California Regional Water Quality Control Board

North Coast Region

Water Code Sections 13267 and 13383 Investigative Order R1-2020-0026

Directing BoDean, Inc. doing business as Mark West Quarry

To Submit Technical and Monitoring Reports Pertaining to Discharges from the Mark West Quarry

WDID No. 1 49I009813

Sonoma County

The California Regional Water Quality Control Board, North Coast Region (Regional Water Board) finds that:

1. BoDean, Inc. doing business as Mark West Quarry is the operator of the Mark West Quarry located at 4611 Porter Creek Road in Sonoma County (Facility).[1]

2. BoDean, Inc. doing business as Mark West Quarry (the Discharger) currently operates the Facility, enrolled for coverage under the General Permit for Storm Water Discharges Associated with Industrial Activities, State Water Resources Control Board Order 2014-0057-DWQ, NPDES Order No. CAS000001 (Industrial General Permit).

3. Storm water from the Facility discharges into Porter Creek. Porter Creek is a tributary of the Russian River, in the Russian River Watershed, and a water of the State and United States.

4. The Facility operations consist of hard rock mining and materials processing. The Facility mines broken stone which it crushes and processes into aggregate base rock, aggregate subbase, construction grade rock, asphaltic grade rock, and concrete grade aggregates. Facility operations generate fine-grained aggregate, silt, and dust from active mining, material shipping/handling and storage. These operations generate sediment which is transported by storm water to Porter Creek. Total Suspended Solids (TSS) is an indicator of the undissolved

1 Notice of Intent submitted by Dean Soiland, June 19, 2015.

solids that are present in storm water discharge. Suspended particles directly affect water clarity and attenuate light in the water column. Water clarity affects both phytoplankton and submerged aquatic vegetation (SAV), which control primary production in estuarine systems.

5. During a storm event on December 16, 2018, Regional Water Board staff observed sediment-laden storm water in Porter Creek downstream of the Facility.[2] On December 17, 2018, Regional Water Board staff visited the Facility and observed sediment buildup below the eastern outfall that conveys storm water from the Facility to Porter Creek.[3]

6. During storm events on January 9, 2019; January 16, 2019; February 13, February 26; and March 20, 2019, Regional Water Board staff observed sediment-laden storm water discharging from the Facility's eastern culvert that receives runoff from Tributary C.[4] Regional Water Board staff collected samples during each inspection.[5] The laboratory results show elevated total suspended solids (TSS), suspended solids concentration (SCC), and turbidity in the discharge from the Facility relative to upstream conditions.

7. On May 1, 2019, the Regional Water Board issued Investigative Order R1-2019-0029, requiring Facility evaluation and submission of updated documentation to the Stormwater Multiple Application and Report Tracking System (SMARTS). R1-2019-0029 also required that you identify any additional and/or advanced Best Management Practices (BMPs) necessary to prevent the discharge of sediment from the Facility to Porter Creek, and provide a technical report documenting the implementation of the additional and/or advanced BMPs, and/or Storm Water Pollution Prevention Plan (SWPPP) implementation measures, and precipitation based receiving water monitoring.

8. On May 14, May 16, November 26, and December 6, 2019, Regional Water Board staff conducted follow-up inspections. During the course of these inspections, Regional Water Board staff observed three newly installed treatment systems at the Facility. Each treatment system is independently operated and includes a control room, pumps, filter media, chemical flocculants, and four tanks. The treatment systems are intended to remove sediment from the storm water runoff prior to discharge.[6] (Together, Treatment System). The Treatment System was partially in operation (SP-3 component only) during the Regional Water Board's inspection on December 6, 2019.

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2 Photos 1 and 2, December 17, 2018, Regional Water Board Inspection Memo.
3 Photos 3 and 4, December 17, 2018, Regional Water Board Inspection Memo.
4 Investigative Order R1-2019-0029, Precipitation-Based Receiving Water Monitoring, Monthly Monitoring Report, uploaded in SMARTS.
5 January 9, 2019, January 16, 2019, February 13, 2019, and February 26, 2019, Regional Water Board Inspection Memos uploaded to SMARTS.
6 See Figures 1-3, below.

9. On January 29, 2020, the Discharger notified Regional Water Board staff in an email that the Treatment System was fully installed and operational as of January 27, 2020.[7]

10. On January 29, 2020, in response to the Regional Water Board's inquiry of whether any flocculant is used for the Treatment System, the discharger stated that "minimal flocculant (HaloKlear) is being used" via email.

