This Order is issued to Brent Alan Vanderkam (hereafter referred to as Discharger) based on provisions of Water Code section 13304, which authorizes the Central Valley Regional Water Quality Control Board (Central Valley Water Board) to issue a Cleanup and Abatement Order (Order), and Water Code section 13267, which authorizes the Regional Water Board to require the preparation and submittal of technical and monitoring reports.

The Assistant Executive Officer finds, with respect to the Discharger’s acts, or failure to act, the following:

1. **Purpose of the Order:** This order requires the Discharger to clean up and abate the effects of the discharges of nutrients, soil and rock into an unnamed class II tributary to Clover Creek, an anadromous Class I tributary to Cow Creek which is tributary to the Sacramento River and eliminate the threat of future discharges. The unnamed tributary is hereafter referred to as “Unnamed Tributary”. The Unnamed Tributary is considered waters of the state, as well as, waters of the United States (references hereafter to waters of the United States are inclusive of waters of the state). The Discharger or the Discharger’s lessee graded more than two acres of land and filled waters of United States in May 2014, without authorization from applicable federal, state, and local agencies, including the Central Valley Water Board. The work was performed to create an area for the cultivation of marijuana. This Order requires investigation and cleanup in compliance with the Water Code, the Basin Plan, Resolution 92-49, and other applicable State and Regional Water Board plans, policies, and regulations.

2. **Responsible Parties:** The Discharger, as the property owner and/or the person with the legal ability to control the activities on the property that resulted in the discharge and/or threat of discharge, is the responsible party for purposes of this Order. This Order finds that Mr. Vanderkam is the primary responsible party and is liable.

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1 The Regional Water Board administers and enforces the Clean Water Act (CWA). The CWA regulates what it refers to as “navigable waters” and defines those waters as “waters of the United States.” Waters of the United States has been interpreted broadly by the agencies responsible for implementing the CWA to include all traditionally navigable waters and their tributaries. (40 C.F.R. 122.2) The Porter-Cologne Water Quality Control Act (Porter-Cologne) provides the Regional Water Board additional authority to regulate discharges of waste into “waters of the state.” (Water Code, § 13260.) The term “waters of the state” is defined as “any surface water or groundwater, including saline waters, within the boundaries of the state.” (Water Code, § 13050, subd. (3).) All waters of the United States that are within the boards of California are also waters of the state for purposes of the Porter-Cologne.
a. Per records from the Shasta County Assessor-Recorder’s Office, Brent Alan Vanderkam owns just over 60 acres, identified as Assessor Parcel No. 099-120-035-000 (hereafter Site). The Site is located at 11550 Buggy Road in east Shasta County in Section 45, Township 32N, Range 1W, MDB&M; in the vicinity of latitude 40°37.496’N and longitude 122°0.592’W. Large scale grading and excavation operations were conducted at this Site which have caused and threaten to cause numerous unpermitted discharges of sediment and nutrients into the Unnamed Tributary and Clover Creek. Accordingly, Mr. Vanderkam, as the owner of the Site which sustains conditions that have resulted in the discharge and/or create a threat of discharge to waters of the United States, is a responsible party.

b. Based on satellite imagery and on statements made to California Department of Fish and Wildlife (CDFW) Wardens, and by neighboring property owners, grading commenced sometime in April or May of 2014. Mr. Vanderkam has also asserted that he leased the property to a third party who developed the Site but has not been willing to identify that third party. The Central Valley Water Board reserves the right to amend this CAO to add additional responsible parties if and when those parties are identified.

3. Site Location and Description: The Site is located at 11550 Buggy Road in east Shasta County. Grading and fill activities occurred in the vicinity of latitude 40°37.496’N and longitude 122°0.592’W adjacent to and within the Unnamed Tributary to Clover Creek. This location is approximately 1.5 miles upstream of the Unnamed Tributary’s confluence with Clover Creek.

4. Site History: Per records from the Shasta County Assessor-Recorder’s Office, Mr. Brent Vanderkam purchased the Site in February of 2014. The 60.2 acre parcel supports a single-family dwelling, with water supplied from a well on the property. The Site has no prior regulatory oversight or history with the Central Valley Water Board.

5. Factual Basis of Order: The Discharger and/or the Discharger’s lessee conducted activities detailed below that have created and/or threaten to create, conditions of pollution in waters of the state by unreasonably impacting water quality and beneficial uses.

a. The Site sits adjacent to an Unnamed Tributary that is an intermittent Class II tributary (supporting non-fish aquatic species) to Clover Creek. Clover Creek is listed on the State’s Clean Water Act (CWA) 303d list for pathogens and is susceptible to contaminants (such as sediment and nutrients) that may decrease the dissolved oxygen concentration and/or increase temperature enhancing pathogen environment. Grading at the site has resulted in the ground surface being stripped of vegetation and the upper soils lying vulnerable to wind and water erosion. The soils comprising the fill material placed within and alongside the Unnamed Tributary are comprised of clayey sand with about 90% fines. Clays and other fine grained earthen materials can be transported as suspended sediment and lead to increased water turbidity. Heavier particles such as sand and gravel generally settle out of the water column during decreased flows. Excessive suspended sediment and increased turbidity can impair water quality and aquatic life. These soils were classified using the Visual Classification of Soils - Unified Soil Classification System, ASTM Standard D 2488-00, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) and cross referenced with the United States Department of Agriculture (USDA) Soil Survey of Shasta County Area, California (1974), which are identified as Toomes very stony loam and can be moderately to highly erosive. As documented in photographs as well as field turbidity measurements.
during the on-site inspection, grading activity has resulted in the discharge of fill, sediment, and nutrients to the Unnamed Tributary and threatens future sediment discharges from storm water runoff and erosion of fill material placed adjacent to and within the Unnamed Tributary.

b. On 17 November 2014, CDFW Warden Steven Crowl provided a declaration to Central Valley Water Board staff (Staff) describing a large grading operation adjacent to an ephemeral streambed off of Buggy Road in Millville, Shasta County. The declaration further alleged that this illegal grading, which included discharge of spoils directly to the Unnamed Tributary as well as a potential water diversion, was conducted to establish a large marijuana growing operation. Warden Crowl and Central Valley Water Board staff subsequently confirmed with the Shasta County Building Division that no permits had been issued for grading activities at the Site, but that the County had issued a grading violation and placed the property in non-compliance.

c. On 20 November 2014, Central Valley Water Board staff obtained an inspection warrant granting access to the Site. As documented in the attached Buggy Road Inspection Report (Attachment 1), on 21 November 2014, Staff inspected the Site and observed two large berms of unprotected spoils from the grading and excavation activities; a significant amount of which had been discarded directly within the Unnamed Tributary, diverting and re-routing the natural flow of the drainage course. Staff calculated approximately 7,035 cubic yards of fill material exposed to erosion, more than 427 cubic yards of which had been placed directly into the streambed. Photographs of sediment movement and field turbidity measurements document the discharge of sediment in Site runoff. In addition to sediment discharge, Staff observed a large algal bloom indicating the potential for excess nutrient pollution from storm water originating on Site. Surface water samples were collected from locations upstream and downstream from the Site along with a sample of Site runoff. Analytical results confirmed the presence of nutrients in both Site runoff and downstream samples in concentrations greater than background levels (none detected upstream); likely a result of the abandoned and uncontained fertilizers, nutrients, and potting soil (including ingredients containing Nitrates and Total Phosphorus) observed on Site discharging into the Unnamed Tributary.

6. **Beneficial Uses and Water Quality Objectives:** The *Water Quality Control Plan for the Sacramento and San Joaquin River Basins, Fourth Addition*, (hereafter “Basin Plan”) designates beneficial uses, establishes water quality objectives, contains implementation programs for achieving objectives, and incorporates by reference, plans and policies adopted by the State Water Resources Control Board. Clover Creek is a tributary of Cow Creek and hence the Sacramento River. Existing and potential beneficial uses for Cow Creek include the following: Municipal & Domestic Supply (MUN); Agricultural Supply (AGR); Industrial Power (POW); Water Contact (REC-1) & Other Non-contact Recreation (REC-2); Cold (COLD) Freshwater Habitat; Migration of Cold Freshwater Aquatic Organisms (MIGR); Spawning of Warm & Cold Freshwater Aquatic Organisms (SPWN); and Wildlife Habitat (WILD). Beneficial uses of any specifically identified water body generally apply to all of its tributaries.

a. Beneficial uses of the underlying groundwater are municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).
b. The Basin Plan lists specific water quality objectives for inland surface waters. These objectives include in part, limitations on increased temperature, sediment, settleable and suspended material, and turbidity.

c. The State Water Board has adopted Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304 (“Resolution 92-49”), which is included as Appendix 9 of the Basin Plan. Resolution 92-49 sets forth the policies and procedures to be used during an investigation and cleanup of a polluted site, and requires that cleanup levels be consistent with State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality Waters in California (“Resolution 68-16”). Resolution 92-49 requires the waste to be cleaned up in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored. Any alternative cleanup level to background must: (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Water Board. Resolution 92-49 directs that investigations proceed in a progressive sequence. To the extent practical, it directs the Regional Water Board to require and review for adequacy written work plans for each element and phase, and the written reports that describe the results of each phase of the investigation and cleanup.

