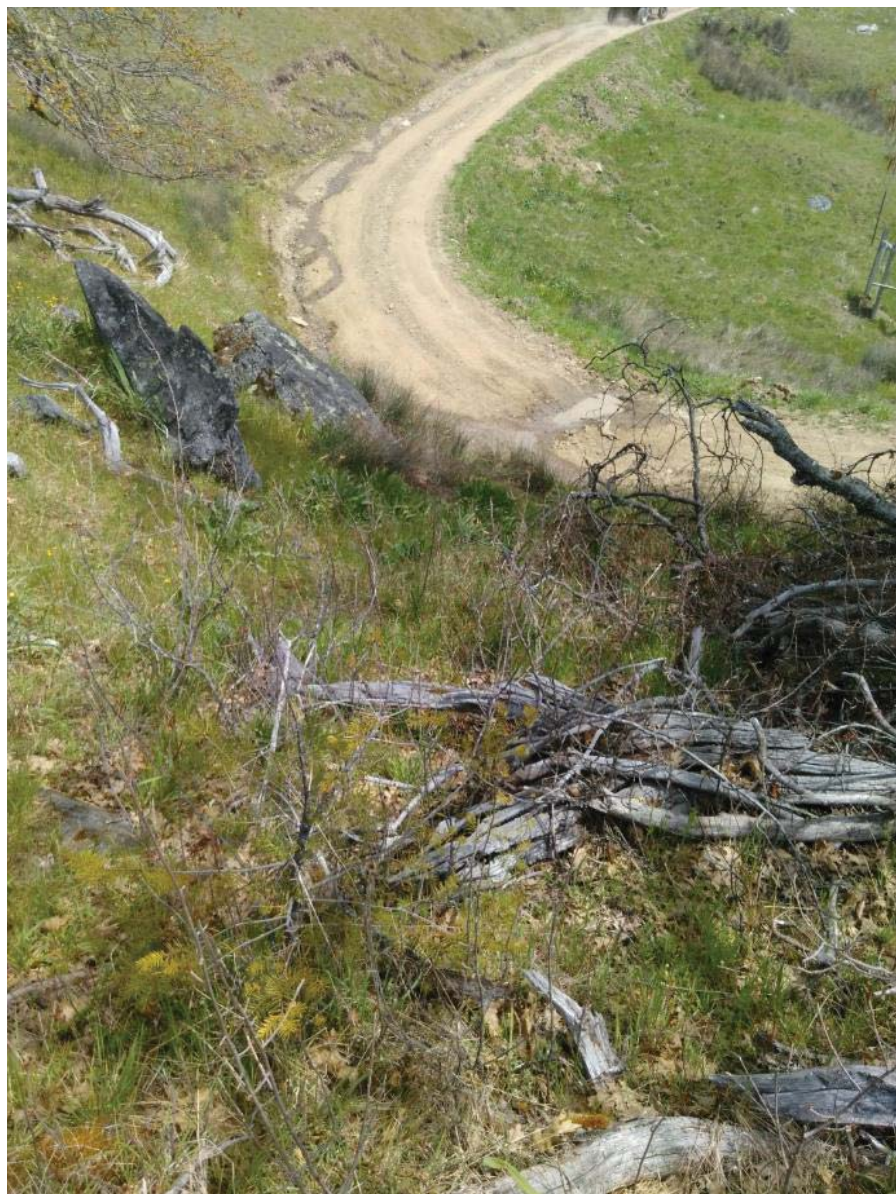
SW corner of CA-3 showing strawing and waddles installed. Drainage for Class III is in lower left corner of photo, not a very defined channel, very vegetated, waddle installed in channel. Retake of OP-4



Class III is standing water and native channel is not very defined. (at CA-3) Retake of OP-5



View of Class III water course. Also in view are the decommissioned access road to CA-3 and the site of the removed culvert. Retake of OP-6



Location where Class III watercourse that passes by CA-3 flows downslope. During site visit, channel became ill-defined and flow appeared to return to the ground and then reemerge at a seep along the roadside cut bank.



Class III watercourse to the NE of CA-4 where it is in vegetated ruts and seems to percolate back into the ground



Vegetated channel of Class III watercourse as it passes by CA-4 which has been decommissioned and strawed.



Site of removed 4" culvert at CA-3



View looking downstream at the decommissioned access road to CA-3



Further of upstream from CA-3



Waddles and straw installed on disturbed earth above CA-3



Another view of the revegetation progress on the cut slope above CA-3



NW corner of CA-3 showing raw exposed banks, site of NOV-4, Above drainage of CV-2



Strawing, waddles, and revegetation of southern edge of CA-3



Wood chips that were recently processed. Chips have started to be applied to aisles in the Cultivation areas and it is intended that all cultivation areas will have a buffer of woodchips



Upper greenhouse on the west side of CA-5. Slope is revegetated, strawed and lined with waddles. Aisles and front of greenhouse covered in bark.



View of the inside of greenhouse CA-5



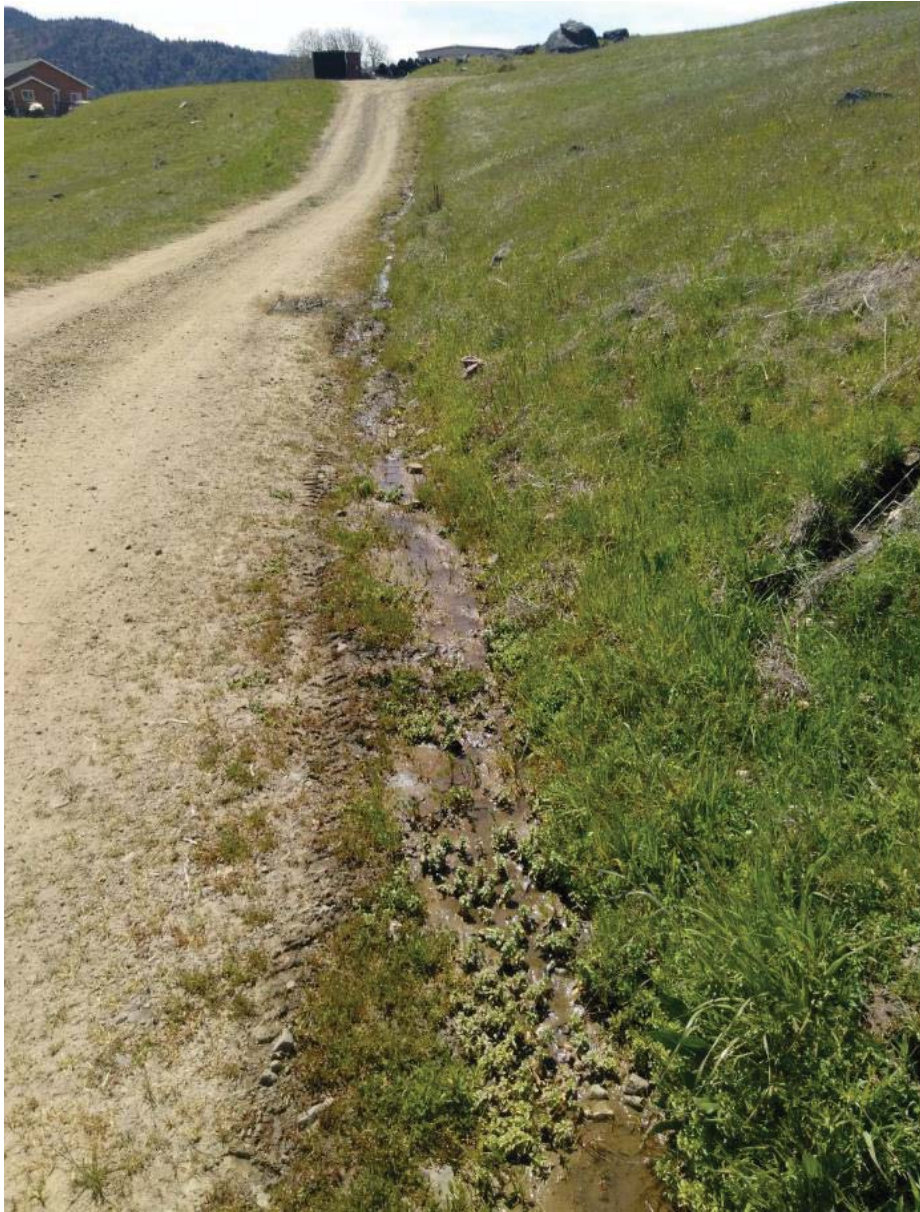
Landing at the NE corner of CA-5 showing channelization and erosion from runoff



Ruts and revegetation at the lowest slope of the terrace at CA-5



Eroding drainage channel at the SE corner of CA-5. Silt fence to be installed at lower perimeter.



Seepage/ditch, not very well defined inboard ditch between CA-4 and CA-5. Lack of relief at this segment contributes to erosion and hydrologic connectivity issues further down the road.



View of CA-4 looking NE with CA-5 in the background. Site has been decommissioned and remediated.



View of CA-4 looking SW with CA-5 in the background



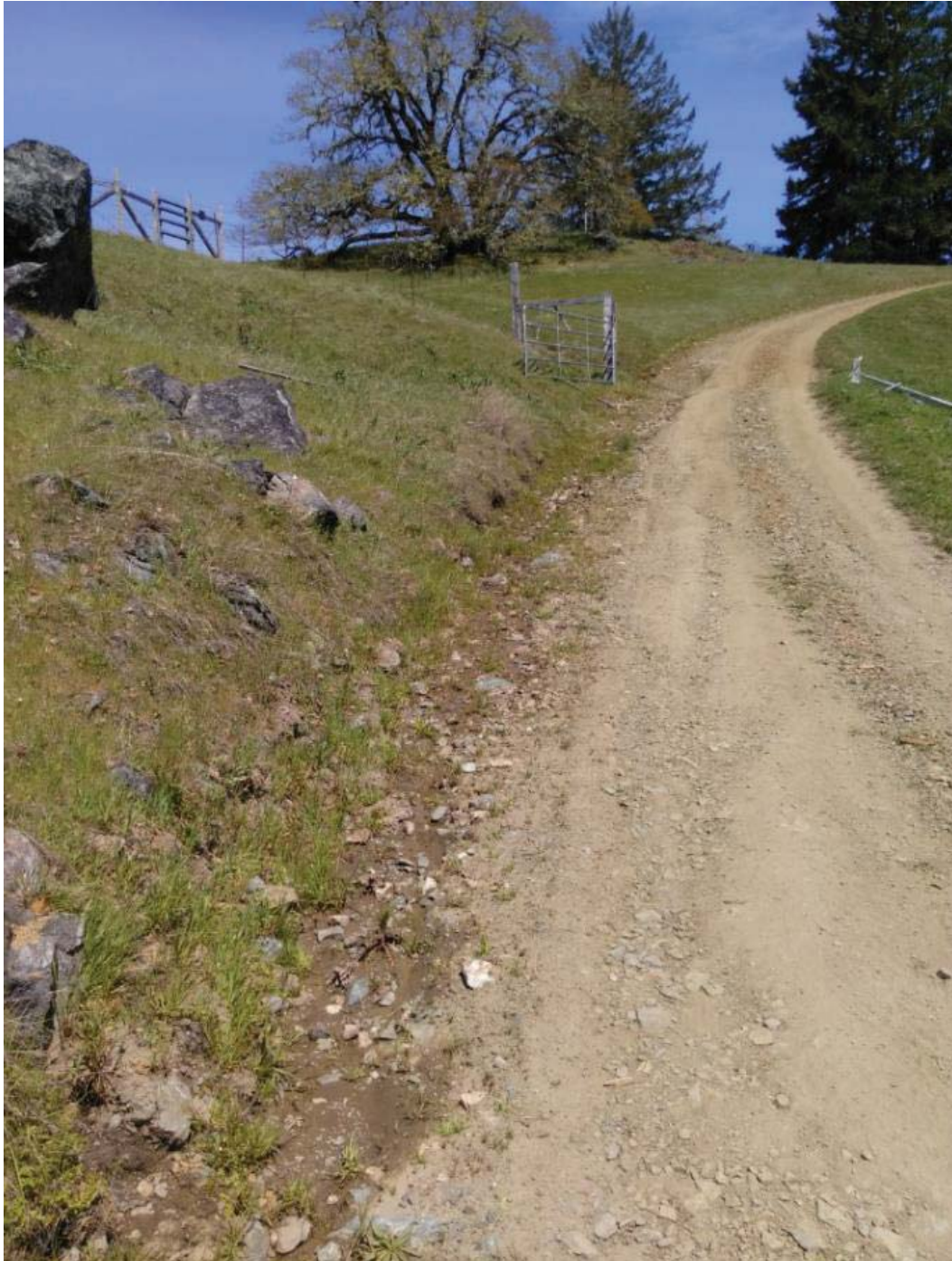
CV-3 proposed stream crossing. Site of a seep that intercepts roadway with no conveyance.



CV-3 looking downhill across road.



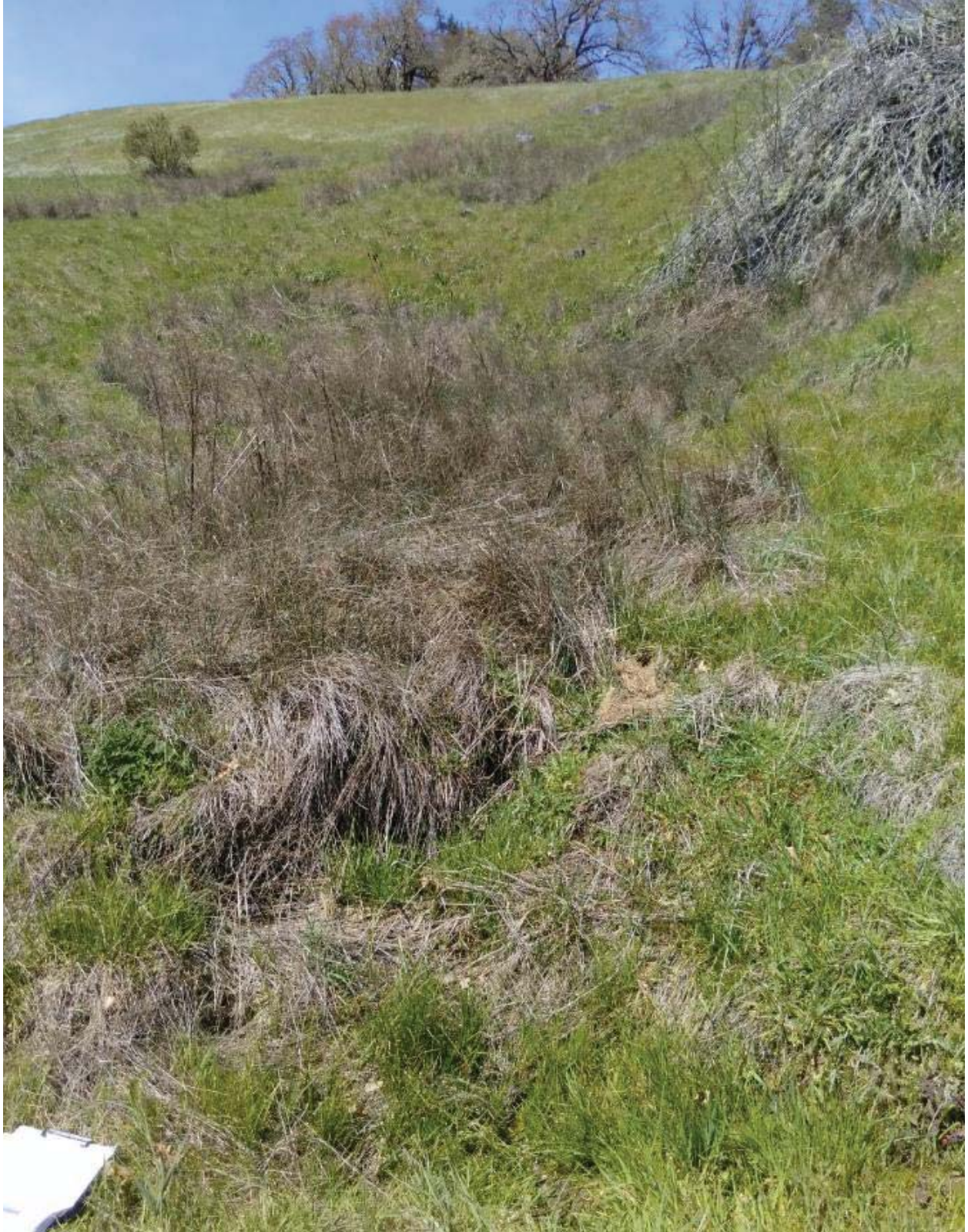
CV-3. Outlet of the dip that conveys the seep across access road



Segment of road between seep crossing and CV-2 that lacks a defined ditch. This segment contributes to issues further downgrade. Road segment to be hydrologically disconnected.



Road segment to be improved and hydrologically disconnected. CV-2 is visible in the background at the bend in the road.



The view upstream from the inlet of CV-2.



View of the inlet CV-2 looking downslope.



Outlet of CV-2 viewed from above



Downstream from outlet of CV-2



Inboard ditch between CV-1 and CV-2 is poorly defined and hydrologically connected to inlet of CV-1



View upstream of CV-1



Inlet of CV-1



Outlet of CV-1 is inundated



Outlet of CV-1 from downstream



AC-1. Seepage from both directions on the roadway forms a dip and spills off the roadway at this low point. Armored crossing to be installed or alternate road access. Road segment to be improved per PWA Roads Manual.



AC-1. Looking downhill from roadway. Inadequate drainage of access road and contributing hillside seeps causing erosion and sediment transport. Road improvements and armored crossing proposed.



AC-1. View of erosion on the downslope side caused by hydrologic connectivity.



