

Summary

Alternative Compliance Plan for Water Right (A012248)

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INTRODUCTION

See [Information and Instruction Sheet](#) for assistance in completing this form. The form shall be completed by the water right owner, their agent, or for an Alternative Compliance Plan filed for a group, the designated contact. The vast majority of water right owners should be able to meet the measurement requirements. Participation in an Alternative Compliance Plan does not relieve the participant of the independent obligation to file an online annual Report of Water Diversion and Use.

All sections of the form below must be completed. An incomplete form does not excuse non-compliance with the regulation or release you from the obligation to measure. The Alternative Compliance Plan may not be used to avoid measurement and monitoring, but should be used to describe an alternative method of measurement and monitoring which will provide the information required by the Regulation. Estimated diversion records may not meet the Regulation's accuracy requirements without supporting documentation.

Note: The large text boxes in the form have a character limit of 2,000 characters. Responses requiring more than 2,000 characters for a particular text box should be submitted as an attachment in Section I of this form. Additional information should be attached in Section I.

SECTION A - WATER RIGHT OWNER INFORMATION

This section of the form describes the information that is required for each water right or claimed right covered under the Alternative Compliance Plan.

In Section I, attach a table (in Microsoft Excel .xlsx, comma-separated .csv, or tab-separated .txt format) containing the Application or Statement Number for each water right covered under the Alternative Compliance Plan. For your water right, answer the questions below.

(1) Owner Name(s) *

Richard Berglund

(2) Email Address *

[REDACTED]

(3) Phone Number *

[REDACTED]

(4) Mailing Address Line 1 *

[REDACTED]

(5) Mailing Address Line 2:

(6) City *

Trinity Center

(7) State *

CA

(8) Zip Code *

96091

(9) Is the Water Right Owner also the Primary Contact? *

☒ Yes

☐ No

On questions 10 through 13, please tell us what you understand the requirements of the regulation to be for this water right to be.

(9) Installation Deadline *

☐ January 1, 2017

- ☐ July 1, 2017
- ☒ January 1, 2018

(10) Measurement Accuracy *

- ☐ 10%
- ☒ 15%
- ☐ Other, as specified in the Alternative Compliance Plan (if submitted)

(11) Required Monitoring Frequency *

- ☐ Hourly
- ☐ Daily
- ☒ Weekly
- ☐ Monthly

(12) Qualifications of the Individual Installing/Certifying *

- ☐ A California Licensed Professional Engineer (PE), a person working under the supervision of a California PE, a California-licensed contractor authorized by the State License Board for C- 57 well drilling or C- 61 Limited Specialty/D-21 Machinery and Pumps, or a Hydrologist or Engineer employed by a Federal Agency
- ☐ A person trained and experienced in water measurement (for diversions of less than 100 acre-feet per year - no specific training is required; the person using any equipment and reporting the information must know how to use the equipment and submit correct information)

SECTION B - INFORMATION ON PRIMARY CONTACT

This section of the form includes the contact information for the primary contact associated with the Alternative Compliance Plan.

(1) Name(s): *

(2) Phone Number: *

(3) Email Address: *

(4) Mailing Address Line 1: *

(5) Mailing Address Line 2:

(6) City: *

(7) State: *

(8) Zip Code: *

(8) The Alternative Compliance Plan Primary Contact is a(n): *

- ☐ Water Right Owner
- ☐ Agent

SECTION C - INFORMATION ON QUALIFIED INDIVIDUAL

This section of the form includes the contact information for the Qualified Individual certifying the Alternative Compliance Plan.

(1) Name(s): *	<input type="text" value="Brett Vivyan"/>
(2) Phone Number: *	<input type="text" value=""/>
(3) Email Address: *	<input type="text" value=""/>
(4) Mailing Address Line 1: *	<input type="text" value=""/>
(5) Mailing Address Line 2:	<input type="text" value=""/>
(6) City: *	<input type="text" value="Eureka"/>
(7) State: *	<input type="text" value="CA"/>
(8) Zip Code: *	<input type="text" value="95501"/>
(9) The qualifications of the individual certifying the Alternative Compliance Plan are: *	<div><p><input checked="" type="radio"/> California Licensed Professional Engineer (PE)</p><p><input type="radio"/> Person working under the supervision of a California Professional Engineer</p><p><input type="radio"/> California-licensed contractor authorized by the State License Board for C- 57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps</p><p><input type="radio"/> Hydrologist or Engineer employed by a Federal Agency</p><p><input type="radio"/> Person trained and experienced in water measurement (for diversions of less than 100 acre-feet per year - no specific training is required; the person using any equipment and reporting the information must know how to use the equipment and submit correct information)</p></div>
(10) Qualifying Individual's PE or Contractor license number, if applicable:	<input type="text" value="84167"/>