7. **Failure to Obtain Necessary Permits:** Central Valley Water Board staff determined that the grading and clearing activities at the Site occurred without coverage under any of the following regulatory permits:

   a. a National Pollutant Discharge Elimination System (NPDES) permit;
   
   b. a Clean Water Act (CWA) section 404 permit from the Army Corps of Engineers
   
   c. a CWA section 401 Water Quality Certification issued by the Central Valley Water Board;
   
   d. a CDFW Lake and Streambed Alteration (LSA) Agreement; nor
   
   e. a grading Permit issued by Shasta County.

8. **Legal Authority to Require Clean Up and Abatement.** Water Code section 13304, subdivision (a) states, in relevant part:

   Any person who has discharged or discharges waste into waters of this state in violation of any waste discharge requirements or other order to prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and causes, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including, but not limited to, overseeing cleanup and abatement efforts. Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall have jurisdiction to
grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.

9. **Clean Water Act Violations:** The Clean Water Act prohibits certain discharges of storm water containing pollutants except in compliance with a NPDES permit. Discharges to surface waters comprised of storm water associated with construction activity, including clearing, grading, excavation, and other land disturbance activities (except operations that result in disturbance of less than one acre of total land area and which are not part of a larger common plan of development or sale), are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities, NPDES No. CAS000002, Order No. 2009-0009-DWQ (General Permit). Furthermore, CWA section 404 requires any person proposing to discharge dredge or fill material into navigable water of the United States to obtain a Section 404 permit prior to such discharge. CWA section 401 requires that any person obtaining a Section 404 permit, obtain water quality certification from the State in which the discharge occurs.

a. Staff sampled and confirmed the presence of elevated nutrients (nitrate and total phosphorus) originating near a large mixing tank from leaking bags of fertilizer and uncontained potting soil discharging to the Unnamed Tributary.

b. Staff documented turbid plumes and discharge of sediment-laden storm water from disturbed surfaces discharging from the Site to the Unnamed Tributary. Turbidity measurements collected downstream from the Site exceed Basin Plan objectives for turbidity increases where natural turbidity upstream measured between 1 and 5 NTUs\(^2\). Field turbidity measurements downstream from the Site discharge exceeded background upstream measurements by nearly 30 NTUs.

c. The Discharger is responsible for approximately 2.26 acres of clearing, grading, excavation, and/or land disturbance at the Site.

d. Staff observed a significant area of disturbed ephemeral streambed (68 yards as calculated), a portion of which was filled with spoils from excavation activities. More than 427 cubic yards of fill material was placed in the ephemeral streambed of the Unnamed Tributary at the Site.

e. Based on informal consultation with US Army Corps of Engineers, the land disturbance associated with the Site has likely compromised jurisdictional seasonal wetlands/vernal pool habitat within the approximate 2.26 acres of graded area. Jurisdictional seasonal wetlands/vernal pool habitat can be Waters of the United States.

\(^2\) The Basin Plan lists the following limitations for turbidity attributable to controllable water quality factors:

- Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2.
- Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.
10. **Water Code Violations:** The placement of fill into the Unnamed Tributary, and the discharge of storm water containing sediment, excess nutrients from fertilizers, and potting soil are discharges of waste to waters of the state in violation of Water Code sections 13260\(^3\) and 13376\(^4\), and which create a condition of pollution subject to this Order in accordance with Water Code section 13304.

a. “Waste” is defined by Water Code section 13050, subdivision (d) as,

\[ \textit{sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.} \]

b. Sediment and nutrients, when discharged to waters of the state, are deemed a “waste” as defined in Water Code section 13050. The Discharger has discharged, or permitted his lessee to discharge, waste directly into surface waters tributary to Clover Creek, which is tributary to Cow Creek. Accordingly, the beneficial uses of Cow Creek discussed above in paragraph no. 6 also apply to all of its tributaries.

c. “Pollution” is defined by Water Code section 13050, subdivision (l)(1) as,

\[ \textit{an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following:} \]
\[ \textit{1. The waters for beneficial uses;} \]
\[ \textit{2. Facilities which serve these beneficial uses} \]

d. The clearing and grading activities conducted by the Discharger, and/or his lessee, in addition to improper storage of fertilizers and soil amendments have resulted in the unauthorized discharge of waste into surface waters and surface water drainage courses and have created, and threaten to create, a condition of pollution by unreasonably affecting the beneficial uses of waters of the state.

i. Discharges of sediment and other inert material alter the hydrologic and sediment transport regimes of the Unnamed Tributary by affecting the flow of water and establishment of vegetation. Such changes may lead to adverse conditions such as flooding, increases in suspended sediment and turbidity, accelerated erosion of the adjacent channel bed or banks, and localized accumulation of deleterious materials. Additionally, such discharges directly threaten habitat for aquatic species dependent upon native sediment and vegetation characteristics (MIGR, SPWN, and WILD). Increased sedimentation and turbidity can result in increased

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\(^3\) Pursuant to Water Code section 13260, subd. (a)(1) “[a]ny person discharging waste or proposing to discharge waste, within any region that could affect the quality of the waters of the state…” shall file a report of waste discharge. The Regional Board has not received a 401 application or report of waste discharge for wastes discharged at the Site.

\(^4\) Pursuant to Water Code section 13376 “[a]ny person discharging pollutants or proposing to discharge pollutants to the navigable waters of the United States within the jurisdiction of this state or any person discharging dredged or fill material into the navigable waters of the United States within the jurisdiction of this state shall file a report of the discharge in compliance with the procedures set forth in Section 13260, except that no report need be filed under this section for discharges that are not subject to the permit application requirements of the Federal Water Pollution Control Act, as amended.”
treatment and/or maintenance costs for downstream agricultural and municipal users that withdraw and treat the water (AGR, and MUN). Sediment laden storm water discharges to and the resulting turbidity within surface waters can also affect the recreational and aesthetic enjoyment of the surface waters (REC-1, REC-2).

ii. Discharge of excess nutrients, especially nitrates and phosphorus, can lead to eutrophication and algal blooms. Algal blooms can block out light, clog fish gills, and cause an increase for biological oxygen demand as they die, severely lowering dissolved oxygen levels available to sustain aquatic ecosystems. Lowered dissolved oxygen concentrations can also provide favorable conditions for proliferation of pathogenic bacteria. In addition, excess nutrients can contribute to toxic algal blooms which create bioaccumulative toxins that can be deleterious to aquatic ecosystems and wildlife that may consume aquatic fauna (WILD, MIGR, SPWN). Eutrophication and algal blooms can also affect the recreational and aesthetic enjoyment of surface waters. Direct exposure to toxic algae can lead to rashes, respiratory problems, and neurological effects in humans, and can raise costs for water treatment plants and contribute to harmful byproducts when treated (REC-1, REC-2, MUN).

11. Cleanup and Abatement Action Necessary: Untreated storm water from the Site has discharged, and continues to discharge, sediment and nutrients into the Unnamed Tributary. Approximately 7,035 cubic yards of fill material remains on Site as loosely compacted spoils with no erosion control to protect from weathering and further discharge to the Unnamed Tributary. Over 427 cubic yards of these spoils remain within the Unnamed Tributary. Abandoned, open bags of fertilizer and loose potting soils have spilled and are left improperly stored on Site. Cleanup and abatement is necessary to ensure that the existing condition of pollution is cleaned up, that threatened unauthorized discharges to surface waters or surface water drainage courses originating from the Site are prevented, background water quality levels are restored, and that any impacts to beneficial uses are mitigated. The current condition of pollution is a priority violation as outlined in the State Water Resources Control Board Water Quality Enforcement Policy (Enforcement Policy) and the issuance of a cleanup and abatement order pursuant to Water Code section 13304 is appropriate and consistent with policies of the Central Valley Water Board.