CA-6 with straw and waddles in place



Western bank terraced area of CA-6



View of the western bank of CA-6



Drainage outlet at SE corner of CA-6. Silt fence to be installed



CA-6



Waddles, straw and revegetation on the north edge of CA-6

Remediation Plan Report

1700 Larabee Road, Bridgeville, CA 96626

APN: 210-051-064 &

APN: 210-051-081

Prepared For:

Happy Valley Farms LLC.

January 15, 2019

Prepared By:



**MOTHER EARTH
ENGINEERING**

920 Samoa Boulevard, Suite 210
Arcata, CA 95521
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1. Project Location

This project is located at 1700 Larabee Road, Bridgeville, CA 96626.

Humboldt County APN: 210-051-064 & 210-051-081

Cannabis Apps#: 12170 & 12166

2. Project Description

This project is to remediate previously cultivated areas pursuant to special permit for 16,900 square feet of existing cannabis cultivation.

3. Methods

Field visits were conducted by Mother Earth Engineering staff from August to September of 2018 to inspect the remediated areas, relocation sites, and assess the parcel for overall compliance with Water Board, County and California Department of Fish and Wildlife (CDFW) regulations.

4. Environmental Superiority of Relocation Sites

Based on the site investigation, the relocation sites 2, 5, & 6 were found to be environmentally superior to the former guerilla grow sites (Attachment A). This is primarily due to reduced slopes, a consolidation of grow sites, and additional distance to riparian areas which reduce overall impacts to water quality. The sections below summarize the key areas of environmental superiority with respect to the relocation sites.

4.1 Superior Slopes

Former grow sites A, B, & D were located on graded flats on the northern border of the parcel with slopes larger than 15% at 3,000 feet in elevation (Attachments B & C). The three relocation sites located at Cultivation Areas 2, 5, and 6, reside in flat, open grasslands with slopes of less than 15%. The reduced slopes of the relocation sites allow for stormwater runoff to attenuate and dissipate much more quickly and completely than areas with steeper slopes.

4.2 Superior Vegetation Buffers

Former grow sites A, B & D were located in close proximity to oak woodland canopies, and were relocated to open grassland areas that are surrounded by natural, grassy vegetated buffers of approximately 200 feet or more in width in the downslope areas. In contrast, the former grow sites contain a mixture of grassy areas as well as partially oak woodland canopied areas. In the partially canopied areas, the ground cover is a combination of forest duff and woody debris with limited vegetative ground cover or shrubs. This type of ground cover is more erosive than fully grassed areas. Also, this type of ground cover in combination with steeper slopes increases the likelihood of erosion and sediment transport. Therefore the open grassland area of the relocation sites present a superior

configuration of naturally vegetated buffers to minimize erosion and attenuate runoff and sediment transport.

4.3 Superior Riparian Buffers

Former grow site C was located roughly within 50 feet of riparian habitat. The relocation sites provide enhanced riparian buffers over their former grow sites. These enhanced riparian buffers, while not required, are very beneficial for environmental protection when considering the specific site location. The relocation sites increase the distance to riparian zones by 300 feet or more. The increased distances of the relocation sites from the nearest watercourse, coupled with their more gently sloping characteristics provides superior conditions (greater ability to dissipate flow and attenuate sediment and constituents) in order to enhance protection of riparian areas.

4.4 Improved Solar Access

The relocation sites are located in open grassland areas. The former grow sites are located in existing clearings that are generally surrounded by tree canopies along the perimeter due to the past guerilla grow methods. The perimeter canopy creates partial shading of the former grow sites during certain times of year, and thus sub-optimal growing conditions. The relocation sites do not have any shading issues. The improved solar aspect of the relocation sites will allow for more efficient cultivation thus reducing energy impacts. Without any increase to the amount of fertilizers/amendments, there will be an increased yield (pounds) of cannabis per square foot, simply due to the relocation site's increased access to solar radiation.

4.5 Reduced Impacts to Water Quality

The relocation sites provide reduced impacts to water quality over the former grow sites. Sediment deposition impairs waterways and increases water temperatures affecting the health of riparian species. The relocation sites and their surrounding buffers as well as the consolidation of the grow sites provide superior dissipation and attenuation of storm water and sediment flows. This significantly reduces the potential for sediment transport and delivery to nearby watercourses.

5. Remediation and Monitoring Protocol

5.1 Best Management Practices (BMPs)

Best Management Practices for operations, work, construction, erosion control and other elements will be followed at all times as stipulated by:

1. Regional Water Board – Order R1-2015-0023, Appendix B
2. California Department of Fish and Wildlife
3. State Water Board Cannabis General Order

5.2 Remediation of Former Grow Sites

During the site visit, the former grow sites A, B, & D were observed to have been decommissioned with all debris removed. Additionally, former grow site C had been fully remediated under CDFW BMPs and protocols. Ongoing remediation requires monitoring of erosion control and revegetation measures, with additional installation of erosion control and seeding/plantings on an as-needed basis per regular self-inspections. Applicant shall refer to their WRPP and 1) assure that the WRPP is fully implemented 2) follow BMP installation and monitoring protocols as prescribed in WRPP. Applicants shall remove any remaining debris from all areas and have a qualified professional verify completion of debris removal and submit evidence to the county.

5.3 Revegetation of Relocation Site

During the site visit, the relocation sites were observed to be naturally greater than 70% revegetated. The relocation sites were surrounded by grassland area buffers greater than 200ft in width. There was no evidence of sediment transport, and the cultivation areas appeared to be well attenuated by natural buffers. For the relocation sites, ongoing revegetation and erosion control protocols should be followed, and the area should be monitored per the protocol outlined in the section below.

5.4 Monitoring and Criteria for Success

Additional to routine monitoring required by the Water Board, the following ongoing monitoring protocol shall continue for a minimum of three years. Both the relocation sites and remediated former grow sites shall be monitored. The following monitoring and implementation schedule shall be followed annually:

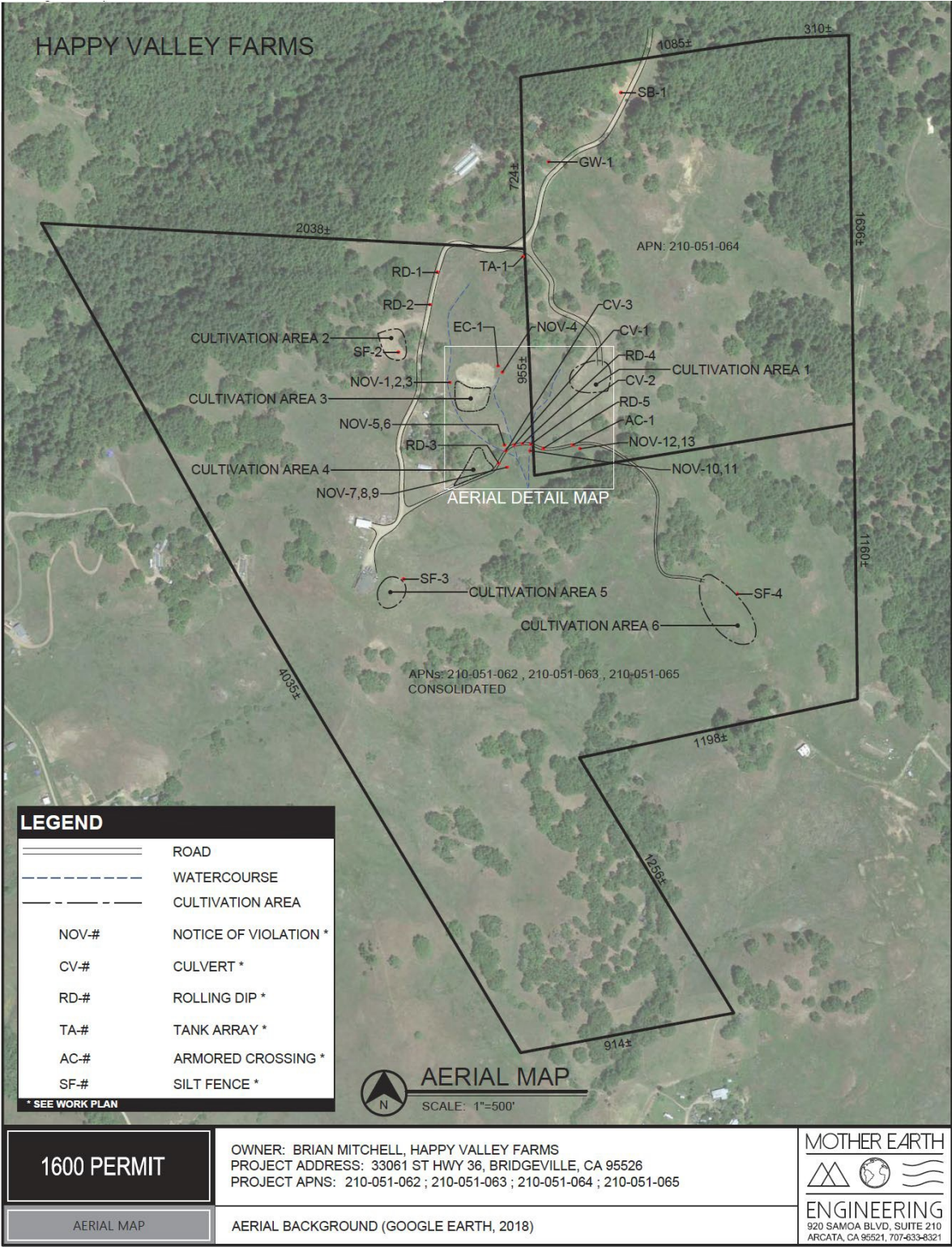
1. One month prior to commencing season's cultivation activities
 - a. Self-Inspection with Documentation
2. After self-inspection and before commencing season's cultivation activities
 - a. Implementation of additional corrective as needed per self-inspection
 - b. Document all measures installed per item 2.a above.
3. Mid-season
 - a. Self-Inspection with Documentation
4. October 1st
 - a. Self-Inspection with Documentation
5. October 1st- 15th
 - a. Implementation of additional corrective as needed per self-inspection.
 - b. Document all measures installed per item 2.a above.
6. By December 15th
 - a. Self-Inspection with Documentation
7. Winter wet weather monitoring
 - a. Self-Inspection with Documentation following any rainfall event with an intensity of 3 inches of precipitation or greater in 24hours.

The following success criteria shall be utilized:

- Revegetation at 70% coverage or better.
- No evidence of significant sediment transport during post wet-weather event monitoring.

6. Attachments

A. Parcel Map

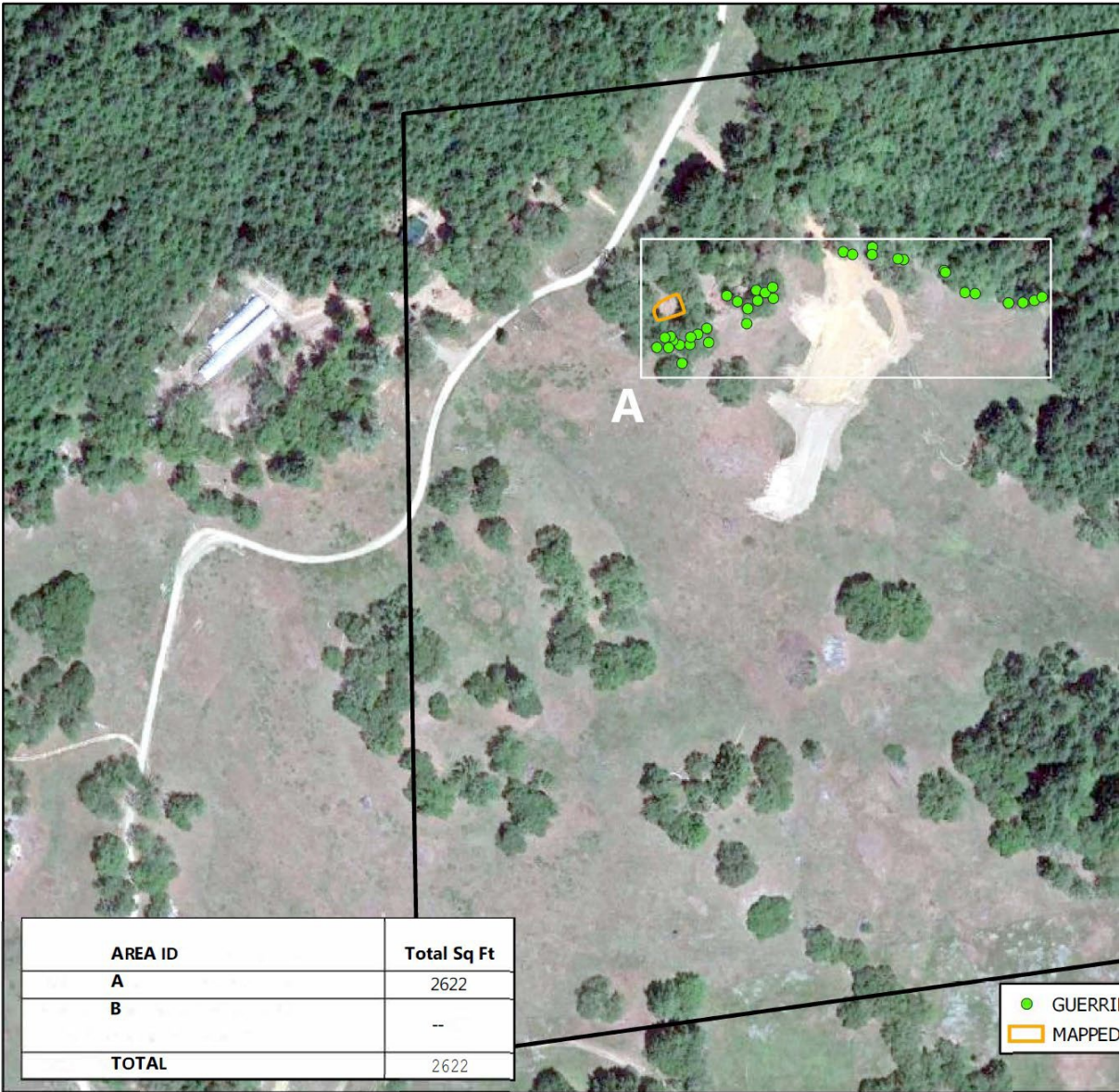


B. Cultivation Area Status

AREA NAME	APN	Current Status
Cultivation Area 1	210-051-064	excess greenhouses to be removed. 2600 sq ft of cultivation under interim
Cultivation Area 2	210-051-081	excess greenhouses to be removed. 4000 sq ft of cultivation under interim
Cultivation Area 3	210-051-081	remediated per CDFW , no growing
Cultivation Area 4	210-051-081	remediated per CDFW , no growing
Cultivation Area 5	210-051-081	cultivation greenhouses to be removed. Immature plant area 1800 sq ft under interim permit
Cultivation Area 6	210-051-081	excess greenhouses to be removed. 8500 sq ft of cultivation under interim


C. Pre-Existing Sites

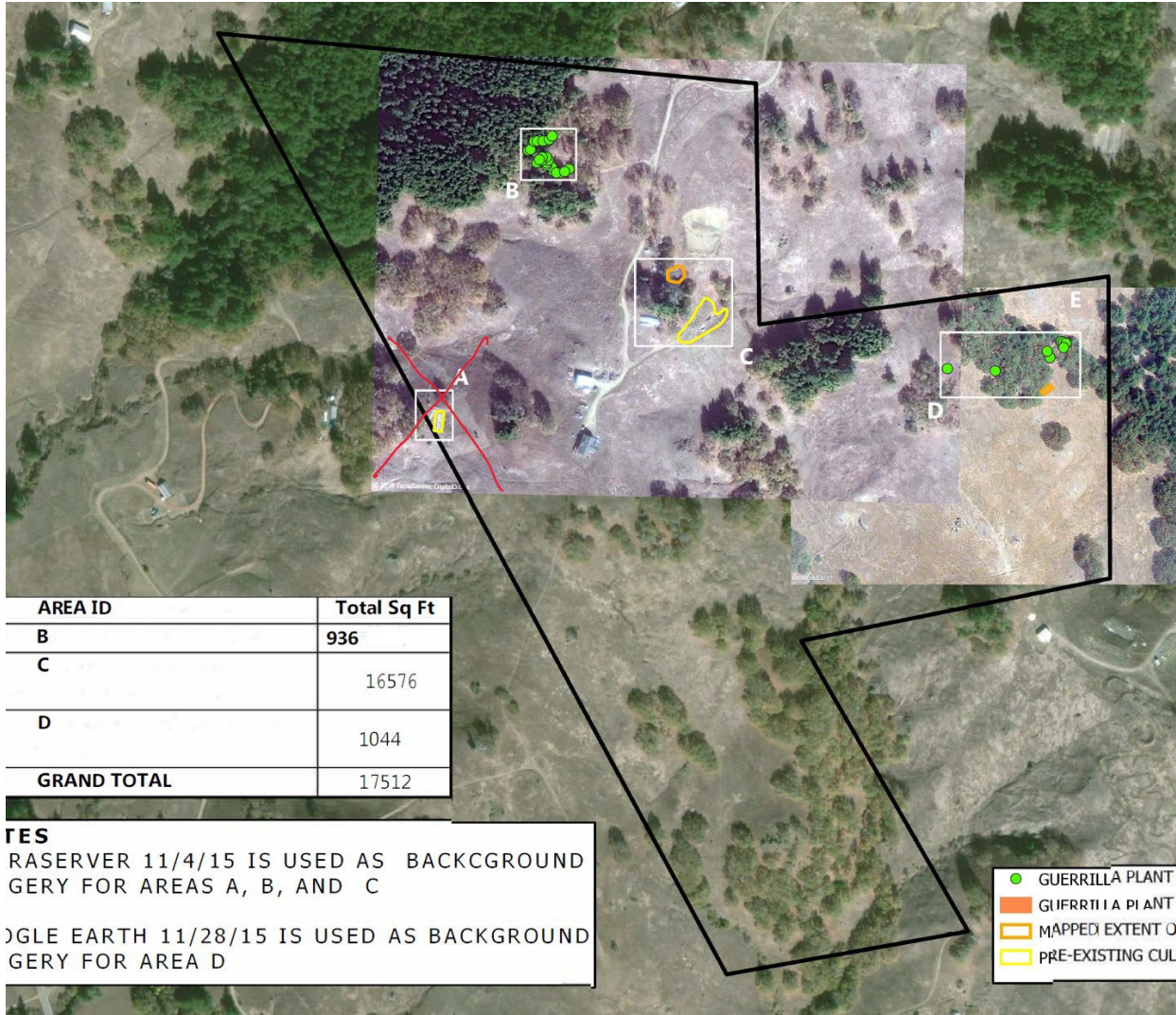
APN	PREEXISTING AND GUERILLA AREA NAMES
210-051-064	A
210-051-081	B, C, D



HAPPY VALLEY FARMS LLC.
BRIDGEVILLE, CA
APN: 210-051-064

**OVERVIEW
 MAP**

0 100 200

 Map Date: 3/26/
 Background Image: Google



AREA ID	Total Sq Ft
B	936
C	16576
D	1044
GRAND TOTAL	17512

NOTES
 AERIAL PHOTO 11/4/15 IS USED AS BACKGROUND
 PHOTOGRAPHY FOR AREAS A, B, AND C
 GOOGLE EARTH 11/28/15 IS USED AS BACKGROUND
 PHOTOGRAPHY FOR AREA D