11. Chemical flocculants utilized in the Treatment System may pose a threat to the beneficial uses of Porter Creek as these chemicals may be inadvertently released to receiving water due to system failure, bypass, overflow, spill, or overdosing. Per the Safety Data Sheet (SDS) attached to the Mark West Quarry technical memorandum that has been uploaded in SMARTS on February 29, 2020[8], the specific flocculant used in the Treatment System, HaloKlear BHR-50, consists predominantly of aluminum chloride hydroxide sulfate, which is highly acidic (pH 3-3.5) and may produce aluminum as a precipitate in the receiving water. These qualities may harm sensitive aquatic species, such as fish, and pose a threat to human health, as described in more detail below if the use of this flocculant is not properly managed or in the event of a catastrophic release or system overwhelm.

12. Aluminum adversely impacts beneficial uses related to aquatic life. Elevated levels of aluminum can affect some species' ability to regulate ions, like salts, and inhibit respiratory functions, like breathing. Aluminum can accumulate on the surface of a fish's gills, leading to respiratory dysfunction, and possibly death.[9] Some types of plants and animals are able to tolerate acidic waters and moderate amounts of aluminum. Others, however, are acid-sensitive and will be lost as the pH declines. Generally, the young of most species are more sensitive to environmental conditions than adults. At pH 5, most fish eggs cannot hatch. At lower pH levels, some adult fish die.[10]

13. Per the Water Quality Goals included in the Basin Plan, established by USEPA, and California Division of Drinking Water, Sulfate, which is a constituent of the flocculent used in the Treatment System, can impact drinking water taste and odor, as well as have an adverse human health effect.[11]

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7 January 29 email correspondence from Facility representative uploaded to SMARTS.
8 Technical Memorandum, procedures and documentation for residual flocculant testing, SMARTS ID 2602584, prepared and uploaded by the Facility's consultant (EPS) on February 29, 2020.
9 https://www.epa.gov/wqc/aquatic-life-criteria-aluminum.
10 https://www.epa.gov/acidrain/effects-acid-rain#:~:text=At%20lower%20pH%20levels%2C%20some,plants%20it%20eats%20might%20not.
11 https://public3.waterboards.ca.gov/wqgapps.

14. Lastly, outflow from the Treatment System into Porter Creek has the potential to cause erosion and associated impacts to receiving waters, because it discharges, at a high velocity, to the hillside, where it may erode sediment and transport it into receiving waters.[12] Per USEPA, higher turbidity increases water temperatures because suspended particles absorb more heat. This, in turn, reduces the concentration of dissolved oxygen because warm water holds less dissolved oxygen than cold. Higher turbidity also reduces the amount of light penetrating the water, which reduces photosynthesis and the production of dissolved oxygen. Suspended materials can clog fish gills, reducing resistance to disease in fish, lowering growth rates, and affecting egg and larval development. As the particles settle, they can blanket the stream bottom, especially in slower waters, and smother fish eggs and benthic macroinvertebrates. Sources of turbidity include soil erosion, waste discharge, and urban runoff.[13]

15. The discharge of sediment, metals, including aluminum, and the reduction of pH in receiving waters has the potential to degrade beneficial uses, as designated in the Water Quality Control Plan for the North Coast Region (Basin Plan) for Porter Creek, Mark West Creek, and the Russian River. The Beneficial Uses designated include: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Groundwater Recharge, Freshwater Replenishment, Navigation, Water Contact Recreation , Non-Contact Water Recreation , Commercial and Sport Fishing, Warm/Cold Freshwater Habitat, Wildlife Habitat, Rare, threatened, or Endangered Species, Migration of Aquatic Organisms, Spawning, Reproduction, and/or Early Development.[14]

Legal and Regulatory Authority

16. This Investigative Order (Order), issued pursuant to California Water Code (Water Code) sections 13267 and 13383 conforms to and implements policies and requirements of the Porter-Cologne Water Quality Control Act (Division 7, commencing with Water Code section 13000) including sections 13267 and 13383, and the Basin Plan adopted by the Regional Water Board including beneficial uses, water quality objectives, and implementation plans.