12. Technical Reports Required: Water Code section 13267(a) provides that the Regional Water Board may investigate the quality of any water of the State within its region in connection with any action relating to the Basin Plan. Water Code section 13267, subdivision (b) provides that the Regional Water Board, in conducting an investigation may require a discharger to furnish, under penalty of perjury, technical or monitoring program reports. The technical reports required by this Order are necessary to assure compliance with this Order and to protect the waters of the state. The technical reports are further necessary to demonstrate that appropriate methods will be used to cleanup waste discharged to surface waters and surface water drainage courses and to ensure that cleanup complies with Basin Plan requirements. In accordance with Water Code section 13267, subdivision (b) the findings in this Order provide the Discharger with a written explanation with regard to the need for remedial action and reports and identify the evidence that supports the requirement to implement clean up and abatement activities and submit the reports. The Discharger named in this Order owns and/or operates the Site from which waste was discharged, and thus is appropriately responsible for providing the reports.
13. California Environmental Quality Act: Issuance of this Order is being taken for the protection of the environment and to enforce the laws and regulations administered by the Regional Board as such is exempt from provisions of the California Environmental Quality Act (CEQA) (Public Resources Code section 21000 et seq.) in accordance with California Code of Regulations, title 14, sections 15061, subdivision (b)(3), 15306, 15307, 15308, and 15321. This Order generally requires the Discharger to submit plans for approval prior to implementation of cleanup and restoration activities at the Site. Mere submittal of plans is exempt from CEQA as submittal will not cause a direct or indirect physical change in the environment and/or is an activity that cannot possibly have a significant effect on the environment. CEQA review at this time would be premature and speculative, as there is simply not enough information concerning the Discharger’s proposed remedial activities and possible associated environmental impacts. To the extent that the Order requires earth disturbing and revegetation activities not to exceed five acres in size and to assure restoration of stream habitat and prevent erosion, this Order is exempt from provisions of CEQA pursuant to California Code of Regulations, title 14, section 15333. If the Regional Board determines that implementation of any plan required by this Order will have a significant effect on the environment that is not otherwise exempt from CEQA, the Regional Board will conduct the necessary and appropriate environmental review prior to approval of the applicable plan. The Discharger will bear the costs, including the Regional Board’s costs, of determining whether implementation of any plan required by this Order will have a significant effect on the environment and, if so, in preparing and handing any documents necessary for environmental review. If necessary, the Discharger and a consultant acceptable to the Regional Water Board shall enter into a memorandum of understanding with the Regional Water Board regarding such costs prior to undertaking any environmental review.

REQUIRED ACTIONS

IT IS HEREBY ORDERED that, pursuant to Water Code sections 13267 and 13304, that Mr. Brent Alan Vanderkam (Discharger) shall cleanup and abate the discharge and threatened discharge of earthen materials, soil, and sediment to waters of the United States as follows:

1. **By 1 May 2015,** submit plans prepared by an appropriately licensed professional for the completion of stabilization and mitigation efforts necessary to minimize erosion and further discharge of sediment and nutrients to the Unnamed Tributary during the winter and spring 2015 including but not limited to the following:
   a. A detailed Site map accurately depicting topography, graded/disturbed surfaces, earthen side cast material, and all surface water courses/drainages,
   b. Identification of all locations where sediment has discharged to surface waters or surface water drainage courses,
   c. Using the above information, identify all areas of immediate concern, along with proposed emergency mitigation measures to be implemented at each area of concern necessary to stabilize the Site during the winter and spring 2015.
   d. Remove and properly store fertilizers and soil amendments to cease additional nutrient discharge to the Unnamed Tributary.
   e. Stabilize all disturbed areas with erosion control mulches, blankets, mats, tarps, or other accepted erosion control equipment in sufficient quantities to protect the disturbed soil surface from the forces of rain drop impact and overland flow.
f. A monthly monitoring report assessing site conditions and providing notice and photograph of mitigation measures completed, and recommendations for additional emergency measures or repairs to previously identified areas of immediate concern where appropriate.

Central Valley Water Board staffs will review the Interim Plan in consultation with the Discharger or his authorized agent(s) and other responsible agencies immediately upon receipt. Once approved work shall begin immediately, but no later than 10 business days, to implement the proposed emergency measures.

2. **By 15 July 2015**, the Discharger shall provide a proposed Restoration, Mitigation, and Monitoring Plan (hereafter “RMMP”). The RMMP shall include but not be limited to:

   a. A completed Wetland Delineation for the Site to include: all lands disturbed by excavation and a 100ft zone beyond the disturbed area in all directions, as well as the length of the affected Unnamed Tributary and its banks to the Western property line.

   b. An assessment of the impacts to the Unnamed Tributary to Clover Creek, Class I tributary of Cow Creek from the unauthorized activities, to be completed by the appropriate qualified professional. This assessment, at a minimum, must address channel hydrology, riparian habitat and loss thereof, channel stability, and locations where fill material has been placed or discharged; and shall include aerial photographs and/or satellite images, photographs, reports, topographic maps or drawings, etc., of Site conditions prior to conducting the un-permitted activities. Assessment findings shall serve as the basis for the RMMP.

   c. The RMMP shall include plans for Site restoration and proposed mitigation to restore beneficial uses by restoring the channel and potential seasonal wetlands to pre-discharge conditions and to compensate for and minimize any further impacts to the wetlands and Unnamed Tributary. Best management practices shall be applied to all current and planned work associated with construction activities on the Site impacting, or having the potential to impact, the Unnamed Tributary. The RMMP shall contain, at a minimum, design specifications and drawings, an implementation schedule, and a monitoring plan. The RMMP shall incorporate use of appropriate native or endemic species in all re-vegetation efforts.

   d. The implementation schedule in the RMMP shall include detailed project milestones that take into account the time anticipated to obtain all applicable local, state, and federal permits necessary to fulfill the requirements of this Order. For example, it is likely that a LSA Notification will be required under Fish and Game Code (FGC) section 1602. CDFW has 30 days to determine if such notification is complete and an additional 60 days to issue a draft LSA agreement, which will include measures necessary to protect the resources. The time for providing that notice and obtaining that agreement should be considered and accounted for when developing a RMMP that complies with the deadlines provided in this Order.

3. **By 1 August 2015**, begin implementation of the RMMP.
4. **By 15 October 2015,** complete all approved restoration and mitigation measures described in the proposed RMMP.

5. **By 1 December 2016,** submit a **Completion Report** for the RMMP. The Completion Report shall accurately depict all construction and/or mitigation measures and document that the above plan to restore, compensate for, and minimize any further impacts to the unnamed tributary of Clover Creek has been fully implemented.

6. **By October 1 of each year** (starting 1 October 2016) submit an annual monitoring report. The Annual Monitoring Report shall summarize monitoring results of RMMP and shall continue until at least three years after successful completion of the RMMP, or until a report, acceptable to the Assistant Executive Officer, is submitted showing the discharger has met the requirements of the RMMP.

**GENERAL REQUIREMENTS AND NOTICES**

7. **Duty to Use Qualified Professionals:** The Discharger shall provide documentation that plans, and reports required under this Order are prepared under the direction of appropriately qualified professionals. As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. The Discharger shall include a statement of qualification and registration numbers, if applicable, of the responsible lead professionals in all plans and reports required under this Order. The lead professional shall sign and affix their registration stamp, as applicable, to the report, plan, or document. The required activities must be implemented by the appropriately qualified/licensed professionals as otherwise required by law.

8. **Signatory Requirements:** All technical reports submitted by the Discharger shall include a cover letter signed by the Discharger, or a duly authorized representative, certifying under penalty of law that the signer has examined and is familiar with the report and that to their knowledge, the report is true, complete, and accurate. The Discharger shall also state if it agrees with any recommendations/proposals and whether it approves implementation of said proposals. Any person signing a document submitted under this Order shall make the following certification:

   “I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

9. **Notice of Onsite Work:** The Discharger or his authorized agent(s) shall notify Board staff at least 48 hours prior to any onsite work, testing, or sampling that pertains to environmental remediation and investigation and is not routine monitoring, maintenance, or inspection.
10. **Notice of Change in Ownership or Occupancy:** Report Any Changes in Ownership or Occupancy: The Discharger shall file a written report on any changes in the Site’s ownership or occupancy. This report shall be filed with the Central Valley Water Board no later than 30 days prior to a planned change and shall reference the number of this Order.

11. **Submissions:** All monitoring reports, technical reports or notices required under this Order shall be submitted to:

Ashley Hampton  
364 Knollcrest Dr., Ste.205  
Redding, CA 96002  
(530) 224-6130

12. **Other Regulatory Requirements:** The Discharger shall obtain all applicable local, state, and federal permits necessary to fulfill the requirements of this Order prior to beginning the work. For example, FGC section 1602 requires a person or entity to notify CDFW 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. The failure to notify CDFW constitutes a violation of FGC section 1602.

13. **Cost Recovery:** Pursuant to Water code section 13304, the Regional Water Board is entitled to, and may seek reimbursement for, all reasonable costs it actually incurs investigating and abating the effects of the unauthorized discharges of waste and to oversee/supervise the cleanup of such waste, or other remedial action, required by this Order. The Discharger shall enroll in the State Water Board’s Cost Recovery Program and shall reimburse the State of California for all reasonable costs actually incurred by the Regional Board.

14. **Delayed Compliance:** If for any reason, the Discharger is unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Assistant Executive Officer, the Discharger may request, in writing, an extension of the time specified. The extension request shall include justification for the delay. Any extension request shall be submitted as soon as a delay is recognized and prior to the compliance date. An extension may be granted by revision of this Order or by a letter from the Assistant Executive Officer. The Regional Water Board acknowledges that local, state, and federal permits may cause a delay beyond the control of the Discharger and will take all the available relevant facts into consideration when considering whether or not to grant an extension request.