- GUERRILLA PLANT
- GUERRILLA PLANT
- MAPPED EXTENT OF
- PRE-EXISTING CULVERT



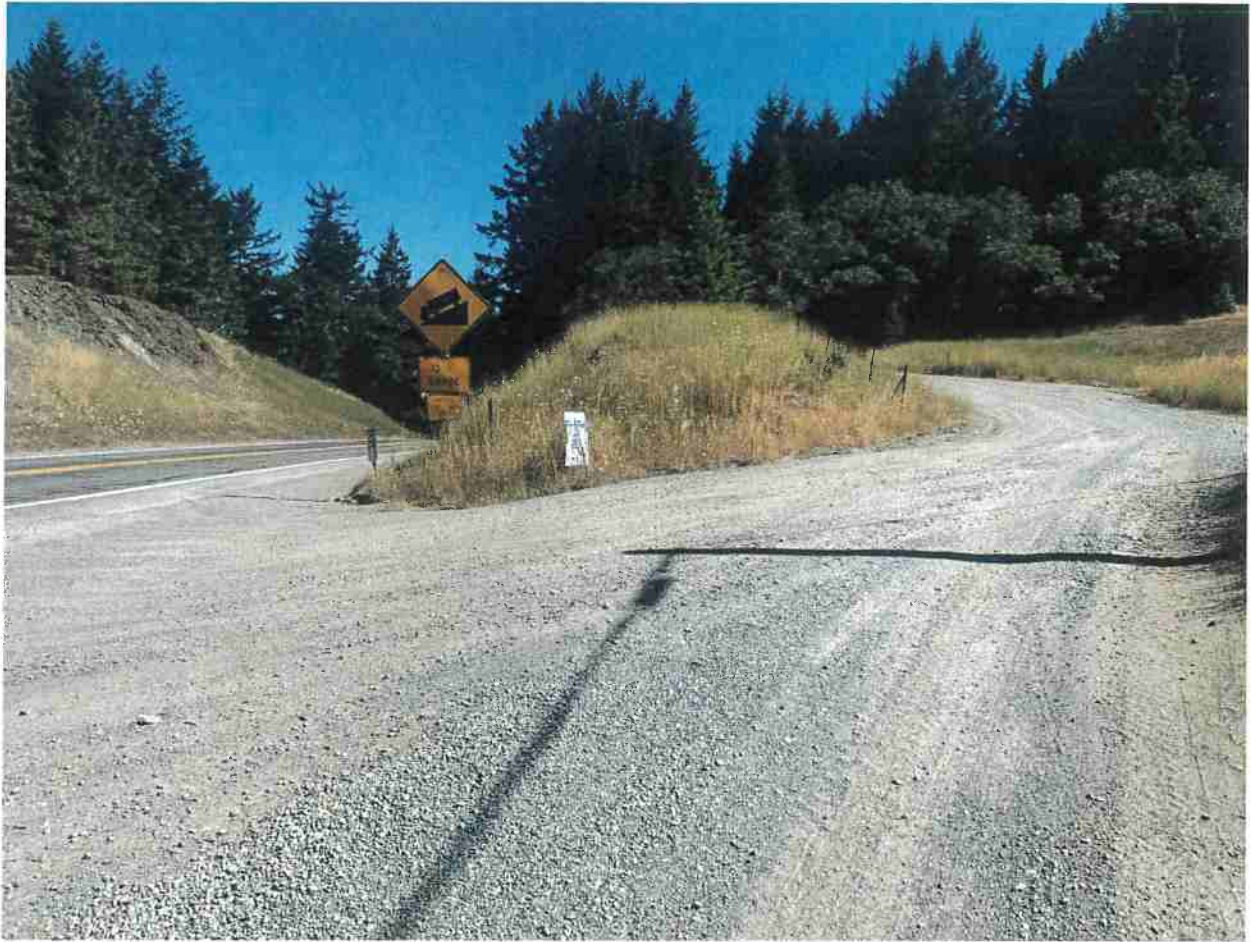
Road Evaluation and Photos

Joe Rice Road, a.k.a. Upper Larabee Valley Road, a.k.a. Larabee Valley Ridge Road

Happy Valley Farms, Inc.

APN 210-051-081, Apps 12166

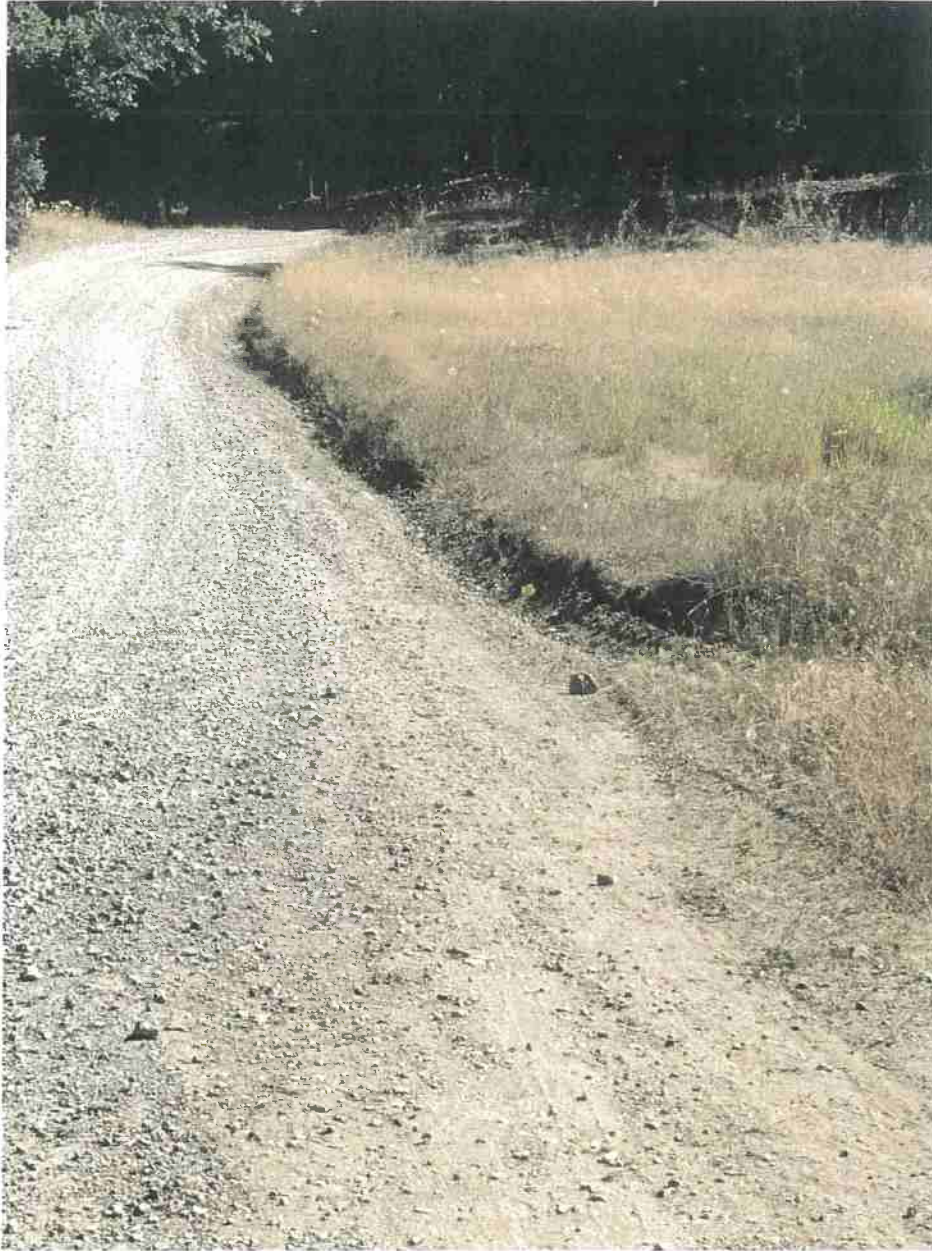
APN 210-051-064, Apps 12170



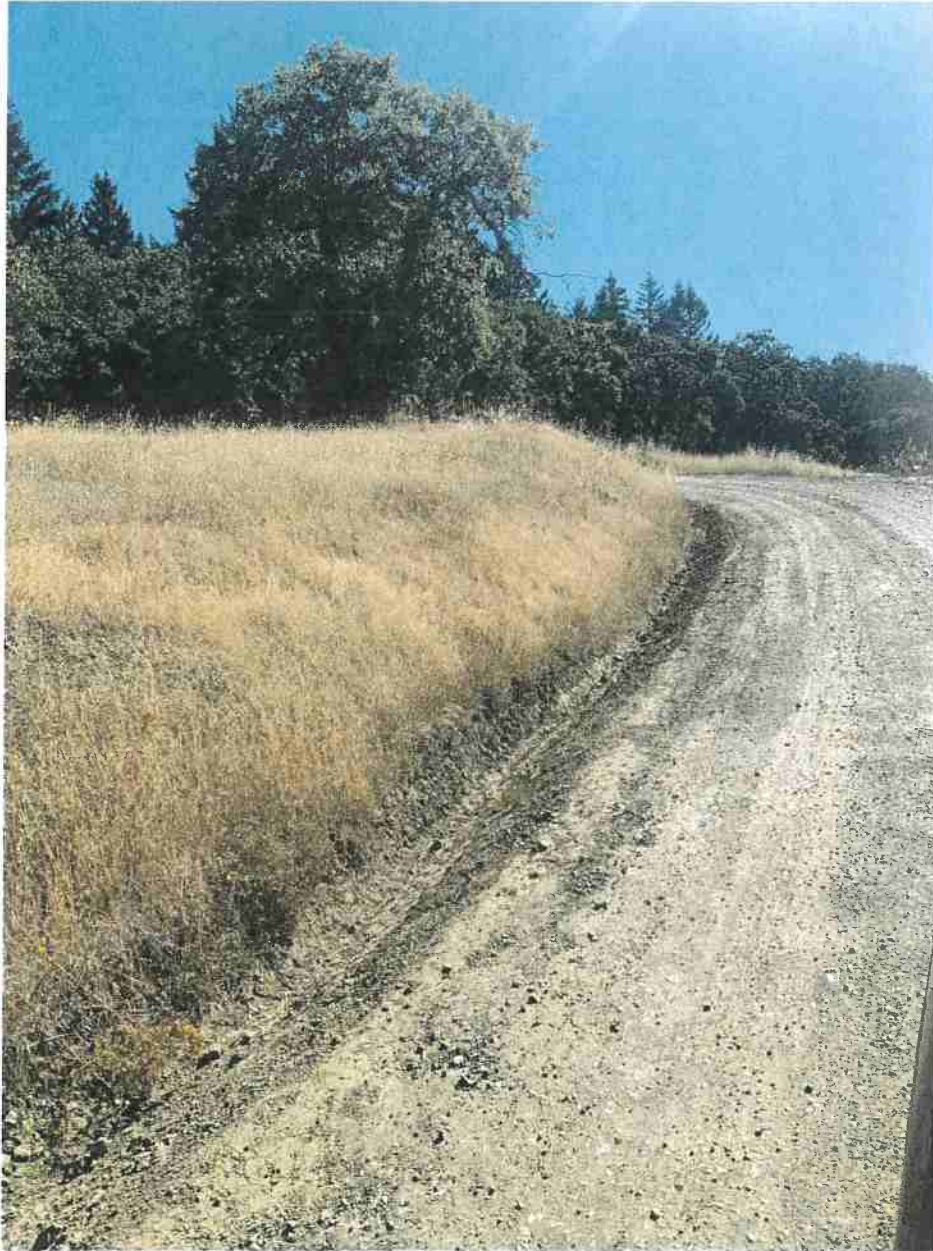
Mm —0 photo 1 At the turn off from highway 36 mile marker 32.00 summit brake check pull out looking up the Larabee valley ridge road



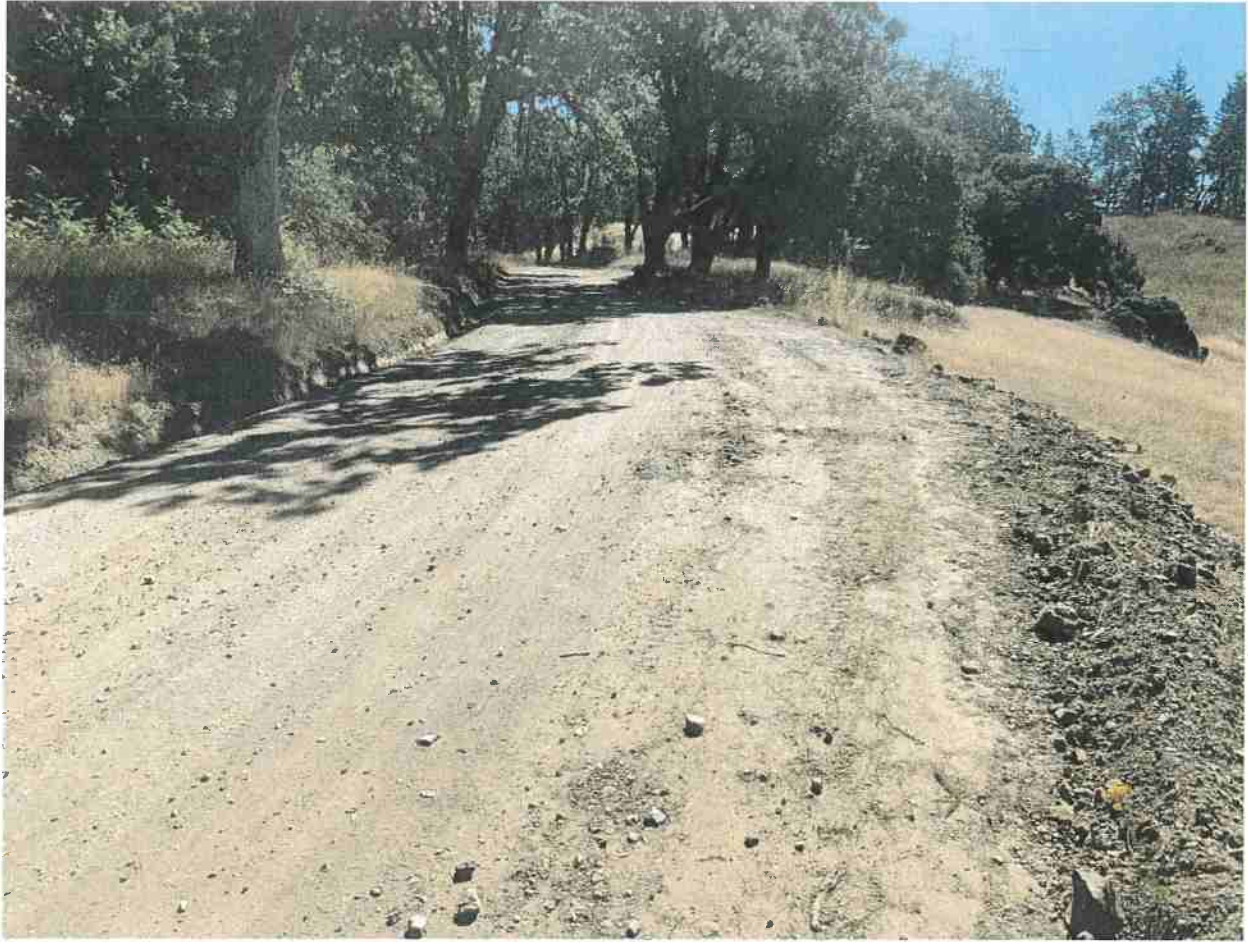
Mm —.25. Photos 2/3 large pull out and recently graded road with new ditches for proper water drainage