17. Water Code section 13267, subdivision (a), provides that the Regional Water Board may investigate the quality of any waters 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 reports required by this Order will assist the Regional Water Board in determining whether the Discharger has

12 Photo 3b, December 6, 2019, Regional Water Board Inspection Memo.
13 https://archive.epa.gov/water/archive/web/html/vms55.html.
14.https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/180710/BPChapter2BeneficialUses.pdf.

taken, or will take, necessary actions to protect water quality and the beneficial uses of surface waters in the Russian River watershed. The burden of compiling these reports, including the costs associated with collecting the information, bear a reasonable relationship to the benefits that will be obtained from having the necessary information for the Regional Water Board to properly regulate and monitor the Facility and to protect the water quality in Porter Creek.

18. Water Code section 13383, subdivision (a) provides in part that the Regional Water Board may establish monitoring, inspection, reporting, and record keeping requirements for any person who discharges, or proposes to discharge to navigable waters. Porter Creek is a tributary of the Russian River and a water of the United States. Subdivision (b) provides that the Regional Water Board may require any person to establish and maintain monitoring equipment or methods and provide other information as may be reasonably required.

19. Industrial General Permit section XI. Sampling and Analysis, B. 6.c. requires the sampling and analysis of additional parameters identified by the Discharger on a facility-specific basis that serve as indicators of the presence of all industrial pollutants identified in the pollutant source assessment as described in Section X.G.2. These additional parameters may be modified (added or removed) in accordance with any updated SWPPP pollutant source assessment. Additionally, Industrial General Permit section XI. Sampling and Analysis, B.6.f., requires the sampling and analysis of additional parameters if directed by the Regional Water Board.

20. The Discharger's Treatment System, which includes the use of chemical flocculants, may pose a threat to the quality and beneficial uses of receiving waters if not properly operated or maintained or in the event of a catastrophic release or system overwhelm. The appropriate operation of the Treatment System requires a high level of sophistication, constant oversight, and an effective operations and maintenance program that includes both preventive and corrective maintenance activities. Failure to appropriately implement the Treatment System and an associated operations and maintenance program increases the risk to water quality. This Order requires additional monitoring and oversight, as specified below, pursuant to the Industrial General Permit section XX. Special Conditions and Water Code sections 13267 and 13383.

THEREFORE, IT IS HEREBY ORDERED that, pursuant to Water Code sections 13267 and 13383, the Discharger shall provide the following information:

A. Design Verification: The Discharger shall submit a report prepared and stamped by an appropriately qualified, California licensed professional engineer, that demonstrates how the Treatment System outlets are designed and operated in a manner to avoid causing erosion from concentrated flow Treatment System to Porter Creek. This design verification report is due no later than November 9, 2020.

B. Pre-Storm Inspections: Within 48 hours of each Qualifying Storm Event (as defined by the Industrial General Permit) anticipated to produce at least 0.1 inches of rain, the Discharger shall inspect the condition of the Treatment System. The pre-storm inspection shall include a visual inspection of the Treatment System consistent with the Operation and Maintenance Manual. This inspection must include an assessment available of storage capacity, to ensure that the Treatment System is fully operational prior to the storm event. The Discharger will retain these pre-storm inspection reports at the Facility and provide them upon request. The SWPPP will be updated to include these pre-storm inspections.

C. Treatment System Operation and Maintenance Plans and Reports

1) **Treatment System Plan:** The Discharger shall upload to SMARTS a Treatment System Plan no later than October 26, 2020. This plan shall address water discharged from the Treatment System and any bypassed discharge. The Treatment System Plan shall combine Facility specific data and Treatment System information and at a minimum include:

a) **An Operation and Maintenance Manual:** This portion of the Treatment System Plan shall describe how the Treatment System will be operated and maintained to prevent the discharge of flocculant material, flocculant chemicals, chemical byproducts, or any other pollutants into waters of the State or the United States. The Treatment System Operation and Maintenance Manual shall identify the Treatment System operators, their training and certification, and the operators' emergency contact information.

i) **Residuals Management:** The Operation and Maintenance Manual shall include a plan to remove sediment from the storage or treatment cells as necessary to ensure that the cells maintain their required water storage (i.e., volume) capacity. Sediment removed from the Treatment System shall not be stored in a manner that could result in the material being conveyed to surface waters, consistent with requirements of the Industrial General Permit. Records of the data and quantity of removed material, characterization, disposal location, and manifests as necessary, shall be retained at the Facility and made available upon request.