15. **Potential Liability:** If the Discharger fails to comply with the requirements of this Order, this matter may be referred to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability. Failure to comply with this Order may result in the assessment of an administrative civil liability up to $10,000 per violation per day, pursuant to California Water Code sections 13268, 13350, and/or 13385. The Regional Water Board reserves its right to take any enforcement actions authorized by law, including but not limited to, violation of the terms and condition of this Order.
16. **No Limitation of Water Board Authority.** This Order in no way limits the authority of the Regional Water Board to institute additional enforcement actions or to require additional investigation and cleanup of the Site consistent with the Water Code. This Order may be revised as additional information becomes available.

17. **Modifications.** Any modification to this Order shall be in writing and approved by the Regional Water Board, including any potential extension requests.

18. **Requesting Review by the State Water Board:** Any person aggrieved by this or any final action of the Regional Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and Title 23, California Code of Regulations, section 2050 et al. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

This Order is effective upon the date of signature.

[Signature]

Clint E. Snyder, Assistant Executive Officer

[Date]

Attachment 1 – November 21, 2014, Buggy Road Inspection Report

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-12-
20 February 2015

PROPERTY OWNER: Brent Alan Vanderkam

PROPERTY OWNER MAILING ADDRESS: 230 W Tazewell St. #102 Norfolk, VA 23510

ACCESSOR PARCEL NUMBER & COUNTY: APN: 099-120-035-000
                                        Shasta County

PROPERTY PHYSICAL ADDRESS: 11550 Buggy Road, Millville, CA

CONTACT(S): N/A

RESIDENT(S) PRESENT: N/A – There were no residents present on the property during the inspection.

INSPECTION DATE & TIME: 21 November 2014 at 0930

INSPECTED BY: Ashley Hampton, ES, Central Valley Water Board
               Kevin Pfeiffer, EG, Central Valley Water Board
               Patricia Vellines, EG, Central Valley Water Board
               Roy Sherrell, ES, Central Valley Water Board

CONSENT/WARRANT: This inspection was conducted in accordance with an administrative inspection warrant issued 20 November 2014 by the Shasta County Superior Court.

ACCOMPANIED BY: Lieutenant DeWayne Little, California Department of Fish & Wildlife
                  Steven Crowl, Warden, California Department of Fish & Wildlife
                  Tobi Freeny, ES, California Department of Fish & Wildlife

EQUIPMENT USED: Garmin Rino 655t GPS & Two-way Radio
                   Measuring Tape 100 feet
                   Nikon Coolpix AW120 GPS Camera

ATTACHMENTS: Appendix A – Figures 1-2
              Appendix B – Inspection Photographs 1-24
Appendix C – Warrant and Affidavit in Support of Warrant
Appendix D – Berm Volume Calculations

OBSERVATIONS AND COMMENTS

BACKGROUND

On 5 November 2014 California Department of Fish and Wildlife (CDFW) Warden Steven Crowl together with Shasta County Sheriff’s Department Marijuana Investigation Team (MIT) conducted a follow-up overflight of property at 11550 Buggy Road (Site) in response to previous overflights of the area exhibiting evidence of extensive grading and marijuana cultivation adjacent to a dry stream bed.

On 17 November 2014 Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff received a declaration from CDFW Warden Steven Crowl including aerial photographs (Photographs #1-2) from the 5 November overflight. The declaration addressed the Site’s threat to water quality due to lack of erosion control efforts as well as the potential for direct impact from spoils placed in the dry streambed. Confirmation by Warden Crowl with Shasta County Building Division revealed that no grading permits had been issued for the Site. Staff’s review of the photographs and cross reference with ArcGIS software equipped with NAIP Imagery, identified the affected waterway at the Site as an unnamed tributary to Clover Creek a Class I stream that supports migration and spawning of anadromous species. Listed on the State’s Clean Water Act (CWA) 303d list of impaired water bodies for fecal coliform, Clover Creek may be sensitive to contaminants such as: additional coliforms, nutrients, and low dissolved oxygen resulting from nutrient load and organic content. Photographs provided by Warden Crowl also indicated a potential diversion resulting from a western berm constructed across the watercourse, as well as the pooling of potentially contaminated waters along the western side of the graded area. Aerial photographs and discussion of the topographical features in the surrounding area also suggest the possibility that the disturbed area may have supported vernal pools and/or seasonal wetlands during the rainy season.

On 18 November 2014 CDFW officers conducted an additional overflight of the Site and observed that the approximate 93 plants present in the previous overflights conducted in September, October, and early November, had been harvested.

On 20 November 2014 CDFW officers and Shasta County MIT served a search warrant on the residence located on the property at 11550 Buggy Road. The vacant residence revealed evidence of large scale marijuana processing as well as the names and phone numbers of contractors who may have aided in the grading activities associated with the grow site.

Based on the photographic evidence and declaration of Warden Steven Crowl, Central Valley Water Board staff obtained an administrative inspection warrant (included with the Affidavit in Support of Warrant as Appendix C) from the Shasta County Superior Court on 20 November 2014 to inspect the property in question and to document any water quality violations including, but not limited to:

a) Entering the premises and observing the physical conditions,
b) Taking photographs and video of the physical conditions of the site and documenting any processes or activities being conducted,
c) Questioning or conferring with persons present on the property privately,
d) Measuring the pumping rate of surface water diversion, water diversion area, height and facilities
e) Collecting and analyzing samples of water potentially impacted by contaminants of concern,
f) Testing water for pollutants including sediment, fertilizers, pesticides, and

g) Inspecting and duplicating any writings and records of spills or emergencies, business plans, contingency plans, etc.

**ONSITE INSPECTION: 21 November 2014**

On 21 November 2014 at 0830 hours, Ashley Hampton, Roy Sherrell, Kevin Pfeiffer, and Pat Vellines from the Central Valley Water Board, Lt. DeWayne Little, Warden Steve Crowl and Tobi Greely of CDFW (Watershed Enforcement Team) met at the CDFW office in Redding.

Site safety and expectations of serving the Inspection Warrant were discussed, as well as general inspection guidelines and communication protocol. During the inspection, Central Valley Water Board staff carried the original signed warrant and copies of the signed warrant to provide to landowners. See Figure 1 for general site vicinity and location.

At approximately 0930 hours, Central Valley Water Board and CDFW staffs arrived at 11550 Buggy Road APN 099-120-U35-000 (Site) (Figure 1). No persons were present upon arrival. Central Valley Water Board staff collected information at GPS Way Point locations 300-302, took measurements at Way Point locations 305-310 and 312-332 (Figure 2), and GPS Tracks were recorded around the perimeter of the disturbed area to estimate the acreage of disturbed area associated with the grow site (Figures 1 & 2). A large graded area in excess of two acres, two large berms of spoils/side cast, leaking bags of "Dr. Earth's" fertilizer adjacent to nearby standing water, algal blooms, open packages of fungicide, diversion/modification of the streambed by placement of spoils directly within the streambed, as well as sediment plumes heading towards an adjacent ephemeral stream—which Staff identified as an unnamed tributary to Clover Creek—were observed at the Site.

Upon entrance to the grow area, the Watershed Enforcement Team immediately observed an extensive graded area flanked on the west and south by two large berms created from the excavated spoils with no erosion control measures in place (Photographs #1-2). Within the graded area, staff observed 93 cloth grow-bags used to support marijuana plants with trimmings left scattered over the Site (Photograph #3). Water was found ponding on the western interior of the site adjacent to what appeared to be a large mixing/holding tank and along the west berm of the grow site (Photograph #4). A well was located at the top of the hill to the west of the Site between the residence and the western berm. Based on the location of the well, and hosing emanating from the pump house, it is possible that this water may have been used to fill the mixing tank and supply irrigation to the Site. A spray applicator was also observed lying next to the mixing tank (Photograph #5).

Staff located and identified the ephemeral streambed as the unnamed tributary to Clover Creek from the aerial photographs on the north end of the graded section and observed that flow from recent storms ran from east to west towards Clover Creek (Photograph #2). Flow from the ponding water on the west end of the graded area was noticeably moving from the mixing tank locale towards and converging with the ephemeral stream to the north end of the site (Way Point 301; Photographs #6-10). The ponding water showed evidence of significant sediment movement (Photograph #11), as well as potential for high nutrient concentration due to uncontained potting soils and two large leaking bags of "Dr. Earth's Flower Girl" organic fertilizer (containing fish bone, feather, and kelp meals, potassium sulfate, seaweed extract and ProBiotic—soil microbes and mycorrhizae) open and spilling out near the water's edge (Photographs #12-14). The ingredients found in this fertilizer are sources naturally rich in nutrients phosphorus, nitrogen, and potassium. The presence of an algal bloom seen in
Photographs #15-16 is also evidence of high nutrient content in site run-off. Also documented were open packets of an organic bacterial fungicide "Actinovate" (active ingredient: Streptomyces lydicus – a naturally occurring soil bacterium) lying out exposed to the elements (Photograph #17).