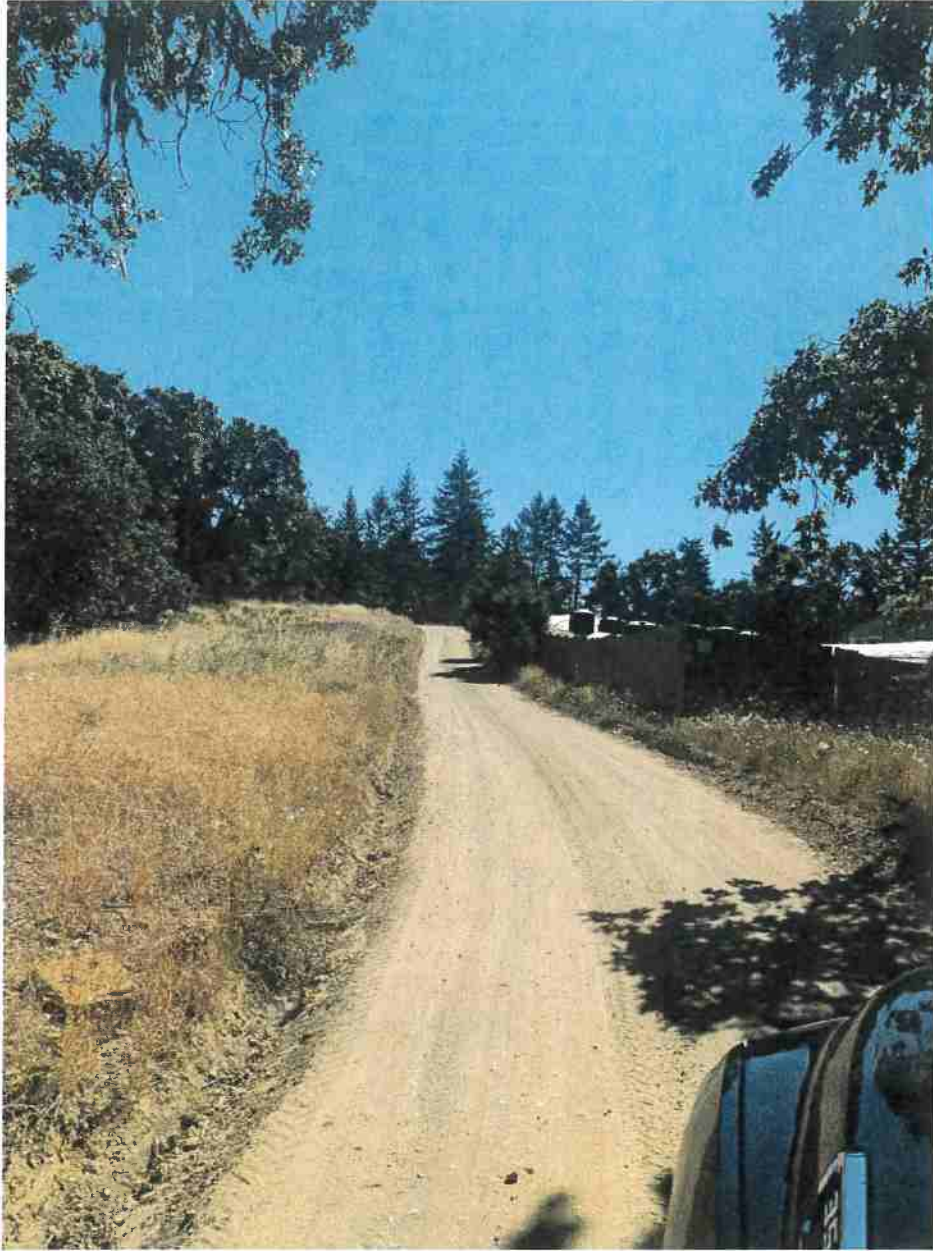
Mm —.25. Photos 2/3 large pull out and recently graded road with new ditches for proper water drainage



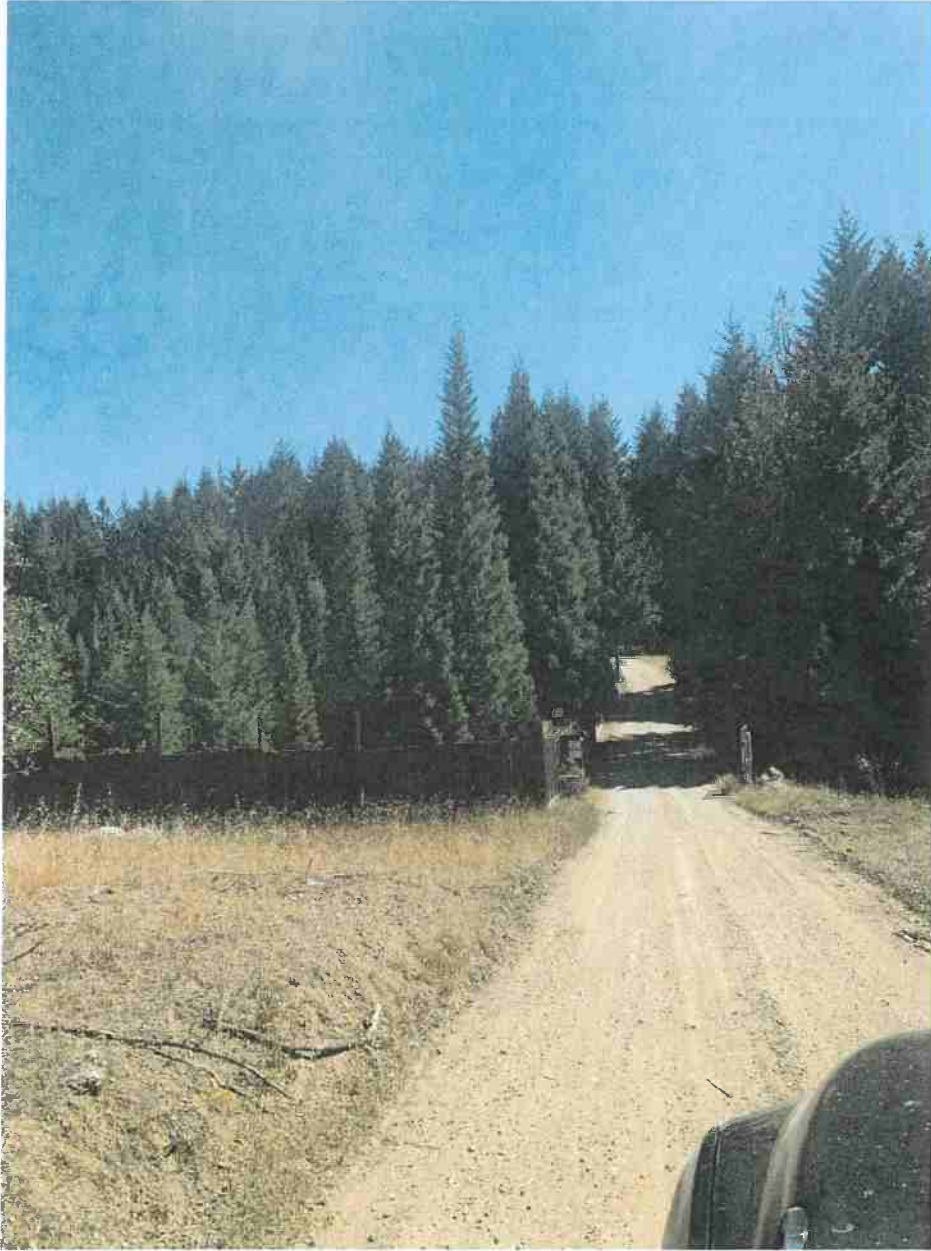
Mm-.75 photo 4 Ditch relief



Mm- .9 photo 5 Property line with cloud hands farm plus pull out



Mm-1.0 photo 6 Matt Pucket property line gate



Mm 1.6 photo 9 Joe rice gate



1.75 photo 10 pull out



1.75 photo 10 pull out



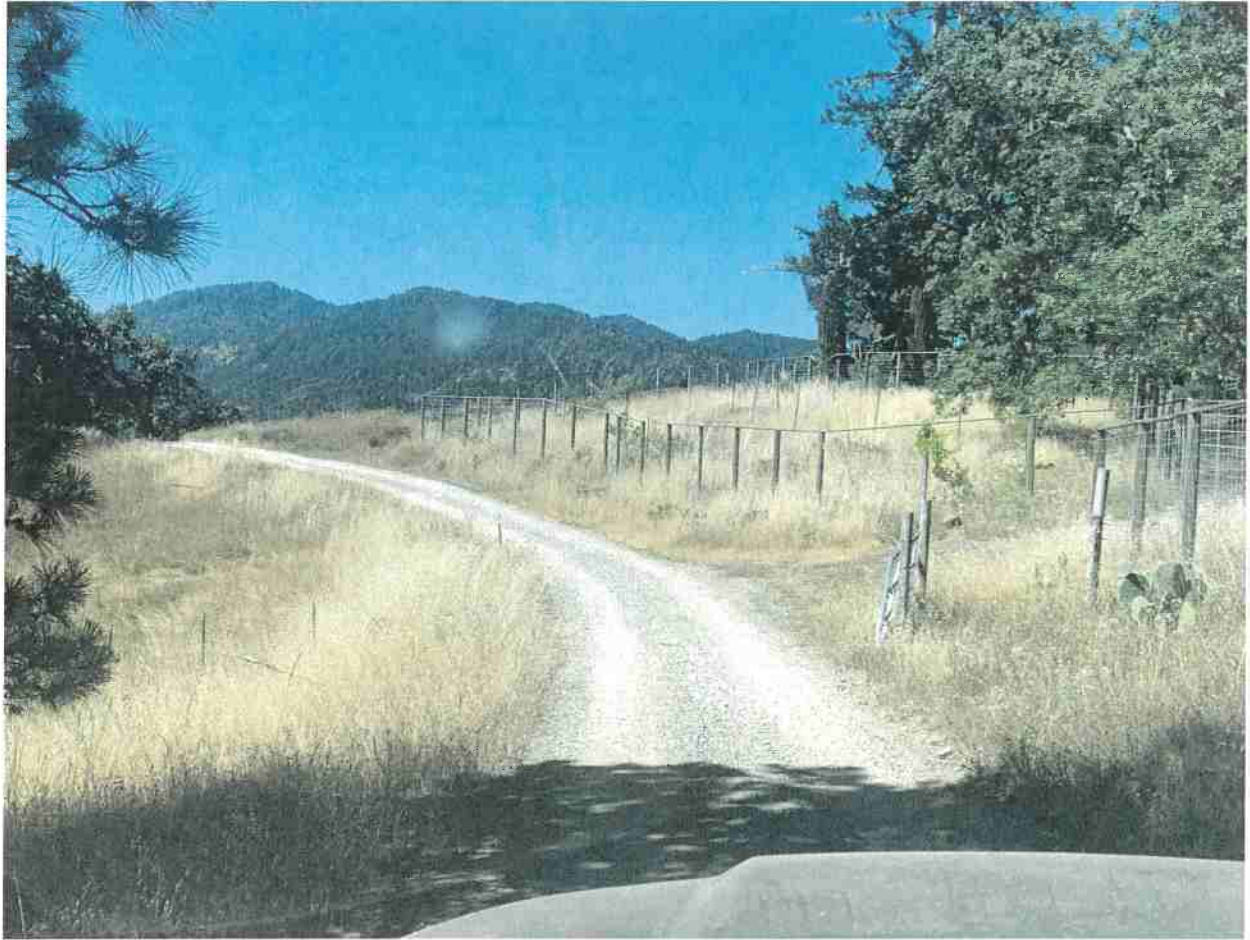
2.0 mm Photo 11 our gate and property line



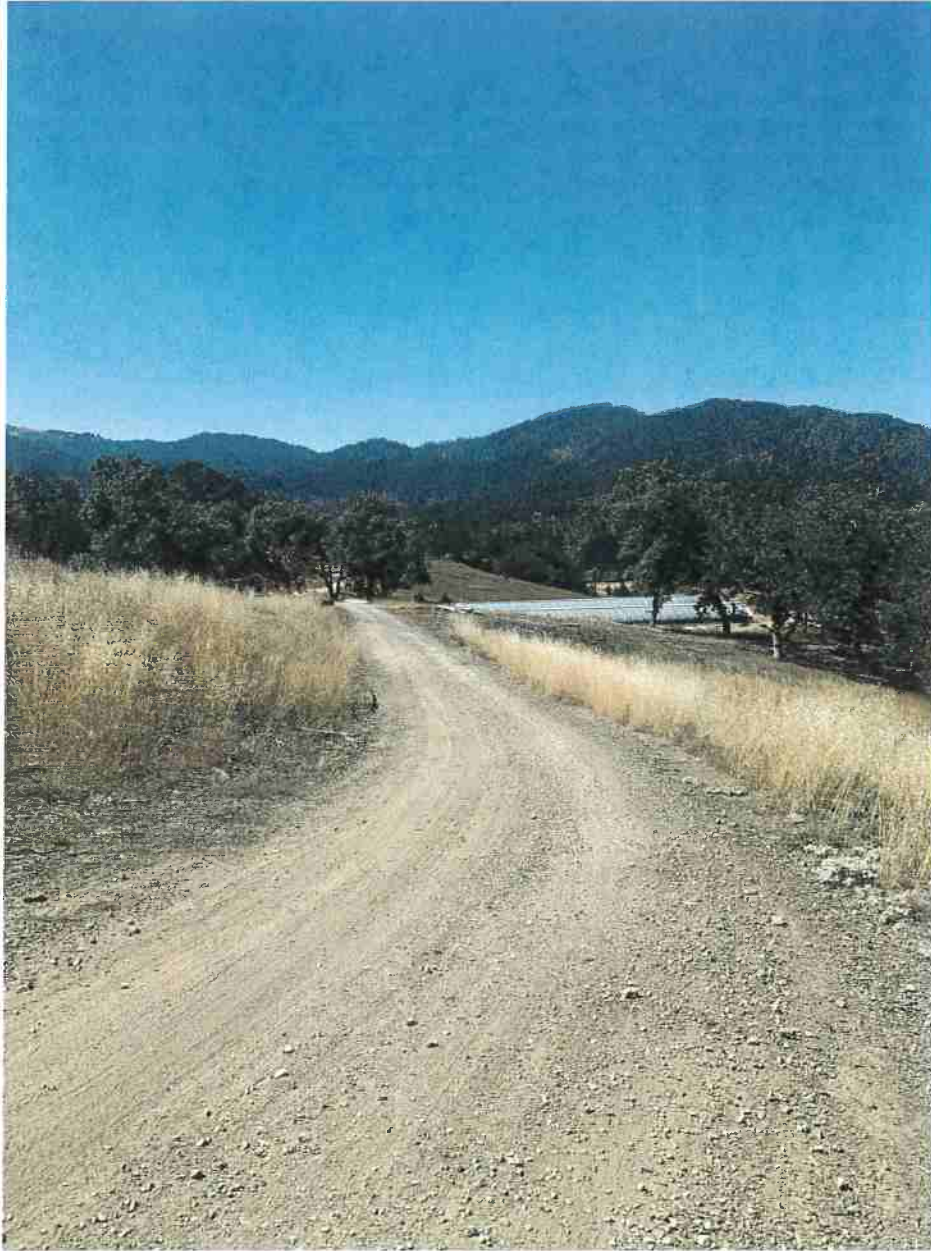
2.3 mm photo 13 pull out



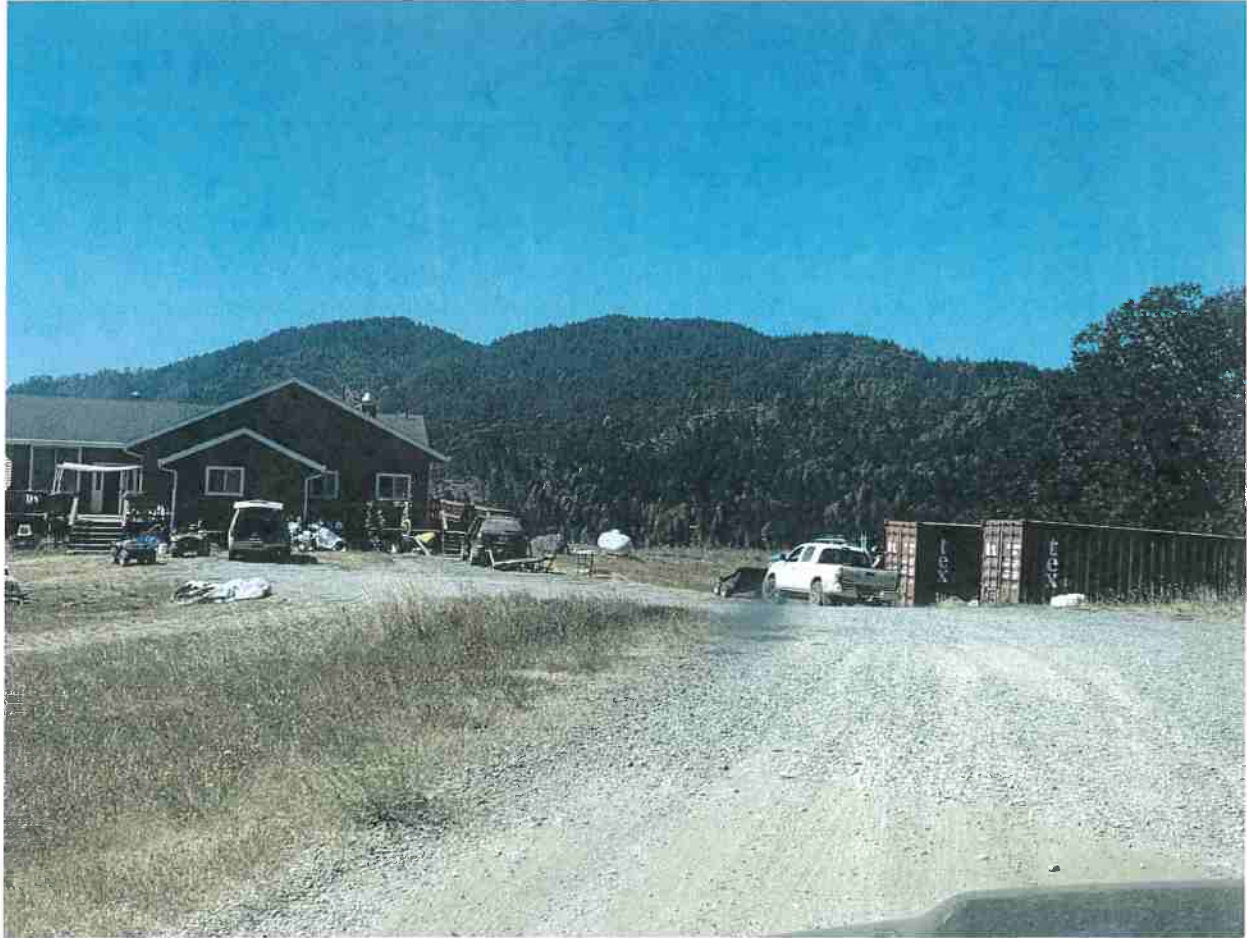
2.5 mm photo 14 ranch out, roads end , turn around area



2.5 mm photo 14 ranch out, roads end , turn around area



2.5 mm photo 14 ranch out, roads end , turn around area



2.5 mm photo 14 ranch out, roads end , turn around area

HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT

PART A: Part A may be completed by the applicant

Applicant Name: Nikola Erickson APN: 210-051-081
Planning & Building Department Case/File No.: _____
Road Name: Larabee Valley Ridge Rd (complete a separate form for each road)
From Road (Cross street): Highway 36 mile marker 32.00
To Road (Cross street): Larabee Valley Ridge Rd End
Length of road segment: 2.5 miles Date Inspected: 7-28-23
Road is maintained by: County Other Private
(State, Forest Service, National Park, State Park, BLM, Private, Tribal, etc)

Check one of the following:

- Box 1 The entire road segment is developed to Category 4 road standards (20 feet wide) or better. If checked, then the road is adequate for the proposed use without further review by the applicant.
- Box 2 The entire road segment is developed to the equivalent of a road category 4 standard. If checked, then the road is adequate for the proposed use without further review by the applicant.