ii) **Filtration System Operation:** The discharger shall ensure that differential pressure measurements are monitored according to the Operation and Maintenance Manual to confirm that the final filter stage is functioning properly prior to each QSEs. Operation data and maintenance data shall be retained at the Facility and made available upon request.

b) **A Health and Safety Plan:** To ensure the safe handling and management of the Treatment System by Facility staff, this plan shall address the health hazards and risks associated with the handling of and exposure to all chemicals and materials associated with the Treatment System, protocols for proper handling, Personal Protective Equipment (PPE) needed, appropriate first aid, location of first aid equipment, and emergency response plan.

c) **A Spill Prevention and Response Plan:** This plan shall describe how the Discharger will prevent the release of any materials and/or pollutants associated with the operation, maintenance, or repair of the Treatment System and it shall outline proper procedures to respond to any spills if they occur. This plan should identify all potential pollutants and their sources, and shall include necessary Safety Data Sheet and other reference information, 24-hour emergency response numbers and procedures, location and type of clean up and containment materials, and training records for all staff who may need to utilize the Spill Prevention and Response Plan.

D. **Monitoring and Sampling Reports:** The Discharger shall retain at the Facility all visual monitoring reports, data logs, toxicity monitoring and testing reports, and jar test reports. They shall be made available to the Regional Water Board upon request.

1. **Visual Monitoring:** The Discharger shall designate, in its Treatment System Operations and Maintenance Plan, the person responsible for daily visual inspections during operations of the Treatment System and during discharge events and as required by manufacturer specifications to ensure the system is fully operational and waste discharges meet all applicable requirements.

2. **Operational and Compliance Monitoring:** The discharger shall conduct the following:

a) Flow shall be continuously monitored and recorded for total volume treated and discharged.

b) Influent and effluent pH must be continuously monitored and recorded

c) Influent and effluent turbidity (expressed in NTU) must be continuously monitored and recorded at not greater than 15-minutes intervals.

d) The type and amount of chemicals used for pH adjustment, if any.

e) Dose rate of all chemicals, such as flocculants, used in the Treatment System, and any residuals present in the effluent (expressed in mg/L) shall be monitored and recorded 15-minutes after startup and every 8

hours of operation. This data shall be retained at the Facility and made available upon request.

3. **Toxicity Monitoring and Testing:** The Discharger shall test acute toxicity on effluent samples annually while the Treatment System is discharging during a QSE. The Discharger shall select an approved testing methodology for Whole Effluent Toxicity (WET method) as outlined by USEPA and all applicable quality assurance methods.[15] The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, USEPA-841-R-02-012" for Fathead minnow, *Pimephales promelas* (fathead minnow). Acute toxicity for *Oncorhynchus mykiss* (Rainbow Trout) may be used as a substitute for testing fathead minnows.

4. **Jar Tests – Chemical Coagulation/Flocculation:** Jar tests shall use water samples selected to represent typical Facility conditions and in accordance with ASTM D2035-08 (2003).

   a) The Discharger shall conduct, at a minimum, six site-specific jar tests (per polymer, with one test serving as a control) monthly during operation of the Treatment System, to determine the proper flocculent use and dosage levels for effective system operation.

   b) Single field jar tests may also be necessary if conditions warrant, for example if activities disturb changing types of soils, which consequently cause change in storm water and runoff characteristics.

E. Notification and Reporting

The following information must be provided at a minimum when reporting any of the conditions described in items 1 through 3 below:

- Description of the incident including the location, time, quantity, cause, if the incident is ongoing, immediate corrective actions undertaken or any additional corrective actions and/or cleanup and abatement order.

- In addition, provide any additional pertinent information necessary to describe the incident and remediation.

1. The Discharger shall upload to SMARTS, within thirty (30) days of data collection, the field sampling sheets, measurements, and photographic documentation from the Facility monitoring. All lab analyzed results shall be uploaded no more than thirty (30) days after analytical reports are made available to the Discharger from the laboratory.

15 https://www.epa.gov/cwa-methods/whole-effluent-toxicity-methods.