Staff then turned their attention to the unnamed tributary to Clover Creek. Staff first observed the upstream portion entering the site through grasses and cobble where natural turbidity of the stream appeared low with little to no sediment (Photograph #19). Way Point 302, Figure 2 marks the section of streambed flowing into the site with relatively low turbidity and where a beetle larva was identified by CDFW Environmental Scientist, Tobi Freeny. Staff documented the altered streambed, the direction of flow through the site, and where the stream picked up sediment converging with run-off from the western end of the grow site (Photographs #2, #19-20). Flow of the stream was rerouted around the obstructing western berm, out of the disturbed area and eventually back to its natural channel (Figure 2; Photographs #2, #21). The berm obstructing the path of the stream is shown in photographs #1-2. Stream flow was significantly slowed (as indicated by ponding in the northwest corner of the Site) and was effectively rerouted after convergence with Site run-off by side-cast from the excavation that had been discharged directly into the streambed.

Equipped with a Garmin Rino 655t, Staff traced the 0.3 mile perimeter of the disturbed area (Figures 1 & 2). Using the area function, the Garmin Rino calculated the disturbed area to be approximately 2.26 acres. Measurement of the distance along the streambed within the perimeter of the disturbed section estimates the length of the altered/disturbed streambed to be about 618 meters. Garmin Way Points 305-310 and 312-332 (Figure 2) were recorded at locations along the berm in conjunction with length measurements alongside the slopes of the berm to estimate the total volume of material excavated. Staff’s minimum calculations, as shown in Appendix D, for total disturbed volume are estimated at 7035 cubic yards; all of which lack erosion control measures. The portion of the spoils placed within streambed exceed 427 cubic yards as calculated via approximate streambed width measured from ArcGIS satellite imagery and average cross sectional area. These are conservative calculations considering the berm’s transect with the streambed is not perpendicular, curving slightly up the streambed and filling a greater area.

As documented in photographs #2, #22, #23, and #24, Staff collected water samples upstream of the disturbed area (Upstream Sample), at the last ponding area before discharge to the stream (Pond/Run-off Sample) and downstream of the ponding area (Downstream Sample). All three samples were analyzed for the following nutrients: nitrite, nitrate, ammonia, total kjeldahl nitrogen, and total phosphorus. Nutrients were not detected in the Upstream Sample. The Pond/Run-off Sample and the Downstream Sample, however, confirm concentrations for both nitrate and total phosphorus. The Downstream Sample also confirmed the presence of ammonia (Table I). Phosphorus is often the nutrient responsible for accelerated eutrophication in lakes and reservoirs. Overabundance of nutrients in water can result in algal blooms, lowered dissolved oxygen concentrations and potential fish kills. Although there have been no national criteria established for concentrations of phosphorus, the Environmental Protection Agency (EPA) recommends that total phosphorus should not exceed 0.05 mg/L in a stream at a point where it enters a lake or reservoir or 0.1 mg/L in streams that do not discharge directly into lakes or reservoirs. Total phosphorus in both Site Run-Off and Down Stream samples exceed these recommendations. These elevated concentrations of nutrients in both the Pond/Run-Off Sample and Downstream Sample, together with phosphorus and nitrogen rich ingredients present in the fertilizer left on site, indicate that the nutrients are originating from fertilizers used and stored on-site and discharging to the surface stream during rain events.
Table I. Laboratory results from samples collected 11-21-2014 and analyzed for nutrients: NO$_2^-$, NO$_3^-$, NH$_3$, TKN, and total P.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Nutrite (mg/L)</th>
<th>Nitrate (mg/L)</th>
<th>Ammonia (mg/L)</th>
<th>Total Kjeldahl Nitrogen (mg/L)</th>
<th>Total Phosphorus (mg/L)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>NO$_2^-$ as (N)</td>
<td>NO$_3^-$ as (N)</td>
<td>NO$_3^-$ as (NO$_3$)</td>
<td>NH$_3$</td>
<td>TKN</td>
</tr>
<tr>
<td>Pond/Run-Off</td>
<td>ND</td>
<td>0.40</td>
<td>1.77</td>
<td>ND</td>
<td>ND</td>
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<tr>
<td>Upstream</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Downstream</td>
<td>ND</td>
<td>0.23</td>
<td>1.02</td>
<td>0.213</td>
<td>ND</td>
</tr>
</tbody>
</table>

Turbidity measurements were analyzed using an Oakton T-100 field turbidity unit by Ms. Freeny at locations upstream (GPS Coordinates 40 37 30.57N, 122 00 29.35W) and downstream (GPS Coordinates 40 37 29.38N, 122 00 36.68W) of the Site’s discharge point. Turbidity measurements downstream exceeded upstream measurements by nearly 30 NTUs where the natural turbidity upstream measured between 1 and 5 NTUs (Table II).

The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition (Basin Plan) lists specific water quality objectives for inland surface waters. These objectives include part, limitations on increased temperature, sediment, settleable and suspended material, and turbidity. Specifically, the Basin Plan lists the following limitations for turbidity attributable to controllable water quality factors:

- Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2.
- Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Table II: Field turbidity measurements on 11-21-2014 taken upstream and downstream of site run-off.

<table>
<thead>
<tr>
<th>Basin Plan Objectives</th>
<th>Natural Turbidity</th>
<th>Increases Shall Not Exceed</th>
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<tr>
<td></td>
<td>Between 1 and 5 NTUs</td>
<td>1 NTU</td>
</tr>
<tr>
<td></td>
<td>Between 5 and 50 NTUs</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Between 50 and 100 NTUs</td>
<td>10 NTU</td>
</tr>
<tr>
<td></td>
<td>Greater than 100 NTUs</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field Measurements</th>
<th>Upstream Location Turbidity (NTU)</th>
<th>Downstream Location Turbidity (NTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Sample #1</td>
<td>3.84</td>
<td>31.8</td>
</tr>
<tr>
<td>Grab Sample #2</td>
<td>3.91</td>
<td>36</td>
</tr>
<tr>
<td>Grab Sample #3</td>
<td>4.07</td>
<td>33.5</td>
</tr>
<tr>
<td>Average Turbidity</td>
<td>3.94</td>
<td>33.4</td>
</tr>
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</table>

NTU, Nephelometric Turbidity Unit
Lastly, Staff collected soil samples of the native-undisturbed soil, the graded soil, as well as a sample of the berm soil for classification (Photographs #23-25). The samples were consistent in their composition, and all appear to be native soils. A representative soil sample was classified by CVWQCB Engineering Geologist, Kevin Pfeiffer using the Unified Soil Classification System (USCS) as follows:

**Group Symbol:** (SC)CB
**Description:** Clayey Sand with Cobbles and Boulders; About 90% high plasticity, moist, firm, homogenous, dark brown (Munsell 3/2 Hue 7.5 YR), no dilatancy fines with some organics. About 8% sub-rounded to sub-angular, coarse grained, poorly graded sands. About 2% sub-rounded to sub-angular, well graded, hard gravels; about 15% (by volume) sub-rounded to sub-angular, well graded, hard cobbles. Trace (by volume) sub-rounded, poorly graded, hard boulders.

Other notes: Soil is organic rich but not an organic soil. Grass roots permeate the sample. Soil had a uniform color of dark brown (Munsell 3/2 Hue 7.5 YR).

This soil classification has been cross referenced with United States Department of Agriculture (USDA) Soil Survey of Shasta County Area, California (1974) and is consistent with Toomes very stony loam (TeD) as identified in the Site’s region. This well-drained soil type is categorized under the hydrologic soil group D and is described as moderate to highly erosive which creates substantial potential for sediment discharge to the Unnamed Tributary due to erosion from rainfall and overland flow to the berms and disturbed areas.

Further investigation and consultation with US EPA and US Army Corps of Engineers will be required to evaluate potential presence of seasonal wetlands or vernal pools throughout the Site’s graded and surrounding areas.

**SUMMARY**

Potential water quality violations at this site include:

1) Basin Plan – Threat to beneficial uses of Clover Creek and its unnamed tributary off of Buggy Road.
2) Construction Storm Water Permit - Greater than 1 acre of disturbed soil without a storm water construction general permit, failure to submit a Notice of Intent.
3) Water Quality – Turbidity violation. Exceeding a 1NTU increase where natural turbidity is between 1 and 5 NTUs. Continued threat to waters of the state via sediment discharge from site grading/side-cast and a lack of erosion control measures at the grow site. Discharge of high concentrations of nutrients (and their potential for lowering dissolved oxygen concentrations) to waters of the state.