An equivalent road category 4 standard is defined as a roadway that is generally 20 feet in width, but has pinch points which narrow the road. Pinch points include, but are not limited to, one-lane bridges, trees, large rock outcroppings, culverts, etc. Pinch points must provide visibility where a driver can see oncoming vehicles through the pinch point which allows the oncoming vehicle to stop and wait in a 20 foot wide section of the road for the other vehicle to pass.

- Box 3 The entire road segment is not developed to the equivalent of road category 4 or better. The road may or may not be able to accommodate the proposed use and further evaluation is necessary. Part B is to be completed by a Civil Engineer licensed by the State of California.

The statements in PART A are true and correct and have been made by me after personally inspecting and measuring the road. A map showing the location and limits of the road being evaluated in PART A is attached.

N. Erickson
Signature

7-28-23
Date

Nikola Erickson
Name Printed

LINDBERG GEOLOGIC CONSULTING
David N. Lindberg, CEG
Post Office Box 306
Cutten California 95534
(707) 442-6000



November 28, 2022

Project No: 0489.00

Full Moon Farms
c/o Mr. Nikolai Erickson
1065 Riverside Drive
Rio Dell, California 95562

Subject: Hydrologic Isolation of Existing Well (WCR2016-003430) from Surface Waters,
33061 State Highway 36, Bridgeville, APN: 210-051-064

APPS 12170-5/12/66

APN 210-051-061

To Whom It May Concern:

As requested, Lindberg Geologic Consulting has assessed an existing permitted well on the above-referenced parcel to estimate its potential for hydrologic connectivity with any adjacent wetlands and or surface waters, and if pumping this well could affect surface waters in nearby water courses. Tributaries in the vicinity of this well drain to Butte Creek (Figure 1).

A California-Certified Engineering Geologist visited this site on August 23, 2022, to observe the subject well and local site conditions. Based on our research, observations, and our professional experience, it is our opinion the subject well has a low likelihood of being hydrologically connected to nearby surface waters in any manner that could affect adjacent springs, wetlands and or surface waters in the vicinity. We define the "vicinity" as the area within a 1,000-foot radius of the subject well, an area of approximately 72 acres. We understand that the applicant hopes to use water from this well to irrigate cannabis. We are not aware of the proposed volume of water to be extracted or what the pumping schedule might be but expect that that information is provided elsewhere in the application.

Based on the Humboldt County WebGIS and the Assessor's Parcel Map (Figure 2), parcel 210-051-064 (Figure 2) encompasses approximately 40 acres. GPS located the subject well at latitude 40.46342° north, and longitude 123.68163° west ($\pm 9'$). This well is in Section 13, T1N, R4E, HB&M, and is 200 feet deep. Wellhead elevation is approximately 3,060 feet (Figure 1 and 2).

The Humboldt County WebGIS shows two ephemeral tributaries of Butte Creek proximal to the subject well. The nearest ephemeral tributary is more than 920 feet southeast of the subject well. More than 1,900 feet west of the subject well is another ephemeral tributary of Butte Creek (Figure 1). As stated, based on interpolation from the USGS "Larabee Valley, Calif." (1977), topographic quadrangle map (Figure 1), and the Humboldt County WebGIS, this well site elevation is 3,060 feet. The elevation of the closest ephemeral watercourse to the southeast is 2,820 feet and the elevation of the ephemeral watercourse to the west 3,035 feet. The elevation of the bottom of the subject well is approximately 2,860 feet, making the nearest watercourse to the southeast 40 feet lower than the total depth of the well; the watercourse to the west 175 feet higher than the bottom of the subject well.

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November 28, 2022

Nikolai Erickson, Well WCR2016-003430 Project No: 0489.00

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Well location is shown approximately on the attached figures, and was drilled by Fisch Drilling, of Hydesville, California, in May 2016, under Humboldt County well permit #15/16-0544. Fisch is a licensed well-drilling contractor (C-57 #683865). They submitted their well completion report (DWR 188) on May 20, 2016 (attached). Based on a 4-hour air lift pump test in May 2016, the driller estimated a yield of 5 gpm. Reported total drawdown during the pump test was 180 feet.

As mentioned, total drilled depth of this well is 200 feet. The borehole diameter is 10-inches from grade to 200feet. From grade to 60feet a 5.563-inch diameter blank (unslotted) PVC casing was installed. From 60 to 200feet, 5.563-inch diameter, screened (slots 0.032-inch) PVC casing was installed. Per County requirements, a bentonite sanitary surface seal was installed from grade to 20 feet. Below 20 feet, to 200 feet, the driller filled the annulus with 3/8-inch pea gravel. The well is cased and sealed through any potential shallow subsurface aquifers. Depth to first water was reported at 45 feet below the surface. Static water level in the completed developed well was reported to be 20 feet bgs when the driller conducted the pump test on May 9, 2016.

The nearest mapped spring to well WCR2016-003430 is at Paribaldoe Lake, in Section 13 (Figure 1), more than 1,580 feet to the northeast, at elevation 2,910 feet, per the WebGIS. The next closest spring is more than 5,900 feet to the southwest at elevation 2,520 feet. Sweasey Lake is over 1,920 feet to the northeast at elevation 2,830 feet on parcel 210-052-001. There are no other mapped watercourses, springs or wetlands within 4,500 feet of the subject well.

This parcel is located within California's Coast Range Geomorphic Province, in the Central Belt of the Franciscan Complex (McLaughlin et al., 2000), a seismically active region in which large earthquakes are expected to occur during the economic life span (70 years) of any developments on the subject property. Geologic mapping by McLaughlin shows that the site is underlain by Mélange (cm1) of the Central Belt of the Franciscan Complex, as shown in Figure 4.

The near-surface organic soils are thin. Below zero to one inch of slightly decomposed plant material, to approximately 18 inches, soils are loam and gravelly loam. From 18-inches depth to approximately 6.5 feet, soils are paragravelly clay loam and very paragravelly clay loam. Soils, based on our explorations, are interpreted to be uniformly distributed across the portion of the subject parcel where the well was drilled.

Materials reported on the geologic log of the driller's report (attached) include 5 feet of "Top Soil" above 37 feet (5 feet to 42 feet) of "Silty Clay". Beneath the silty clay is 109 feet of "Soft Brown Sandstone" (42 to 151 feet), below which the driller logged 49 feet (151 to 200 feet) of "Shale".

We interpret the upper silty clay section of the profile in this well to be an aquitard, a material of low permeability and transmissivity. Sandstone below 42 feet is expected to be porous and permeable, and the sandstone appears to be the water-bearing aquifer material tapped by this well. In this well the elevation of the water-bearing aquifer unit is thus between approximately 3,018 feet and 2,909 feet, based on the reported lithologies, and the perforated zone, in the driller's report.

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Earth materials encountered in the boring are Mélange of the Central Belt Franciscan Complex, as mapped by McLaughlin et al., (2000). Sheared, fractured, and folded metasedimentary rock materials can have variable hydraulic conductivity and can constitute significant aquifers. We interpret the sequence of clay, sandstone and shale as described by the driller below 5 feet, as lithologies within the central belt Mélange (cm1) of the Franciscan Complex. The soft brown sandstone section of the borehole, from 42 to 151 feet, apparently has sufficient hydraulic conductivity to make it, in our interpretation, the primary water bearing unit in this well.

A geologic cross section of the area after McLaughlin et al., (2000) shows the structural and stratigraphic relationships between the regional geologic units (Figure 5). The central belt mélange is shown dipping east and bounded by thrust fault plane contacts. On-site, no dip of the rock units could be observed because they are mantled with soil and colluvium and obscured by vegetation. We interpret the faults in the subsurface as hydrologic boundaries of reduced permeability (due to grinding and shearing along the fault planes), effectively separating units of the Franciscan Complex from each other hydrologically and limiting groundwater flow between the rock units.

Based on observations, review of pertinent and available information, and our experience, it is our professional opinion that this well has a low potential of having any direct or significant connection to proximal surface waters. First water was reportedly encountered at 45 feet and rose to a static level at 20 feet bgs, indicating the aquifer is under some pressure. This well is sealed through the upper 20 feet of any potential unconfined, near-surface aquifers with which it might communicate hydraulically through the borehole. The bentonite-sealed surface casing isolates the well bore from surface runoff and shallow subsurface water infiltration into the deeper water-bearing aquifers.

When considered with the stratigraphy and the underlying geologic structure, plus the distances (horizontal and vertically) from the nearest surface waters, and the depth of the producing zone of this well (~42 to 151 feet), as well as its position relative to the nearest adjacent ephemeral watercourses and surface waters in the vicinity, we conclude that the depth of the surface seal, combined with the 37 feet of silty clay, are sufficient to preclude the potential for hydraulic connectivity with surface waters, of which there are none closer than 920 feet in the eastern ephemeral tributary of Butte Creek. Thus, the water source from which this well draws appears to be a confined subsurface aquifer not demonstrably connected to any surface waters or unconfined, near-surface aquifer(s). This well appears, in our professional opinion, likely to be hydraulically isolated from nearby wells, surface waters, springs or wetlands.

The driller estimated the yield of this well at 5 gallons per minute (gpm) on May 9, 2016. Total drawdown was reported to be 180 feet after Fisch Drilling's four-hour air-lift pump test. At 5 gpm, this well would potentially produce 7,200 gallons per day. As noted in the well completion report, this capacity may not be representative of this well's long-term yield. Additional drawdown and recovery testing would be necessary to estimate a sustainable long-term yield of the site well.

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Nikolai Erickson, Well WCR2016-003430 Project No: 0489.00

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This subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the local ephemeral tributaries to Butte Creek, which only flow for a limited period during the winter and spring and then go dry. Nor does this well appear to be hydrologically connected to any local springs or ephemeral wetlands. Given the horizontal distances involved, and the elevation differences between the water-producing zone in the subject well, and the surface waters of the nearest watercourses, springs, and lakes, the potential for significant hydrologic connectivity between surface waters and groundwater in the deep bedrock aquifer is low. Further, given the apparently limiting condition of 37 feet of low-transmissivity brown silty clay above the water-bearing sandstone unit, the aquifer is likely isolated from, and not significantly hydraulically connected to any other aquifer(s).

As mentioned, on the Larabee Valley USGS topographic quadrangle map, there is one spring mapped in Section 13, more than 1,580 feet northeast of the subject well. Paribaldoe Lake and Sweasey Lake are more than 1,500 feet northeast of this subject well. We interpret the lakes to be separated by a sufficient distance that they would not be significantly connected hydrologically to the confined aquifer tapped by well WCR2016-003430.

We researched the California Department of Water Resources (DWR) database to determine if there were any wells within 1,000 feet of the subject well. Based on the information available at the present time there is only one well that meets that criterion; WCR2016-003990 in Section 13, on parcel APN 210-052-001, is a 20 gpm well, 175-foot deep, more than 500 feet north of the subject well. The wellhead elevation of 3,060 feet, the same as the subject well.

Three other wells are included here that are more than 1,000 feet from well WCR2016-003430:

- WCR2016-003991, is a 115-foot deep, 20 gpm well, 1,200 feet northeast, in Section 13, on parcel 210-052-001, elevation 3,010 feet (50 feet lower than the subject well).
- WCR2017-004066 (legacy well #e0313630), is a 66-foot deep, 30 gpm well, over 1,700 feet northeast in Section 13 on parcel 210-250-008, elevation 2,960 feet (100 feet lower than the subject well).
- WCR2016-005336, is a 200-foot deep, 15 gpm well, more than 1,800 feet northeast, in Section 13, parcel 210-250-008, elevation 2,400 feet (660 below the subject well).

The nearest well is located across the groundwater gradient from each the subject well. As groundwater mimics topography and responds to the force of gravity, in general it will flow down slope in a direction subparallel to topography. The ground surface slopes to the south at the subject well, while at well WCR2016-003990, the topography slopes to the west so groundwater flow in the nearest well is flowing perpendicular and away from well WCR2016-003430. At the time of our visit well WCR2016-003430 did have a pump installed.

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In our professional opinion, it appears that the aquifer tapped by the subject well is recharged by water infiltrating through the soil and bedrock from upslope source areas both proximal and distal to this well site. Ephemeral streams in the vicinity contribute recharge during storms.

The Natural Resources Conservation Service's (NRCS), online Web Soil Survey, shows the subject well within soils of the Rockyglen-Tannin complex, on slopes of 9 to 30 percent, (#4416, Figure 7), which the NRCS describes as well-drained. The Web Soil Survey unit description is attached to this report. Mean annual precipitation in the area is listed by the NRCS as 49 to 71 inches per year. Capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately high to high (0.16 to 0.20 in/hr) with a depth to the water table of more than 80 inches.

If, during the wet season, just ten percent of the "low end" 49 inches of precipitation is absorbed by the soils and does not flow across the surface and into local watercourses, then approximately 16.3 acre-feet, or 5.3 million gallons of water per year (MGPY), may be expected to recharge the local aquifer below this 40-acre subject property. Given that same 49-inches of precipitation, and the same 10 percent partitioned to groundwater recharge, then recharge can be estimated within a 1,000-foot radius of the subject well. Recharge within the 72 acres enclosed by a circle having a 1,000-foot, would be more than 29 acre-feet, and more than 9.6 MGPY. Our estimates are conservative; United States Geological Survey (USGS) researchers estimate that in northwest California, approximately 33 percent of precipitation goes to recharge. (Flint, et al., 2103). Modelling the 72-acre circle surrounding the well with 33 percent of precipitation to recharge results in 31.6 MGPY for groundwater recharge.

On March 28, 2022, Governor Newsom issued an executive order (N-7-22) relating to the ongoing drought in California. In executive order N-7-22, the governor outlined measures the state will undertake to avoid and ameliorate the negative impacts of the current drought. Among these measures, it was ordered that counties, cities, and other public agencies have been prohibited from approving permits for new groundwater wells (or alteration of existing wells) in basins "*subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed*". This well near Larabee Valley is not within a basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where this permitted well is sited.

The order states that counties, cities, and other public agencies are prohibited from issuing permits for new groundwater wells (or alteration of existing wells) "*without first determining that extraction of groundwater from the proposed well is (1) not likely to interfere with the production and functioning of existing nearby wells, and (2) not likely to cause subsidence that would adversely impact or damage nearby infrastructure*". Note that this Order, and that cited in the preceding paragraph, are not applicable to "*wells that provide less than two acre-feet per year (650,000+ gallons) of groundwater for individual domestic users, or that will exclusively provide groundwater to public water supply systems.*"

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November 28, 2022

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Based on our observations, research, and professional experience, it is our professional opinion that the well on APN 210-051-064, near Larabee Valley, has a low likelihood of being hydrologically connected to nearby surface waters or wells in any manner that might significantly impact or affect adjacent any wetlands, wells, and or surface waters in the vicinity.

Please contact us if you have questions or concerns regarding our findings and conclusions.