2. The Discharger shall notify the Regional Water Board by email at northcoast@waterboards.ca.gov with a copy to Farzad.Kasmaei@waterboards.ca.gov, no more than 24 hours after an unauthorized discharge of pollutants to waters of the State or the United States, or if any other water quality problems, including but not limited to:

   a) Any other unauthorized discharges, including treatment system bypass, overwhelm, or release of chemical including flocculent;

   b) Any exceedance of the Basin Plan turbidity objective (20 percent above background/upstream samples) (Basin Plan, page 3-6, section 3.3.17);

   c) Any lab analysis that demonstrates toxicity; or,

   d) Any exceedance of the Hydrogen Ion (pH) objectives for the Russian River HU (<6.5 or >8.5) (Basin Plan, page 3-11, Table 3-1 Specific Water Quality Objectives for the North Coast Region).

3. For discharges that include potentially toxic releases or in the event of a catastrophic failure of the Treatment System during a QSE, provide immediate notice to the Regional Water Board by phone (707) 576-2220 and by e-mail at the email addresses specified it item E.2 above.

F. Provisions

1. **Quality Assurance and Quality Control (QA/QC):** The Discharger shall ensure that the Treatment System is equipped with instrumentation that automatically measures and records effluent water quality data and flow rate for the required monitoring. The minimum data recorded shall be consistent with the monitoring and reporting requirements as articulated in this Order. The Discharger shall report training credentials for personnel who monitor, collect and handle samples, identify the certified laboratory to be used, and describe the sampling methods used.

   a) All laboratory analysis shall be conducted by a Department of Health Services (DHS) Environmental Laboratory Accreditation Program (ELAP) certified laboratory using an appropriately sensitive method to demonstrate compliance with water quality standards.

   b) The Discharger shall specify in the reports the calibration methods and frequencies for all system and field instruments used**.**

   c) The Discharger shall ensure that the Method Detection Limits utilized for each residual coagulant measurement method are adequately sensitive to determine compliance with this Order and other applicable requirements.

2. **Use of Registered Professionals:** The Discharger shall provide documentation that each technical report required by this Order was prepared under the direction of appropriately qualified professionals. In preparing each technical report required by this Order, any engineering or geologic evaluations and judgments must be performed by or under the direction of registered professionals pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. A statement of qualifications and registration numbers of the responsible lead professional shall be included in the report submitted by the Discharger. The lead professional shall sign and affix his or her registration stamp to the report. The Discharger's reliance on qualified professionals promotes proper planning, implementation, and long-term cost-effectiveness of investigation, and cleanup and abatement activities. Professionals shall be qualified, licensed where applicable, and competent and proficient in the fields pertinent to the required activities.

3. **Signatory Requirements:** The technical reports shall be signed and certified by either Legally Responsible Person (LRP) or by the designated Duly Authorized Representative in SMARTS, or the person with overall responsibility for environmental matters for the Discharger. Additional reports submitted in support of the technical report must be signed by the principal author.

4. **Certification Statement:** Any report submitted in response to this Order shall be signed and include the following perjury statement:

   I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5. **Report Submittal:** The technical reports shall be uploaded to SMARTS and submitted electronically to:

   North Coast Regional Water Quality Control Board at
   NorthCoast@waterboards.ca.gov
   and the State Water Resources Control Board Stormwater Multiple Application and Report Tracking System (SMARTS)

G. Notifications

1. **Enforcement Discretion:** The Regional Water Board reserves its rights to take any enforcement action authorized by law for violations of the terms and conditions of this Order. Furthermore, compliance with this Order is wholly distinct from any possible enforcement that may follow from the discharges themselves, pursuant to violations of the Water Code or other orders issued by the Regional Water Board.

2. **Enforcement Notification:** Pursuant to Water Code section 13268, failure to submit the required technical reports as required by Water Code section 13267(b), or falsifying any information provided therein, may result in the imposition of administrative civil liability of up to $1,000 per violation per day. Any actual unauthorized discharge to waters of the United States may subject the Discharger to up to $10,000 for each day of discharge, and $10 for each gallon over 1,000 gallons not cleaned up pursuant to Water Code section 13385. The Regional Water Board may refer this matter to the Attorney General for enforcement in civil court. The Regional Water Board reserves its rights to take any further enforcement action authorized by law.

3. **California Environmental Quality Act Compliance:** The issuance of this Order is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations, section 15306. The submission of technical information does not constitute a project with environmental impacts.

4. **Appeal Notification:** Any person aggrieved by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00pm, 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 (including mandatory furlough days), the petition must be received by the State Water Board by 5:00pm on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: https://www.waterboards.ca.gov/public_notices/petitions/water_quality/ or will be provided upon request.