**RECOMMENDATION**

Based on the inspection and violations noted above, Central Valley Water Board staff recommends issuing an Order under Water Code section 13304 with a compliance schedule to address the violations and require actions be taken to reclaim the area. Staff also recommends consultation with US Army Corps of Engineers and US EPA to evaluate and confirm presence of wetland/vernal pool habitat within the graded area.
Ashley Hampton
Environmental Scientist

Patricia Vellines, P.G.
Engineering Geologist

Kevin Pfeiffer, G.I.T
Engineering Geologist

Roy Sherrell, MFR
Environmental Scientist

Reviewer Signature

Clint Snyder, P.G.
Assistant Executive Officer
Appendix A - Buggy Road Inspection

See Figures 1-2 Attached
Description of Lines and Units

- Class III Watercourse
- Blue Line Watercourse
- Garmin GPS Track
- Graded/Disturbed Area
- Parcels

Map Created By:
Ashley Hampton
Environmental Scientist
Watershed Enforcement Team
Central Valley Regional Water Quality Control Board
Redding Field Office
Date: 1/2/2015
Photograph 1: Aerial photograph from the 5 November 2014 overflight showing potential for water diversion, lack of erosion control, and possible vernal pool topography suggested by the circular patterns in the landscape.
Photograph 2: Second and closer aerial view from the overflight showing ponding water along the western end of the site and potential algal blooms. Labeling shows the direction of flow observed in the stream (identifying both its natural and diverted channels) and identifies berms and sample locations.
Photograph 3: View of grow site towards west and south berms showing the expanse of the grading/excavation and many of the 93 plant bags.

Photograph 4: View of the southwest corner/entrance showing ponding waters adjacent to large mixing tank with hoses stretching to the northwest end of the site.
Photograph 5: Spray applicator adjacent to mixing tank.

Photograph 6: Water in the southwest corner of the graded site showing evidence of turbidity and algal growth flowing to the northwest corner and intersecting the stream.
Photograph 7: Water flowing between ponding areas.

Photograph 8: Water flowing between ponding areas.
Photograph 9: Water flowing between ponding areas.

Photograph 10: Turbid water in the last ponding area intersecting with the stream at the northwestern edge of the unprotected berm.
Photograph 11: Sediment plume flowing into last ponding area before discharge to the stream.

Photograph 12: Leaking bags of Dr. Earth’s Flower Girl organic fertilizer.
Photograph 13: Leaking bags of Dr. Earth’s Flower Girl organic fertilizer adjacent to ponding water — a potential source of nutrients responsible for algal growth.

Photograph 14: Loose potting soil and perlite adjacent to ponding water.
Photograph 15: Loose potting soil with perlite and evidence of algal growth in ponding water.

Photograph 16: Algal bloom.
Photograph 17: Uncontained, open packets of Actinovate Fungicide – a bacterial fungicide.

Photograph 17: Ephemeral stream entering the site with low turbidity.
Photograph 18: Stream flowing through the site.

Photograph 19: Turbid stream after converging with waters from the site and picking up sediment from the excavated soils, traveling around the berm lying in its natural path.
Photograph 20: Stream carving out a new path around the western berm, leaving the disturbed area heading back towards its natural channel.

Photograph 21: Sample site #1, Pond\Run-Off Sample - collected from final ponding area before it discharges into stream.
Photograph 22:  Sample site #2, Upstream Sample - collected upstream from grow site.

Photograph 23:  Sample site #3, Downstream Sample – collected after convergence of stream with site run-off.
Appendix C

Warrant and Affidavit in Support of Warrant
Christian Carrigan, Director, SBN 197045
Yvonne West, Attorney IV, SBN 221414
Office of Enforcement
California State Water Resources Control Board
1001 I St., 16th Floor
Sacramento, CA 95814
Phone (916) 322-3626
Fax (916) 341-5896

Attorneys for Applicant:
California Regional Water Quality Control Board,
Central Valley Region

SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SHASTA

IN THE MATTER OF THE INSPECTION OF: No.

Buggy Road Parcel
APN 099-120-035-000

AFFIDAVIT IN SUPPORT OF
INSPECTION WARRANT
(Code Civ. Proc., § 1822.50 et seq.)
(Wat. Code, §§ 1051, 13267)

I, Clint Snyder, declare as follows:

1. I am employed by the Regional Water Quality Control Board for the Central Valley
Region ("Central Valley Water Board" or "Board") in the Board's Redding office. I have a
Bachelor of Science in Geology from the California State University, Chico. I have been
employed by the Central Valley Water Board since 2008. Prior to working for the Central
Valley Water Board, I had been employed by VESTRA Resources, Inc. from January 2002 to
During my employment with VESTRA Resources, I was a Senior Geologist, principal, and
member of the Board of Directors.
2. During my time with the Central Valley Water Board, I have worked in various programs, including permitting, enforcement, inspections, site cleanup, underground storage tanks (USTs), and landfills. From January 2011 through February 2013, I was the Supervising Senior for the UST, Site Cleanup, and Land Disposal Unit of the Central Valley Water Board. I am currently the Assistant Executive Officer in the Redding Office of the Central Valley Water Board and manage the Redding office.

3. As Assistant Executive Officer of the Central Valley Water Board's Redding office, I provide Executive Management oversight for all programs conducted by the Board including, Point Source and Non-Point Source Discharge Programs, Water Quality Certification, Storm Water, Timber Harvest, Mines, Site Cleanup, Underground Storage Tanks, Land Disposal, Dairies, Irrigated Lands, and Enforcement Programs. My duties at the Central Valley Water Board include oversight of environmental investigations at various facilities and properties throughout the region for the type and character of water code violations that are frequently associated with marijuana cultivation, such as, discharges of wastes including, but not limited to, earthen materials, chemical reagents, cement wastes, or petroleum products, affect or threaten to affect the quality of waters of the state.

4. I am also the Central Valley Water Board's Lead Prosecution Officer for all matters originating from the Redding Office. This includes Administrative Civil Liability Complaints, Cleanup and Abatement Orders issued pursuant to Water Code section 13304, and all orders for technical reports issued pursuant to Water Code section 13267, and water quality certifications issued pursuant to section 401 of the federal Clean Water Act.

5. This affidavit is made in support of the Central Valley Water Board's request for an Inspection Warrant pursuant to Code of Civil Procedure section 1822.50 et seq., Water Code
section 13267, subdivision (c), and Water Code section 1051; to establish reason to believe that
conditions of nonconformity with the Water Code regarding the cultivation of marijuana and
related activities may exist at the property described below; and to set forth reasons why it is
necessary to have law enforcement personnel accompany the Central Valley Water Board for the
inspection.

PROPERTY

6. The property to be inspected is located along Buggy Road in Shasta County, Assessor’s
Parcel Number (APN): 099-120-035-000 (referred to as the “Property”). Plats and aerial
photographs of the Property are attached as Exhibit A hereto. The Property to be inspected is
within the jurisdiction of the Central Valley Water Board. According to County records, the
current owner of the parcel that constitutes the Property is:

<table>
<thead>
<tr>
<th>APN</th>
<th>Owner</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>099-120-035-000</td>
<td>Brent Alan Vanderkam</td>
<td>230 W. Tazewell St. #102, Norfolk, VA 23510</td>
</tr>
</tbody>
</table>

SUMMARY OF INFORMATION

7. Central Valley Water Board staff has received information from representatives from the
Department of Fish and Wildlife that a person or persons on the Property likely conducted
unpermitted marijuana cultivation operations, along with associated activities including grading,
road construction, construction debris, construction of stream crossings, storage and use of
chemicals and/or fertilizers, fuel tanks, stream diversion, stream dredging, in-stream dams, and
structures. Exhibit B is a report prepared at my direction summarizing the investigation and
information obtained to date. I have discussed the content of exhibit B with Lieutenant DeWayne Little and Warden Steven Crowl from the California Department of Fish and Wildlife (CDFW). Exhibit C is a declaration of Warden Steven Crowl and aerial photographs of the Property taken during an overflight on November 5, 2014. I am fully apprised of the investigation conducted as set forth in Exhibits B and C. I declare that Exhibits B and C are a true and correct summary of that investigation to the best of my knowledge and belief. Furthermore, I incorporate Exhibit B and Exhibit C as if set forth fully herein.

8. As described in Exhibit B, Warden Steven Crowl of the CDFW, along with members of the Shasta County Sheriff Marijuana Investigations Team, conducted an overflight of the Buggy Road area on 5 November 2014 in response to previous overflights of the area alerting them to the presence of the operation. Exhibit C contains aerial photographs taken during the overflight. During the overflight they observed a large scale excavation and grading project supporting the cultivation of Marijuana within a dry tributary. The site appeared to have no erosion control measures in place on the over one-acre operation, and the placement of excavated spoils presents an additional threat to water quality and its beneficial uses. The significant alteration to the tributary as noted during the overflight also suggests a potential unauthorized diversion of water. Follow up with Shasta County Building Division by CDFW confirmed that no documents were issued permitting the grading of this site. Based on his experience, Warden Crowl believes that the site possesses a significant threat to the waters of the State.