Sincerely,

David N. Lindberg, CEG
Lindberg Geologic Consulting



DNL:sll

Attachments:

- Figure 1: Topographic Well Location Map
- Figure 2: Humboldt County Assessor's Parcel Map
- Figure 3: Satellite Image of Well Site Vicinity
- Figure 4: Geologic Map
- Figure 4a: Geologic Map Explanation
- Figure 5: Generalized Geologic Cross Section
- Figure 6: Hydrogeologic Cross Section
- Figure 7: USDA-NRCS Soils Map

State of California Well Completion Reports:

- WCR2018-003430, APN: 210-051-064 (Subject Well)
- WCR2016-003990, APN: 210-052-001 (< 900 feet to the north)
- WCR2016-003991, APN: 210-052-001 (1,600 feet to the northeast)
- WCR2017-004066 (legacy #e0313630), APN: 210-250-008 (>1,600 feet east)
- WCR2016-005336, APN: 210-250-008 (>1,800 feet to east)

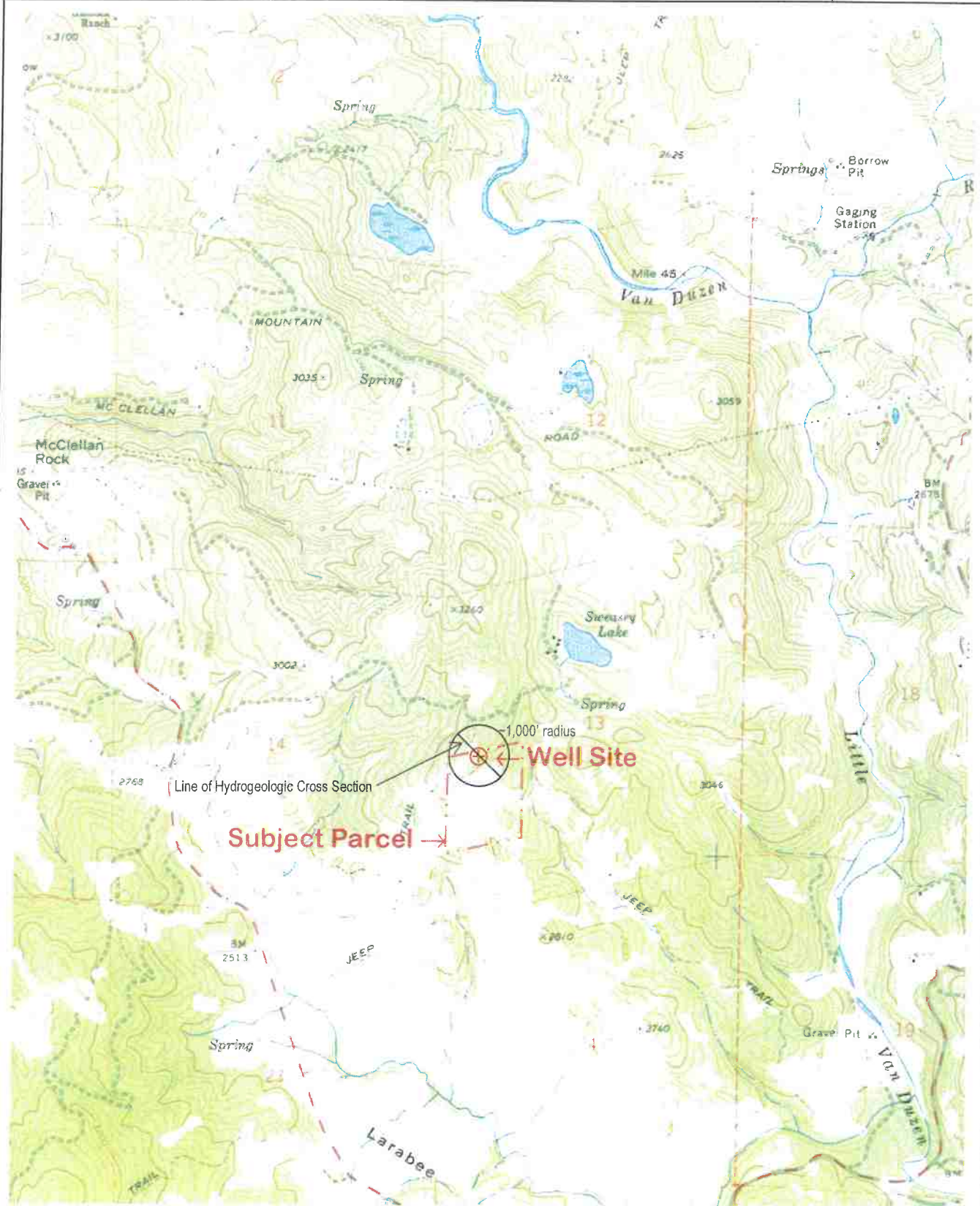
Web Soil Survey, NRCS Map Unit Description:

Rockyglen-Tannin complex, 9 to 30 percent slopes.

Reference:

Flint et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25)

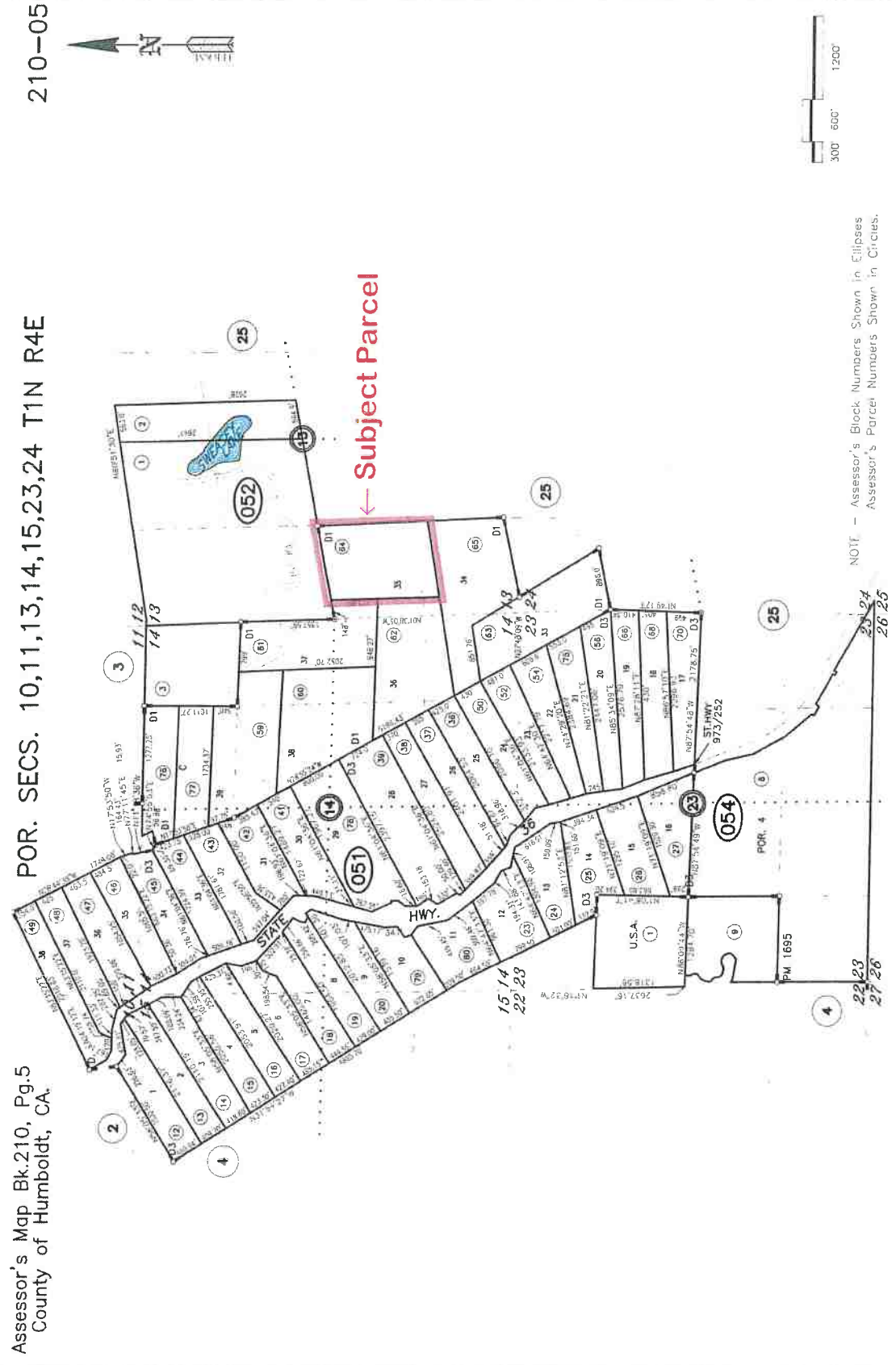
Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	33061 State Highway 36, Bridgeville, California, APN 210-051-064	November 28, 2022
Cutten, CA 95534	Well WCR2016-003430, Mr. Nikolai Erickson, Full Moon Farms, Client	Project 0489.00
(707) 442-6000	Topographic Well Location Map (locations approximate)	1" ≈ 2,200'



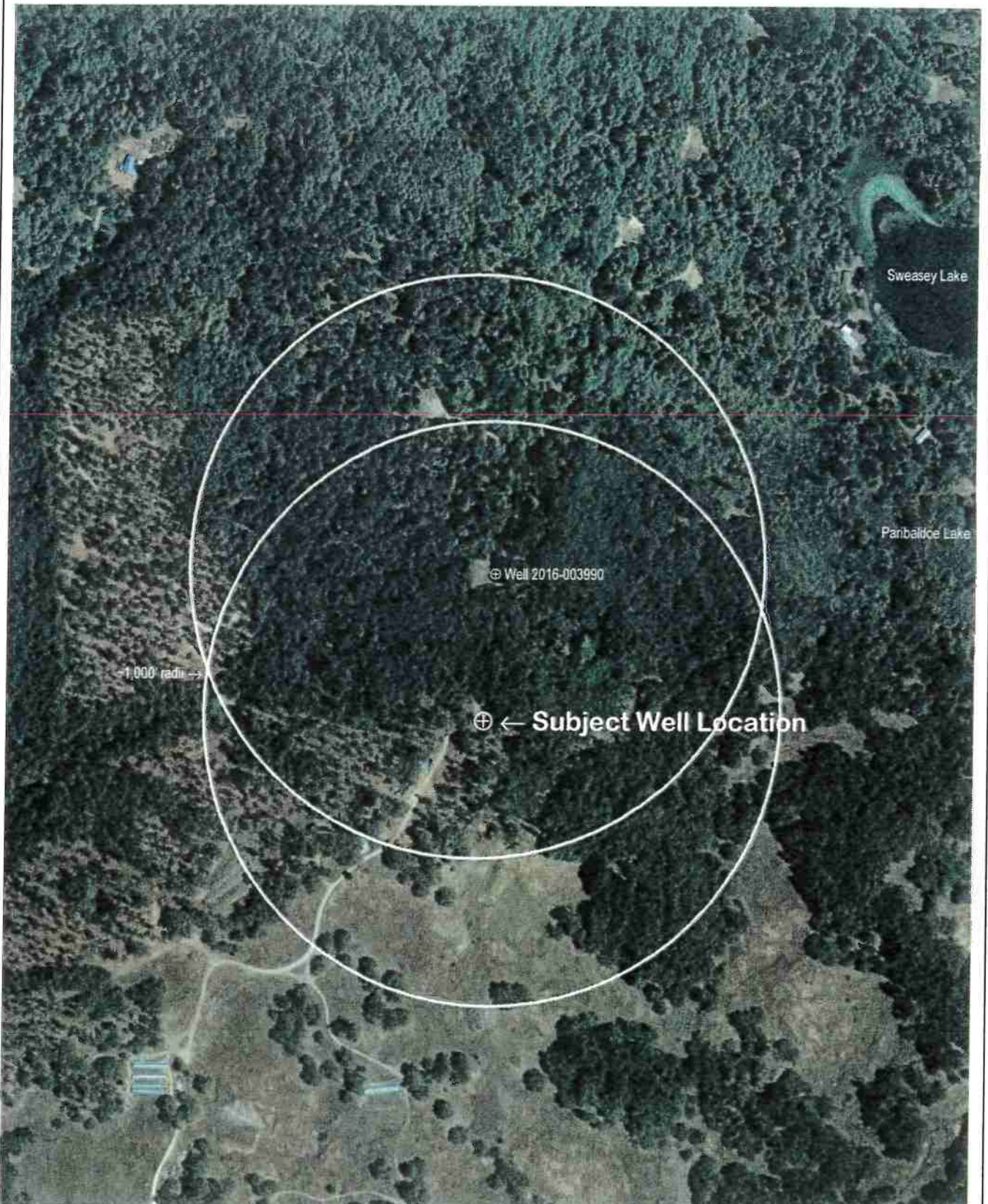
Lindberg Geologic Consulting
 Post Office Box 306
 Cutten, CA 95534
 (707) 442-6000

Engineering-Geologic Well Connectivity Assessment Report
 33061 State Highway 36, Bridgeville, California, APN 210-051-064
 Well WCR2016-003430, Mr. Nikolai Erickson, Full Moon Farms, Client
 Humboldt County Assessor's Parcel Map (locations approximate)

Figure 2
 November 28, 2022
 Project 0489.00
 Scale as Noted



Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	33061 State Highway 36, Bridgeville, California, APN 210-051-064	November 28, 2022
Cutten, CA 95534	Well WCR2016-003430, Mr. Nikolai Erickson, Full Moon Farms, Client	Project 0489.00
(707) 442-6000	Satellite Image of Well Site Vicinity (locations approximate)	1" ≈ 750'



DESCRIPTION OF MAP UNITS

GREAT VALLEY SEQUENCE OVERLAP ASSEMBLAGE

QUATERNARY AND TERTIARY OVERLAP DEPOSITS

- Qal** Alluvial deposits (Holocene and late Pleistocene)
- Qm** Undeformed marine shoreline and silt/clay deposits (Holocene and late Pleistocene)
- Qt** Undifferentiated nonmarine terrace deposits (Holocene and Pleistocene)
- Qls** Landslide deposits (Holocene and Pleistocene)
- QTog** Older alluvium (Pleistocene and/or Pliocene)
- QTW** Marine and nonmarine overlap deposits (late Pleistocene to middle Miocene)
- T** Volcanic rocks of Fiddle Hill (Oligocene)

COAST RANGES PROVINCE
FRANCISCAN COMPLEX

-- Coastal Belt --

Coastal terrane (Pliocene to Late Cretaceous)

Sedimentary, igneous, and metamorphic rocks of the Coastal terrane (Pliocene to Late Cretaceous):

- co1** Melange
- co2** Melange
- co3** Broken sandstone and argillite
- co4** Intact sandstone and argillite
- co5** Basaltic Rocks (Late Cretaceous)
- col** Limestone (Late Cretaceous)
- colc** Undivided blueschist (Jurassic?)

King Range terrane (Miocene to Late Cretaceous)

- k1p** Igneous and sedimentary rocks of Point Delgada (Late Cretaceous)
- colc** Undivided blueschist blocks (Jurassic?)
- ksk1** Sandstone and argillite of King Peak (middle Miocene to Paleocene/ff)
- ksk2** Melange and (or) folded argillite
- ksk3** Highly folded broken formation
- ksk4** Highly folded, largely unbroken rocks
- kl1** Limestone
- ks** Chert
- krb** Basalt

False Cape terrane (Miocene? to Oligocene?)

- kc** Sedimentary rocks of the False Cape terrane (Miocene? to Oligocene?)

Yager terrane (Eocene to Paleocene?)

Sedimentary rocks of the Yager terrane (Eocene to Paleocene?):

- y1** Sheared and highly folded mudstone
- y2** Highly folded broken mudstone, sandstone, and conglomeratic sandstone
- y3** Highly folded, little-broken sandstone, conglomerate, and mudstone
- Ycgl** Conglomerate

-- Central belt --

Melange of the Central belt (early Tertiary to Late Cretaceous)

Unnamed Metasandstone and meta-argillite (Late Cretaceous to Late Jurassic):

- cm1** Melange
- cm2** Melange
- cb1** Broken formation
- cb2** Broken formation
- cwr** White Rock metasandstone of Jayko and others (1989) (Paleogene and/or Late Cretaceous)
- chr** Haman Ridge graywacke of Jayko and others (1989) (Cretaceous?)
- cfs** Fort Seward metasandstone (age unknown)
- cls** Limestone (Late to Early Cretaceous)

- ch** Chert (Late Cretaceous to Early Jurassic)
- b** Basaltic rocks (Cretaceous and Jurassic)
- bc** Undivided blueschist blocks (Jurassic?)
- gs** Greenstone
- mt** Metachert
- yb** Metasandstone of Yolla Bolly terrane, undivided
- b** Melange block, lithology unknown

-- Eastern Belt --

Pickett Peak terrane (Early Cretaceous or older)

Metasedimentary and metavolcanic rocks of the Pickett Peak terrane (Early Cretaceous or older):

- ppm** South Fork Mountain schist
- mb** Chinquapin Metabasalt Member Irwin and others, 1974
- ppv** Valentine Springs Formation
- mv** Metabasalt and minor metachert

Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?)

Metasedimentary and metavolcanic rocks of the Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?):

- ybc** Tallifero Metamorphic Complex of Suppa and Armstrong (1972) (Early Cretaceous to Middle Jurassic?)
- ybc** Chicago Rock melange of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic?)
- st** Serpentine
- mt** Metachert
- yhh** Metagraywacke of Haman Ridge (Late Jurassic to Middle Jurassic)
- st** Metachert
- gs** Greenstone
- sp** Serpentine
- ybd** Devils Hole Ridge broken formation of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic?)
- rc** Radiolarite chert
- ybi** Little Indian Valley argillite of McLaughlin and Ohlin (1984) (Early Cretaceous to Late Jurassic?)

Yolla Bolly terrane

- yb** Rocks of the Yolla Bolly terrane, undivided

GREAT VALLEY SEQUENCE AND COAST RANGE OPHIOLITE

Elmer Creek terrane

- ecms** Mudstone (Early Cretaceous)
- ecg** Coast Range ophiolite (Middle and Late Jurassic)
- ecsp** Lajessed gabbro
- ecsp** Serpentine melange

Old River terrane

Rocks of the Old River(?) terrane:

- dpms** Mudstone (Late Jurassic)
- dpms** Coast Range ophiolite (Middle and Late Jurassic)
- dp** Tuffaceous chert (Late Jurassic)
- dpb** Basaltic flows and feratophytic tuff (Jurassic?)
- dpd** Diabase (Jurassic?)
- dpmp** Serpentine melange (Jurassic?)
- sc** Undivided Serpentinized peridotite (Jurassic?)