It is hereby ordered.

Digitally signed by Claudia E. Villacorta
Date: 2020.10.19 14:35:44 -07'00'

Claudia Villacorta, P.E.
Assistant Executive Officer

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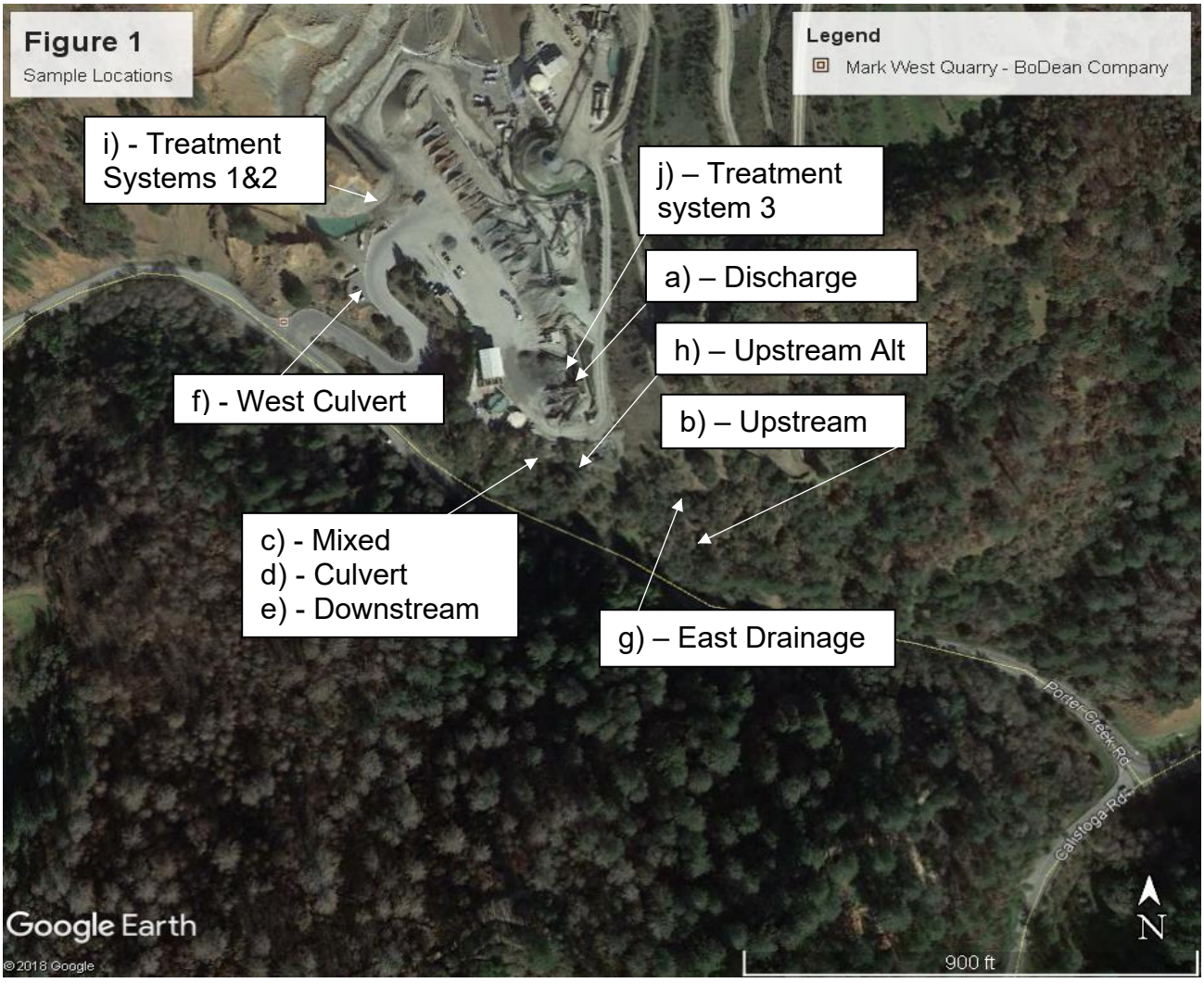

Figure 1: Site map – Treatment System and sample locations

Figure 2: Newly installed treatment systems # 1 & 2

Figure 3: Newly installed treatment systems # 3