9. In my experience and judgment, marijuana cultivation and unpermitted grading activities like those documented in the photographs provided in Exhibit C, and described by Warden Crowl, may be associated with conditions of and/or threatened conditions of, pollution or nuisance resulting from discharges of waste to waters of the State and of the United States.
involving chemicals and/or hazardous wastes from pesticides, fertilizers and leaking fuel tanks or 
other chemical storage containers, earthen materials from grading, road construction, stream 
dredging, in-stream dams, and construction debris from constructing structures and roads, in 
violation of the Porter-Cologne Water Quality Control Act (Wat. Code § 13000 et seq.) and the 
Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.). Such activities may also be 
associated with the diversion, use, and/or storage of water in violation of the California Water 
Code (Wat. Code §§ 1052(a) and 5101).

CENTRAL VALLEY WATER BOARD LEGAL AUTHORITY

10. Water Code section 13050, subdivision (d) defines waste as “any and all other waste 
substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human 
or animal origin, or from any producing, manufacturing, or processing operation, including waste 
placed within containers of whatever nature prior to, and for purposes of, disposal.”

11. Pursuant to Water Code section 13260, any person discharging waste, or proposing to 
discharge waste, that could affect the quality of the waters of the state must file a report of waste 
discharge. A report of waste discharge provides technical information necessary to evaluate the 
characteristics of the discharge site and surrounding region, installed features, operation plans for 
characteristics of the discharge site and surrounding region, installed features, operation plans for 

12. Water Code section 13267, subdivision (a) authorizes the Central Valley Water Board to 
“investigate the quality of any water of the state” within the Central Valley Region. Section 
13267, subdivision (c) states that the Central Valley Water Board “may inspect the facilities of
any person to ascertain whether the purposes of [the Porter-Cologne Water Quality Control Act
(Cal. Wat. Code § 13000 et seq.)] are being met.”

13. Pursuant to Water Code section 1052, subdivision (a), “the diversion or use of water
subject to [Division 2 of the Water Code] other than as authorized [in Division 2] is a trespass.”

Water Code section 5101 requires that persons who divert water shall file annual statements of
diversion and use with the State Water Resources Control Board.

14. Water Code section 1051 authorizes the State Water Resources Control Board to
investigate streams and stream systems, take testimony in regards to water rights or water use,
and to “ascertain whether or not water heretofore filed upon or attempted to be appropriated is
appropriated under the laws of this State.”

SCOPE OF INSPECTION

15. The purpose of the Inspection Warrant is to determine the existence of and, if extant, the
sources of waste discharge or threat of discharge to surface waters, surface water drainage
courses, or ground water and the compliance of those sources with the Porter Cologne Water
1251 et seq.), and to determine the existence of diversions of surface waters and, if extant, the
compliance of those diversions with the California Water Code (Wat. Code § 1000 et seq.).

16. The inspection shall include entering upon and conducting a visual inspection of the
entire Property and conducting and documenting such inspection by taking such samples and
reviewing such writings and records that are kept and maintained on the Property as is necessary
to determine compliance with the statutory provisions cited above. The inspection may include:
(a) entering the Property, observing the physical conditions of the Property, and any equipment located thereon and any operations, processes or other activities being conducted thereon, including, but not limited to, water diversions, graded areas, cultivated areas, road crossings, disposal areas, ponds, surface drainages, watercourses, material stockpiles, storage, and buildings located on the Property;

(b) taking photographs and video of the physical conditions of the Property and any equipment located thereon and any operations, processes or other activities being conducted thereon;

(c) questioning of or conferring with persons present on the Property privately to obtain information bearing on whether violations of the laws and regulations occurred;

(d) the measurement of the pumping rate, if extant; the measurement of each reservoir’s area, dam height, and diversion facilities, if extant;

(e) collecting and analyzing samples of water, raw, graded, processed or stored materials, chemical, fuel, waste, and/or other stored or contained materials;

(f) testing for water pollutants, including but not limited to sediment, fertilizers and pesticides, from any source whether mechanical, process or natural;

(g) inspecting and duplicating any writings and records of spills or emergencies, business plans, contingency plans, or any other information authorized under California Water Code section 13267, subdivision (c).

17. The nature of the marijuana cultivation operations and CDFW’s reports raise concerns regarding the timeliness of executing the warrant, particularly the need to ensure that the owners or occupants do not tamper with evidence, making it reasonably necessary to execute the Inspection Warrant without providing at least twenty-four hour notice. I request that permission
be given to conduct the inspection without notifying the owners or operators of the Property in advance of executing the warrant.

18. The Central Valley Water Board anticipates the execution of the Inspection Warrant may be adversarial and the potential for physical violence may be present. I request that permission be given to conduct the inspection accompanied by the Sheriff and/or other law enforcement personnel, and CDFW’s Law Enforcement Division.

19. Due to the nature of the marijuana cultivation operations and CDFW's reports, I request that permission be given to conduct the inspection with force including but not limited to, cutting chains or forcing open door locks necessary to execute this Inspection Warrant, authorizing law enforcement personnel to detain any persons on the Property who resist, obstruct, or interfere with Central Valley Water Board staff or law enforcement personnel in executing this Inspection Warrant.
WHEREFORE, I respectfully request an Inspection Warrant be issued pursuant to Code of
Civil Procedure sections 1822.50 et seq. to Pamela C. Creedon, Executive Officer of the
California Regional Water Quality Control Board, Central Valley Region, her agents, and
employees to permit an inspection and investigation of the Property named above, as set forth
fully in the Inspection Warrant.

I declare under penalty of perjury that the foregoing is true and correct to the best of my
knowledge, information, and belief.

Executed this 20th day of November 2014 at Shasta County, California.

Mr. Clint Snyder
Assistant Executive Officer
California Regional Water Quality Control Board,
Central Valley Region

Subscribed and sworn before me on this 20th day of November 2014.

Judg e
of the Superior Court, Shasta County
Exhibit B

Buggy Road Unpermitted Grading and Overflight Summary

Initial Investigation

On 5 November 2014 Warden Steven Crowl with the California Department of Fish and Wildlife (CDFW) along with Shasta County Sheriff’s Department Marijuana Investigation Team (MIT) conducted an overflight of a site located of off of Buggy Road in Shasta County. The fly-over was a follow up to previous overflights in the area conducted by CDFW with Lieutenant DeWayne Little which alerted CDFW to the presence of what appeared to be an unpermitted operation. During the overflight investigation on 5 November, Warden Crowl observed large scale excavation and grading of a plot on the parcel within a dry tributary that is being used for the cultivation of marijuana. The site consisted of an excavated area that appears to be in excess of an acre of disturbed land with the fill pushed up into a berm approximately 10 feet in height surrounding the entire grow site. Inspection of the aerial photographs shows additional excavation spoils that appear to have been stockpiled along the western border of the plot within the dry streambed potentially diverting waters from and posing threat of sediment discharge to an unnamed tributary of Clover Creek.

Property Information

Grading operations have been completed on the property without a permit from Shasta County Resource Management. The activity also lacks a Construction General Permit from the Central Valley Water Quality Control Board. Based on the photographic evidence of the placement of spoil piles, lack of erosion control, as well as the observations of Warden Crowl, this site possesses a significant threat to water quality as well as fish and aquatic life. CDFW fully supports the Water Board’s need for an on-site inspection of the property.

The excavated site on the parcel occurs within an unnamed tributary that drains to Clover Creek (below Clover Creek Falls), a Class I tributary of Cow Creek. Cow Creek’s existing beneficial uses as indicated in the Basin Plan include (but are not limited to) the support of cold water habitat (COLD) and migration and spawning of anadromous cold water species (MIGR & SPWN). Warden Crowl noticed no erosion control efforts in place presenting a significant threat of sediment discharge to the unnamed tributary. Given the high potential for fertilizers and pesticides commonly used in marijuana cultivation as well as the current rainy season, the impending threat of discharge of potentially contaminated sediment to both the tributary and Clover Creek requires a joint inspection with CDFW to document the violations that have occurred and gather evidence to support the clean-up and abatement of current activities.

During the inspection, Regional Water Board and CDFW staff would be looking for potential regulatory violations including, but not limited to the following:

- Un-permitted grading.
- Un-permitted road construction.
- Potential sediment discharge from the road construction activities.
- Possible water contamination from use of fertilizers and herbicides/pesticides.
- Potential illegal water diversion from nearby waterways.

The specific parcel associated with the activities associated with marijuana cultivation and grading/excavation activities is:

099-120-035-000

The property associated with the grow site and construction activities has a dwelling adjacent to the site that may likely have occupants. The Water Board is only requesting permission to enter onto the property, not to enter the structure. It is unclear whether the marijuana grow is being performed by a single person, and whether or not the landowners were aware of the activities taking place on his property.

Summary

Based on the information presented by representatives from the CDFW, including the aerial photos provided in Exhibit C, it is the Water Board's position that an inspection of the property by Water Board staff in conjunction with CDFW staff is necessary to protect the beneficial uses of waters of the State. To the best of my knowledge and belief, the information provided in this summary is a true and correct representation of the investigation of the Property to date.