KLAMATH MOUNTAINS PROVINCE

Undivided Great Valley Sequence:

- Ks** Sedimentary rocks (Lower Cretaceous)

Hayfork terrane

Eastern Hayfork subterrane:

- eh** Melange and broken formation (early? Middle Jurassic)
- ehls** Limestone
- ehsp** Serpentine

Western Hayfork subterrane:

- whls** Hayfork Bally Meta-andesite of Irwin (1985), undivided (Middle Jurassic)
- whsp** Wildwood (Chanchulla Peak of Wright and Fahar, 1986) pluton (Middle Jurassic)
- whsp** Clinopyroxenite
- wh** Diabase and gabbro plutons (Middle Jurassic)

Shasta Peak terrane

- rcm** Melange (Jurassic and older)
- rc** Limestone
- rcs** Radiolarian chert
- rcv** Volcanic Rocks (Jurassic or Triassic)
- rcic** Intrusive complex (Early Jurassic or Late Triassic)
- rcp** Plutonic rocks (Early Jurassic or Late Triassic)
- rcpm** Ultramafic rocks (age uncertain)
- rcpd** Illoidy peridotite

Western Goshute province

Smith River subterrane:

- srp** Gabbro? formation (Late Jurassic)
- srp** Pyroclastic andesite
- srp** Glen Creek gabbro-ultramafic complex of Irwin and others (1974)
- srpd** Serpentinized peridotite

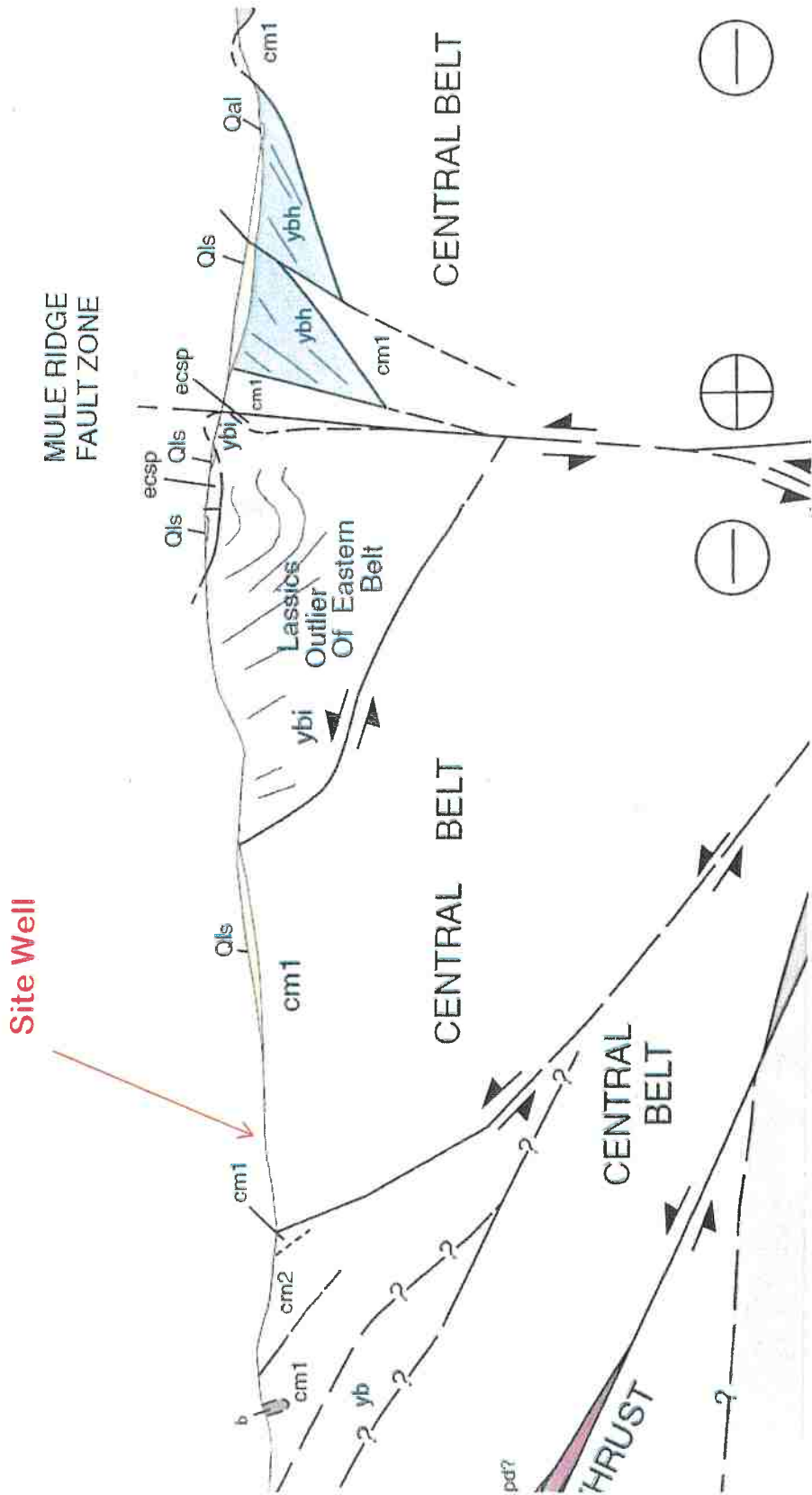
MAP SYMBOLS

- Contact
- Fault
- Thrust fault
- Trace of the San Andreas fault associated with 1905 earthquake rupture
- Strike and dip of bedding
- Inclined
- Vertical
- Horizontal
- Overturned
- Approximate
- Joint
- Strike and dip of cleavage
- Shear foliation
- Inclined
- Vertical
- Fold
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide
- Melange blocks:
 - Serpentine
 - Chert
 - Blueschist
 - Greenstone
 - Fossil locality and number

Lindberg Geologic Consulting
 Post Office Box 306
 Cutten, CA 95534
 (707) 442-6000

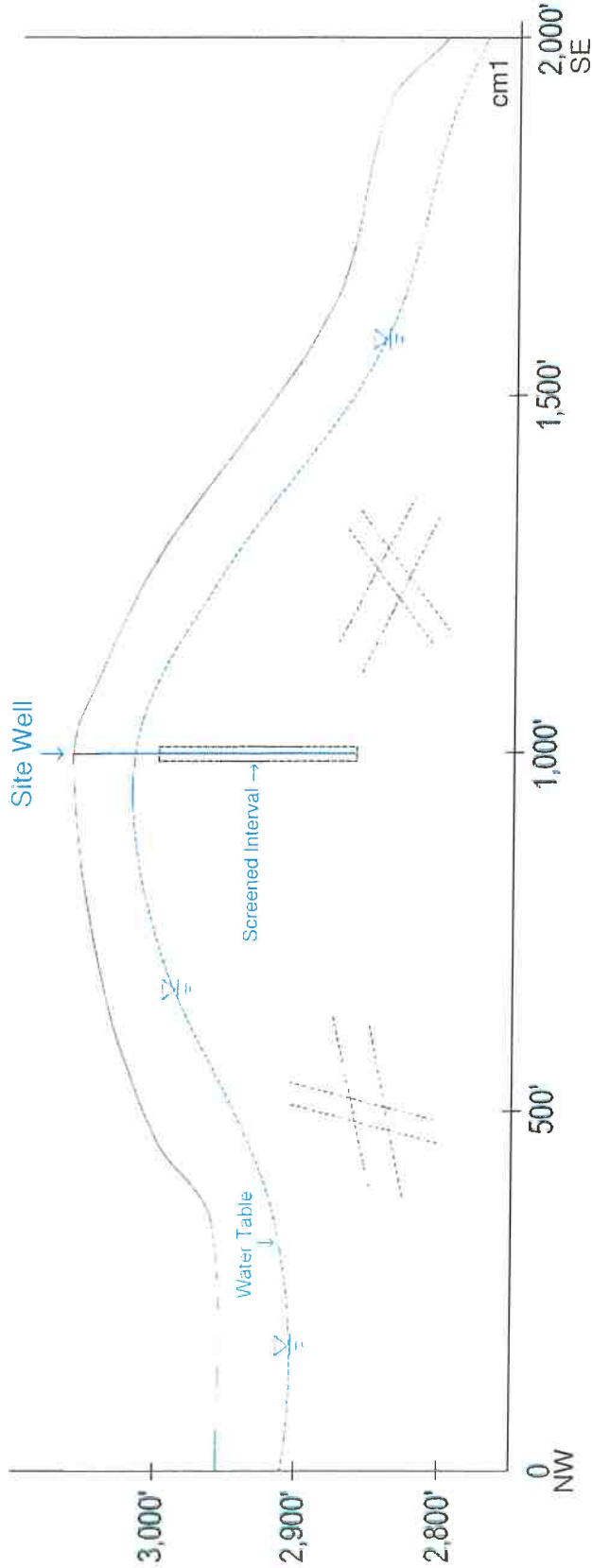
Engineering-Geologic Well Connectivity Assessment Report
 33061 State Highway 36, Bridgeville, California, APN 210-051-064
 Well WCR2016-003430, Mr. Nikolai Erickson, Full Moon Farms, Client
 Generalized Geologic Cross Section (locations approximate)

Figure 5
 November 28, 2022
 Project 0489.00
 Not to Scale



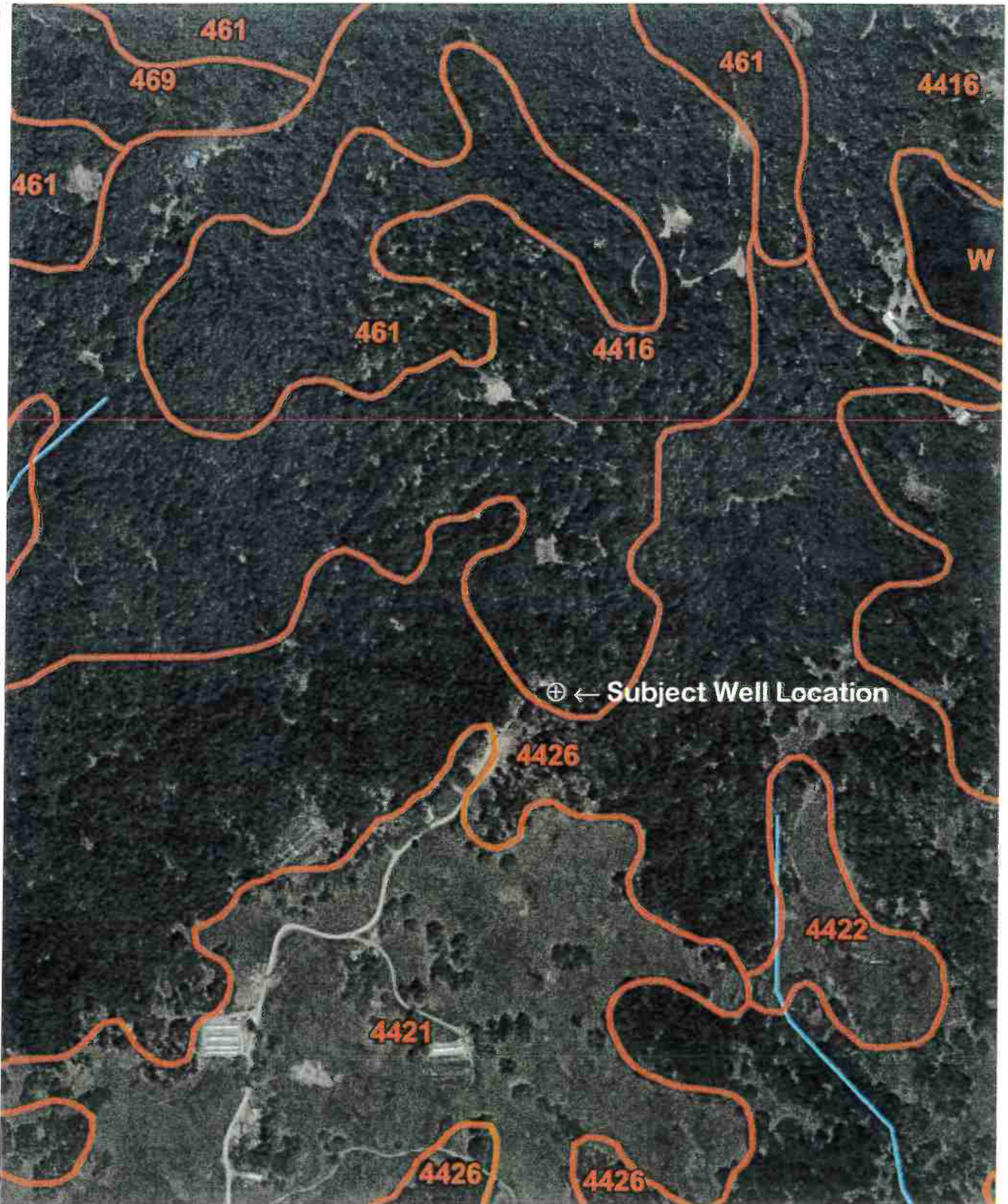
Modified from: McLaughlin, et al., (2,000).

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 6
Post Office Box 306	33061 State Highway 36, Bridgeville, California, APN 210-051-064	November 28, 2022
Cutten, CA 95534	Well WCR2016-003430, Mr. Nikolai Erickson, Full Moon Farms, Client	Project 0489.00
(707) 442-6000	Hydrogeologic Cross Section (locations approximate)	V.E. = 2X



In this vertically exaggerated (~2x) cross section, the view is looking to the northeast toward Sweasey Lake. Groundwater flow in this cross section is southwesterly, toward from the viewer, or out of the page. Groundwater is presumed to flow from recharge areas in the higher ground to the northeast on the southeast ridge of McClellan Mountain, to the southwest toward Larabee Valley. Bedrock subgrade was mapped by McLaughlin, et al., (2000), as Mélange of the Central Belt of the Franciscan Complex. The Central Mélange is one of several component lithologies of the Central Belt Franciscan Complex. Groundwater is envisioned to likely be flowing through fractured metasediments in the Mélange. Fractures in the metasediments, plus sandstone's inherent porosity, are interpreted to be the primary permeability, providing preferential flow paths for the local groundwater. The driller noted first water at 45 feet below the surface and static water at 20 feet. This well is screened through the 60- to 200-foot depth interval.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	33061 State Highway 36, Bridgeville, California, APN 210-051-064	November 28, 2022
Cutten, CA 95534	Well WCR2016-003430, Mr. Nikolai Erickson, Full Moon Farms, Client	Project 0489.00
(707) 442-6000	USDA-NRCS Soil Map (locations approximate)	Scale Not Determined



State of California
Well Completion Report
 Form DWR 188 Complete 5/23/2016
 WCR2016-003430

Owner's Well Number 1 Date Work Began 05/06/2016 Date Work Ended 05/19/2016
 Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program
 Secondary Permit Agency _____ Permit Number 15/16-0544 Permit Date 04/04/2016

Well Owner (must remain confidential pursuant to Water Code 13752)	Planned Use and Activity
Name <u>XXXXXXXXXXXXXXXXXXXX</u>	Activity <u>New Well</u>
Mailing Address <u>XXXXXXXXXXXXXXXXXXXX</u> <u>XXXXXXXXXXXXXXXXXXXX</u>	Planned Use <u>Water Supply Domestic</u>
City <u>XXXXXXXXXXXXXXXXXXXX</u> State <u>XX</u> Zip <u>XXXXX</u>	

Well Location	
Address <u>0 Larabee Valley RD</u>	APN <u>210-051-64</u>
City <u>Bridgeville</u> Zip <u>95526</u> County <u>Humboldt</u>	Township <u>01 N</u>
Latitude _____ N Longitude _____ W	Range <u>04 E</u>
Deg. Min. Sec. Deg. Min. Sec.	Section <u>13</u>
Dec. Lat. <u>40.4625000</u> Dec. Long. <u>-123.6828300</u>	Baseline Meridian <u>Humboldt</u>
Vertical Datum _____ Horizontal Datum <u>WGS84</u>	Ground Surface Elevation _____
Location Accuracy _____ Location Determination Method _____	Elevation Accuracy _____
	Elevation Determination Method _____

Borehole Information	
Orientation <u>Vertical</u> Specify _____	
Drilling Method <u>Direct Rotary</u> Drilling Fluid <u>Air</u>	
Total Depth of Boring <u>200</u> Feet	
Total Depth of Completed Well <u>200</u> Feet	

Water Level and Yield of Completed Well	
Depth to first water <u>45</u> (Feet below surface)	
Depth to Static _____	
Water Level <u>20</u> (Feet) Date Measured <u>05/09/2016</u>	
Estimated Yield* <u>5</u> (GPM) Test Type <u>Air Lift</u>	
Test Length <u>4.0</u> (Hours) Total Drawdown <u>180</u> (feet)	
*May not be representative of a well's long term yield.	

Geologic Log - Free Form		
	Depth from Surface Feet to Feet	Description
	0 5	Top Soil
	5 42	Silty Clay
	42 151	Soft Brown Sandstone
	151 200	Shale

State of California
Well Completion Report
 Form DWR 188 Complete 6/27/2016
 WCR2016-003990

Owner's Well Number 1 Date Work Began 06/13/2016 Date Work Ended 06/17/2016

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency _____ Permit Number 15/16-0725 Permit Date 05/19/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXXX
 Mailing Address XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX
 City XXXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well
 Planned Use Water Supply Domestic

Well Location

Address 3765 N McClellan Mountain RD APN 210-052-01
 City Bridgeville Zip 95526 County Humboldt Township 01 N
 Latitude _____ N Longitude _____ W Range 04 E
 Deg. Min. Sec. Deg. Min. Sec. Section 13
 Dec. Lat. 40.4648000 Dec. Long. -123.6818300 Baseline Meridian Humboldt
 Vertical Datum _____ Horizontal Datum WGS84 Ground Surface Elevation _____
 Location Accuracy _____ Location Determination Method _____ Elevation Accuracy _____
 Elevation Determination Method _____

Borehole Information

Orientation Vertical Specify _____
 Drilling Method Direct Rotary Drilling Fluid Air
 Total Depth of Boring 175 Feet
 Total Depth of Completed Well 170 Feet

Water Level and Yield of Completed Well

Depth to first water 53 (Feet below surface)
 Depth to Static _____
 Water Level 46 (Feet) Date Measured 06/13/2016
 Estimated Yield* 20 (GPM) Test Type Air Lift
 Test Length 4.0 (Hours) Total Drawdown 122 (feet)
 *May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	38	Silty Clay
38	67	Soft Brown Sandstone
67	84	Shale
84	175	Sandstone Shale Mix

Casings										
Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	50	Blank	PVC	OD: 5.563 in. SDR: 21 Thickness: 0.265 in.	0.265	5.563			
1	50	170	Screen	PVC	OD: 5.563 in. SDR: 21 Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	
1	170	175	No Casing Installed	Other	N/A					

Annular Material					
Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	175	Filter Pack	Other Gravel Pack	3/8 in	Pea Gravel

Other Observations:

Borehole Specifications		
Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	175	10

Certification Statement			
I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief			
Name <u>FISCH DRILLING</u>			
Person, Firm or Corporation			
<u>3150 JOHNSON ROAD</u>	<u>HYDEVILLE</u>	<u>CA</u>	<u>95547</u>
Address	City	State	Zip
Signed <u>electronic signature received</u>	<u>06/17/2016</u>	<u>683865</u>	
C-57 Licensed Water Well Contractor	Date Signed	C-57 License Number	

Attachments
SiteMapMcClellanMtn_Redacted.pdf - Location Map - Redacted
SiteMapMcClellanMtn.pdf - Location Map

DWR Use Only			
CSG #	State Well Number	Site Code	Local Well Number
N		W	
Latitude Deg/Min/Sec		Longitude Deg/Min/Sec	
TRS:			
APN:			

State of California
Well Completion Report
 Form DWR 188 Complete 7/13/2016
 WCR2016-003991

Owner's Well Number 2 Date Work Began 06/14/2016 Date Work Ended 06/17/2016
 Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program
 Secondary Permit Agency _____ Permit Number 15/16-0724 Permit Date 05/19/2016

Well Owner (must remain confidential pursuant to Water Code 13752)	Planned Use and Activity
Name <u>XXXXXXXXXXXXXXXXXXXXXX</u>	Activity <u>New Well</u>
Mailing Address <u>XXXXXXXXXXXXXXXXXXXXXX</u> <u>XXXXXXXXXXXXXXXXXXXXXX</u>	Planned Use <u>Water Supply Domestic</u>
City <u>XXXXXXXXXXXXXXXXXXXXXX</u> State <u>XX</u> Zip <u>XXXXX</u>	

Well Location	
Address <u>3765 N McClellan Mountain RD</u>	APN <u>210-052-01</u>
City <u>Bridgeville</u> Zip <u>95526</u> County <u>Humboldt</u>	Township <u>01 N</u>
Latitude _____ N Longitude _____ W	Range <u>04 E</u>
Deg. Min. Sec. Deg. Min. Sec.	Section <u>13</u>
Dec. Lat. <u>40.4653400</u> Dec. Long. <u>-123.6784200</u>	Baseline Meridian <u>Humboldt</u>
Vertical Datum _____ Horizontal Datum <u>WGS84</u>	Ground Surface Elevation _____
Location Accuracy _____ Location Determination Method _____	Elevation Accuracy _____
	Elevation Determination Method _____

Borehole Information	
Orientation <u>Vertical</u> Specify _____	
Drilling Method <u>Other - Under-Ream</u> Drilling Fluid <u>Air</u>	
<u>Down-Hole Hammer</u>	
Total Depth of Boring <u>115</u> Feet	
Total Depth of Completed Well <u>115</u> Feet	

Water Level and Yield of Completed Well	
Depth to first water <u>42</u> (Feet below surface)	
Depth to Static _____	
Water Level <u>26</u> (Feet) Date Measured <u>06/15/2016</u>	
Estimated Yield* <u>20</u> (GPM) Test Type <u>Air Lift</u>	
Test Length <u>4.0</u> (Hours) Total Drawdown <u>89</u> (feet)	
*May not be representative of a well's long term yield.	

Geologic Log - Free Form		
Depth from Surface	Feet to Feet	Description
0	4	Top Soil
4	38	Brown Sandstone
38	75	Blue Fractured Sandstone
75	115	Shale Sandstone Mix

State of California
Well Completion Report
 Form DWR 188 Complete 7/28/2016
 WCR2016-005336

Owner's Well Number 1 Date Work Began 07/22/2016 Date Work Ended 07/27/2016
 Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program
 Secondary Permit Agency _____ Permit Number 15/16-0490 Permit Date 03/15/2016

Well Owner (must remain confidential pursuant to Water Code 13752)			
Name	XXXXXXXXXXXXXXXXXXXX		
Mailing Address	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX		
City	XXXXXXXXXXXXXXXXXXXX	State	XX Zip XXXXX

Planned Use and Activity	
Activity	<u>New Well</u>
Planned Use	<u>Water Supply Domestic</u>

Well Location					
Address <u>0 Hidden Valley RD</u>			APN <u>210-250-08</u>		
City <u>Bridgeville</u>	Zip <u>95526</u>	County <u>Humboldt</u>	Township <u>01 N</u>		
Latitude _____ N	Longitude _____ W	Range <u>04 E</u>	Section <u>13</u>		
Deg. Min. Sec.	Deg. Min. Sec.	Baseline Meridian <u>Humboldt</u>			
Dec. Lat. <u>40.4641200</u>	Dec. Long. <u>-123.6771900</u>	Ground Surface Elevation _____			
Vertical Datum _____	Horizontal Datum <u>WGS84</u>	Elevation Accuracy _____			
Location Accuracy _____	Location Determination Method _____	Elevation Determination Method _____			

Borehole Information	
Orientation <u>Vertical</u>	Specify _____
Drilling Method <u>Other - Under-Ream Down-Hole Hammer</u>	Drilling Fluid <u>Air</u>
Total Depth of Boring <u>200</u> Feet	
Total Depth of Completed Well <u>200</u> Feet	

Water Level and Yield of Completed Well	
Depth to first water <u>70</u> (Feet below surface)	
Depth to Static _____	
Water Level <u>65</u> (Feet)	Date Measured <u>07/26/2016</u>
Estimated Yield* <u>15</u> (GPM)	Test Type <u>Air Lift</u>
Test Length <u>4.0</u> (Hours)	Total Drawdown <u>135</u> (feet)
*May not be representative of a well's long term yield.	

Geologic Log - Free Form		
Depth from Surface Feet to Feet		Description
0	4	Overburden
4	26	Brown Sandstone
26	62	Shale
62	92	Blue Sandstone
92	135	Sandstone Shale Mix
135	151	Chirt
151	173	Soft Shale
173	190	Chirt
190	200	Soft Shale

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	60	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			
1	60	190	Screen	Low Carbon Steel	Grade: ASTM A53	0.188	6	Milled Slots	0.05	
1	190	200	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	200	Other Fill	See description.	3/8 in	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	200	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name FISCH DRILLING
Person, Firm or Corporation

3150 JOHNSON ROAD HYDESVILLE CA 95547
Address City State Zip

Signed electronic signature received 07/28/2016 683865
C-57 Licensed Water Well Contractor Date Signed C-57 License Number

Attachments

SiteMap.pdf - Location Map

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number
		N	W
Latitude Deg/Min/Sec			Longitude Deg/Min/Sec
TRS:			
APN:			

Humboldt County, Central Part, California

4416—Rockyglen-Tannin complex, 9 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2pdbq

Elevation: 200 to 3,610 feet

Mean annual precipitation: 49 to 71 inches

Mean annual air temperature: 45 to 72 degrees F

Frost-free period: 240 to 280 days

Farmland classification: Not prime farmland

Map Unit Composition

Tannin and similar soils: 50 percent

Rockyglen and similar soils: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tannin

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of mountainflank

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from mudstone and/or residuum weathered from sandstone

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 8 inches: gravelly loam

Bt₁ - 8 to 16 inches: loam

Bt₂ - 16 to 31 inches: paragravelly clay loam

Bt₃ - 31 to 47 inches: paragravelly clay loam

Bc_t - 47 to 79 inches: very paragravelly clay loam

Properties and qualities

Slope: 9 to 30 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water

(K_{sat}): Moderately high to high (0.16 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F005XZ022CA - Mesic Mountains >60"ppt

Hydric soil rating: No

Description of Rockyglen

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of mountainflank

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from mudstone and/or residuum weathered from sandstone

Typical profile

O_i - 0 to 2 inches: very gravelly slightly decomposed plant material

A - 2 to 8 inches: gravelly loam

B_{t1} - 8 to 18 inches: very gravelly loam

B_{t2} - 18 to 37 inches: very gravelly loam

B_{t3} - 37 to 59 inches: extremely gravelly loam

BC_t - 59 to 79 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 9 to 30 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water

(K_{sat}): Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: F005XZ022CA - Mesic Mountains >60"ppt

Hydric soil rating: No

Minor Components

Burgsblock

Percent of map unit: 7 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of
mountainflank

Down-slope shape: Concave, convex, linear

Across-slope shape: Linear, concave, convex

Hydric soil rating: No

Coolyork

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of
mountainflank

Down-slope shape: Concave, convex, linear

Across-slope shape: Linear, concave, convex

Hydric soil rating: No

Rock outcrop

Percent of map unit: 3 percent

Hydric soil rating: No

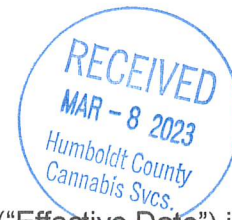
Data Source Information

Soil Survey Area: Humboldt County, Central Part, California

Survey Area Data: Version 9, Sep 1, 2022

12170

COUNTY OF HUMBOLDT
RENEWABLE ENERGY GRANT PROGRAM
GRANT AGREEMENT



This Grant Agreement (the "Agreement") dated 3-8, 2023 ("Effective Date") is made and entered into by and between the County of Humboldt, a political subdivision of the State of California (the "County"), and Nikola Erickson ("Grantee"). The County and Grantee are hereinafter collectively referred to as the "Parties."

RECITALS

WHEREAS, on January 22, 2022 Humboldt County and the state Department of Cannabis Control entered into an agreement that make Local Assistance Grant Program funds available for projects that assist transitioning cannabis farmers from provisional cultivation licenses to annual licenses and for cannabis farmers with annual licenses, maintaining those annual licenses into the future; and

WHEREAS, up to \$3,100,000 was approved to fund a Renewable Energy Grant Program (the "Program") to fund eligible projects that replace gas/diesel/propane powered generators used for commercial cannabis cultivation operations with renewable energy systems, or for other expenses if reductions in gas/diesel/propane powered generator use are documented; and

WHEREAS, a primary goal of the Program is purchase and/or installation of renewable energy system infrastructure, and engineering for renewable energy systems or by establishing a cultivation site's connection to the commercial power grid; and

WHEREAS, the Grantee has submitted an application that meets the minimum requirements of the Program, and the County wishes to enter into this Agreement with Grantee to provide Program funds to assist Grantee with transitioning from provisional cultivation licenses to annual licenses or maintaining their annual licenses into the future.

NOW, THEREFORE, the parties hereto mutually agree as follows:

1. **Grant.** Subject to the terms and conditions of this Agreement, the County agrees to provide a grant of funds to Grantee in an amount of \$30,000 (the "Grant").

2. **Scope of Work.** Grantee hereby agrees and understands that the County retains sole and absolute discretion to determine if Grantee has met the requirements for the Grant. The scope of work is that which was included as part of the original application modified by the County to eliminate the ineligible tasks, attached hereto as **Exhibit A**.

3. **Compensation.** Grantee hereby agrees to use Grant Program funds only for expenses as specified in the original application modified by the County to eliminate

the ineligible expenses, attached hereto as **Exhibit A**. The maximum payment amount shall not exceed the approved budget amount of \$30,000 or \$30,000, whichever is less.

4. Time of Performance. The Grant term shall begin on the Effective Date and shall end two full years after the disbursement under this Agreement, unless sooner terminated as provided herein. All work in the Scope of Work attached hereto as Exhibit A must be completed within two full years after the disbursement.

5. Payment. The County is anticipating the grant funds will be disbursed to Grantee's within 45 days of execution of this agreement, however, the timing of the disbursement(s) of grant funds to Grantees shall be solely determined by the County, but shall not be later than January 1, 2024, or any subsequent extension provided by the County.

6. Evaluation, Monitoring and Reporting. Grantee shall be monitored and evaluated by the County in terms of effectiveness and timely compliance with the provisions of this Agreement. Grantee agrees that authorized representatives of the County, may perform on-site and/or fiscal monitoring of Grantee's record-keeping and reporting to assure compliance with this Agreement. Grantee agrees to make its records and facilities available for such review.

7. Compliance with State and Local Standards. Grantee shall be responsible for complying with the terms, conditions, and requirements of all applicable local and state laws and regulations including the Program Grant Agreement between the Department of Cannabis Control and the County of Humboldt attached hereto as Exhibit B.

8. Indemnification. Grantee shall hold harmless, defend and indemnify COUNTY and its agents, officers, officials, employees and volunteers from and against any and all claims, demands, losses, damages, liabilities, expenses and costs of any kind or nature, including, without limitation, attorney's fees and other costs of litigation, arising out of, or in connection with, Grantee's negligent performance of, or failure to comply with, any of the duties and/or obligations contained herein, except such loss or damage which was caused by the sole negligence or willful misconduct of COUNTY. This provision will survive expiration or termination of this Contract.

9. Events of Default and Remedies. The failure to comply with any term of this Agreement shall constitute a default by Grantee. In the event of a default, County may, in its discretion, take any of the following actions in addition to any other remedies under this Agreement:

- a. Terminate this Agreement, in whole or in part;
- c. Demand immediate reimbursement of any funds disbursed under this Agreement;
- d. Bring an action for equitable relief (1) seeking the specific performance by Grantee of the terms and conditions of the

- Agreement, and/or (2) enjoining, abating, or preventing any violation of said terms and conditions, and/or (3) seeking declaratory relief; and/or
- e. Pursue any other remedy allowed by law or in equity.

10. Modification to the Agreement

No alteration of or amendment to this Agreement shall be effective unless given in writing and signed by all parties.

11. Representatives of the Parties and Service of Notices

11.1. The representatives of the respective parties authorized to administer this Agreement, and to whom formal notices, demands, and communications will be given are as follows:

11.2. The representative of County will be the Director or his authorized designee:

John H Ford
Director of Planning and Building
3015 H Street
Eureka, CA 95501

The Grantee shall be the Stream Protection Program Individual Applicant:

Name: Nikolai Erickson
Address: 1065 Riverside Dr Rio Dell CA 95562
Phone: 707-672-5141
Email: fullmoonfarms@aol.com

11.3 Formal notices, demands, and communications required hereunder by either party will be made in writing and may be affected by personal delivery or by registered or certified mail, postage prepaid, return receipt requested and will be deemed communicated as of the date of mailing.

11.4 If the name of the person designated to receive the notices, demands, or communications, or the address of such person is changed, written notice will be given within five (5) business days of said change.

12. Jurisdiction and Venue. This Agreement shall be construed in accordance with the laws of the State of California. Any dispute arising hereunder, or relating hereto, shall be litigated in the State of California and venue shall lie in the County of Humboldt unless transferred by court order pursuant to California Code of Civil Procedure Sections 394 or 395.


13. Entire Agreement. This Agreement contains the full and complete Agreement between the parties. No verbal agreement or conversation with any officer or employee of either party will affect or modify any of the terms and conditions of this

Agreement. The parties acknowledge that they have read and understood this Agreement and had an opportunity to consult with counsel of their choosing.

14. Counterpart Execution. This Agreement may be executed in one or more counterparts, and by the parties in separate counterparts, each of which when executed shall be deemed to be an original, but all of which taken together shall constitute one and the same Agreement. The parties further agree that facsimile signatures or signatures scanned into .pdf (or signatures in another electronic format designated by County) and sent by e-mail shall be deemed original signatures.

[Signatures appear on next page]



COUNTY OF HUMBOLDT, a political subdivision of the State of California

By: 

Name: John H Ford, or his authorized designee
Title: Director, Department of Planning and Building

Date: 3/16/2023

GRANTEE

By: 
Name: 
Title: An Individual

Date: 3-8-23


Send Signed Agreement to:
Humboldt County
Department of Planning and Building
Grant Agreement for 
3015 H Street, Eureka, CA 95501

Exhibit A

Scope of Work

Happy Valley Farms, LLC – Humboldt County Renewable Energy Grant Program Scope of Work

APN: 210-051-064

08/25/2022

Summary

Happy Valley Farms, LLC is applying for a Renewable Energy Grant to add 11,500 watts of solar panels and an additional 28.8 kWh of battery storage.

The existing solar system serves two adjoining parcels that are under the same ownership. By expanding on the existing system, the applicant will be able to generate more solar power and overall reduce their land impact than they would by building two separate systems. This grant would cover this parcel's share of the estimate.

Tasks and Timeline

Timeline for Tanks to Be Purchased if Grant Funding is Received

08/22/2022 – Submit Grant Application to HumCo

Within 90 Days of Receipt of Funding – If funding is received, contract with Greenwired for installation of the system.

Estimated Reduction of Annual Fuel Use

Currently, the parcel receives its power from a mix of solar panels and diesel generators.

The project currently utilizes 30-gallons of diesel a day during the cultivation season, which is estimated to be 241 days of the year. This results in an annual fuel use of 7,230-gallons. The installation of this solar system and the batteries would reduce the fuel use during the cultivation season down to 5-gallons per day, or 1,205 gallons annually.