Clint Snyder
Assistant Executive Officer
Attached Photos

Photos 1 & 2 attached below were taken by Warden Steven Crowl during the 5 November 2014 overflight conducted of the property in question, and serve as further evidence for the involvement of the Water Board and CDFW.

Photo 1: Photo shows graded and excavated site next to dwelling with spoils piled on the western side of the graded area. The photograph also shows excavation occurred within and along the dry tributary. No obvious erosion control measures are in place.
Photo 1: Closer photograph showing the accumulation of muddy water towards the north western portion of the graded area and more evidence for lack of erosion control.
Exhibit C

Declaration of CDFW Warden Steve Crowl and Aerial Site Photographs
(Attached)
On 11-05-2014, I conducted an overflight of Shasta County with the Shasta County Sheriff's Department Marijuana Investigation Team (MIT). During the flight, I observed a large scale grading operation on Buggy Rd. with the corresponding GPS coordinates of 40° 37.496'N 122° 0.592'W. Incorporated within the graded area, I saw what based on my training and experience; I recognized as marijuana being cultivated. It appeared that the site was excavated and the dirt spoils were pushed up forming a continuous mound around the perimeter of the grow, and appeared to be 10 feet in height. I also noted the grading was done in a dry tributary, with water beginning to accumulate near the southwest corner. The graded area appeared to be in excess of one acre, and substantially altered the tributary. Based my training and experience, I believe the large scale alteration of the tributary, placement of excavation spoils, and the potential for fertilizers and or chemicals commonly used for marijuana cultivation at the site, could be deleterious to fish and aquatic life. I contacted Shasta County Building Division, and found that no grading permits were issued for the site. There appeared to be no erosion control measures taken at the site. See attached images below taken by me on November 5th 2014.
Based on my training and experience, I believe that the work done in the tributary may be deleterious to fish and aquatic life pursuant to Fish and Game code sections 5650 and 1602.

I declare that this summary and the above photos I took on November 5th 2014, are a true, correct and an accurate representation of the investigation and conditions.

Steven Crowl
Warden
Watershed Enforcement Team
California Department of Fish and Wildlife
601 Locust Street
Redding, CA 96001
(530) 225-2300
Christian Carrigan, Director, SBN 197045
Yvonne M. West, Attorney IV, SBN 221414
Office of Enforcement
California State Water Resources Control Board
1001 I St., 16th Floor
Sacramento, CA 95814
Phone (916) 322-3626
Fax (916) 341-5896

Attorneys for Applicant:
California Regional Water Quality Control Board,
Central Valley Region

SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SHASTA

IN THE MATTER OF THE INSPECTION OF:

Buggy Road Parcel
APN 099-120-035-000

) No.
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PAMELA C. CREEDON, Executive Officer of the California Regional Water Quality
Control Board, Central Valley Region (Central Valley Water Board), and her authorized
representatives:

PROOF, by affidavit, having been made before me by Mr. Clint Snyder:

THAT THERE IS REASON TO BELIEVE that there may exist on property located
along Buggy Road, Shasta County Assessor’s Parcel Numbers (APN): 099-120-035-000
(referred to hereafter as the “Property”), conditions of and/or threatened conditions of, pollution
or nuisance resulting from discharges of waste to waters of the State and of the United States
resulting from the cultivation of marijuana and associated activities including, but not necessarily
limited to, chemicals and/or hazardous wastes from pesticides, fertilizers and leaking fuel tanks
or other chemical storage containers, stream dredging, in-stream dams, grading, road
construction, and construction debris from constructing structures and roads, in violation of the
Porter-Cologne Water Quality Control Act (Wat. Code §§ 13000 et seq.) and the Federal Water
Pollution Control Act (33 U.S.C. § 1251 et seq.); AND the diversion, use, and/or storage of
water in violation of the California Water Code (Wat. Code §§ 1052(a) and 5101);
AND that there is authorization for an inspection by the Central Valley Water Board
pursuant to Water Code section 1051 and Water Code section 13267, subdivision (c), with
respect to the Property identified in Exhibit A to the accompanying Affidavit by Central Valley
Water Board staff, attached hereto and incorporated herein by this reference as required by
California Code of Civil Procedure section 1822.50 et seq. for the issuance of an inspection
warrant:

YOU ARE THEREFORE COMMANDED TO INSPECT, INVESTIGATE, AND
SEARCH.

SAID INVESTIGATION SHALL INCLUDE entering upon and conducting a visual
inspection of the entire Property and conducting and documenting such inspection by taking such
samples and reviewing such writings and records that are kept and maintained on the Property as
is necessary to determine compliance with the statutory provisions cited above.
The inspection shall include, but is not limited to the following:
an) entering the Property, observing the physical conditions of the Property, and any
equipment located thereon and any operations, processes or other activities being
conducted thereon, including, but not limited to, water diversions, graded areas,
cultivated areas, road crossings, disposal areas, ponds, surface drainages, watercourses, 
material stockpiles, storage, and buildings located on the Property;
b) taking photographs and video of the physical conditions of the Property and any 
equipment located thereon and any operations, processes or other activities being 
conducted thereon;
c) questioning of or conferring with persons present on the property privately to obtain 
information bearing on whether violations of the laws and regulations occurred;
d) the measurement of the pumping rate, if extant; the measurement of each reservoir’s area, 
dam height, and diversion facilities, if extant;
e) collecting and analyzing samples of water, raw, graded, processed or stored materials, 
chemical, fuel, waste, and/or other stored or contained materials;
f) testing for water pollutants, including but not limited to sediment, fertilizers and 
pesticides, from any source whether mechanical, process or natural; and 
g) inspecting and duplicating any writings and records of spills or emergencies, business 
plans, contingency plans, or any other information authorized under California Water 
Code section 13267, subdivision (c).

This inspection warrant does not authorize the entry or inspection of any residence that 
may be located on the Property. This inspection shall be reasonably conducted so as to effect as 
minimal an intrusion as possible on the normal operations of the business. You shall not interfere 
with the property owner’s observation of the inspection.

The inspection shall be made during the daylight hours between 8:00 a.m. and 6:00 p.m.

In the event that the inspection cannot be completed in a single day, you may return and reenter
the Property for further inspection as you find necessary on a subsequent day or days, subject to
the daylight-hours restriction above, prior to the expiration of this inspection warrant.

The inspection may be made in the absence of the owner and/or occupant.

The inspection may be made without 24-hour notice to the owner and/or occupant that
the warrant has been issued.

Forcible entry may be used to gain access to the Property.

This inspection shall be for the entirety of the Property located on Buggy Road, Shasta
County, APN: 099-120-035-000, and more particularly described on Exhibit A of the
accompanying Affidavit by Central Valley Water Board staff.

This inspection warrant shall be effective for 14 days, unless extended or renewed, and
shall be executed within the 14-day period and returned to this Court within 10 days from the
date of execution, or within the period of extension or renewal.

Given under my hand and dated this 26th day of November, 2014.


Judge of the Superior Court

Attachments:

Affidavit of Clint Snyder and Exhibits thereto

Exhibit A – ParcelQuest Map of Property

Exhibit B – Investigation Summary

Exhibit C – CDFW Warden Steven Crowl’s Statement
AUTHORIZATION TO EXECUTE IN ABSENCE OF OWNER OR OCCUPANT

FOR GOOD CAUSE SHOWN BY AFFIDAVIT, execution of this INSPECTION WARRANT in the absence of the owner or occupant is hereby authorized, as set forth above and in the affidavit.

Dated: 11-20-14

M Marlow

JUDGE OF THE SUPERIOR COURT, SHASTA COUNTY
### Appendix D

**Berm Volume Calculations**

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<th>West Berm</th>
<th>East Side (Ft.)</th>
<th>Base (Ft.)</th>
<th>West Slope</th>
<th>East Slope</th>
<th>X-section Area (Sq. Ft.)</th>
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<th>North Side (Ft.)</th>
<th>South Side (Ft.)</th>
<th>Base (Ft.)</th>
<th>North Slope</th>
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<th>X-section Area (Sq. Ft.)</th>
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Average Area of Cross Sections (Sq. Ft.) | 156
Length of berm (Ft.) | 136
Total Estimated Volume (Cubic Ft.) | 21195
Total Estimated Volume (Cubic Yards) | 785

Total Estimated Volume of West and South Berms (Cubic Yards) | 7035

Estimated Surface Area of West and South Berms (Sq. Ft.) | 26370
Estimated Surface Area of West and South Berms (Acres) | 0.61

Estimated Average Stream Width Impacted by Fill (Yards) | 8.21
Estimated Fill Placed Within Streambed (Cubic Yards) | 427
Estimated Fill Placed Within Streambed (Gallons) | 861.43
Total Estimated Length of Disturbed/Altered Streambed (Yards) | 68

Garmin Calculated Perimeter of Disturbed Land (Mi.) | 0.3
Garmin Calculated Area of Disturbed Land (Ac.) | 2.26

**Notes:**

*Base of Berm for 3rd cross-section calculated as average of other base widths as GPS waypoint on the East side did not record.