SECTION D - REQUEST FOR ALTERNATIVE COMPLIANCE

Water right holders who divert more than 10 acre-feet of water per year are required to measure the water they divert. A diverter may choose any measuring device, or combination of devices, that meet the measurement and monitoring requirements of the regulation. The measurement requirements are summarized on the [Reporting and Measurement Webpage](#) .

For each box checked in questions 1a through 3 below, submit a detailed explanation and attach substantiating documentation.

(1a) Diverter is seeking alternative compliance from the requirement(s) checked below. *

- ☒ Measuring Device Location
- ☐ Required Accuracy
- ☐ Certification of Accuracy
- ☐ Installation and Maintenance
- ☐ Monitoring Frequency
- ☐ Telemetry
- ☒ Other (describe in Section 1b)

(1b) Provide additional information for each of the reasons selected in question 1a: *

The diverter is seeking alternative compliance for the measuring device location due to site safety and accessibility during rain event, high flow and snow. The point of diversion is located on an unnamed tributary to the Trinity River. Access to the diversion location is provided along a narrow footpath, winding along the steep, rocky banks of the creek. During high flows, the diversion and access path may be submerged under fast moving water, rendering the site unsafe. During winter, when snow depth can reach multiple feet, the site is inaccessible due to safety concerns accessing the diversion along the steep slopes and buried under the snow. Photos of the diversion location are provided in Attachment 1. The diverter is also seeking the approval of an alternative measurement method. Diverted water is utilized in three micro-hydro power stations and six irrigation sprinklers. Flow at each Pelton wheel nozzle and irrigation sprinkler may be calculated based on pressure and nozzle diameter at each location. The flow is steady state, as changes in head at the diversion location have an insignificant effect on pressure at the outlet locations.

(5000 character max.)

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(2a) Alternative compliance is being pursued because strict compliance with one or more of the requirements for measuring and monitoring (check all that apply): *

- ☒ Is not feasible.
- ☐ Would unreasonably affect public trust resources.*
- ☐ Is unreasonably expensive.**
- ☐ Would result in the waste or unreasonable use of water.

* Including fish, wildlife, recreation, navigation, and aesthetic values.

** Plans claiming that strict compliance is unreasonably expensive shall be accompanied by an attached supporting cost analysis. The cost analysis should compare the cost of the proposed alternate measuring devices to the cost of the measurement devices required by the Regulation. All Plans shall include a budget and shall identify sources of financing. The budget should provide sufficient detail to show the cost of the proposed alternate measuring devices, the cost of obtaining any necessary permits, and the cost of installation.

(2b) Provide additional information for each justification selected in question 2a: *

Strict compliance for monitoring at the point of diversion is infeasible due to accessibility issues described above and system configuration. A single diversion pipe feeds a spring box where three separate pipes convey diverted water for power supply and irrigation. Water that is not conveyed through the three system pipes is returned to the stream. Much of the system, consisting of 4,680 feet of 2" PVC pipe would need to be replaced to achieve strict compliance.

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(3a) Alternative compliance is requested under the following categories (check all that apply): *

- ☐ Highly variable flow rate at point of diversion.
- ☒ Point of diversion is inaccessible a portion of the year due to weather or other on-site conditions.
- ☐ Point of diversion is under tidal influence
- ☒ There is an existing measuring device or measurement method in use.
- ☐ Water is corrosive to measurement equipment.
- ☐ The diversion is measured by another entity (identify entity and method of measurement used).
- ☐ Other (provide complete description in section 3b)

(3b) Provide additional information for each of the categories selected in question 3a: *

Access to the diversion location is provided along a narrow footpath, winding along the steep, rocky banks of the creek. During high flows, the diversion and access path may be submerged under fast moving water, rendering site access unsafe. During winter, when snow depth can reach multiple feet, the site is inaccessible due to safety concerns accessing the diversion along the steep slopes and buried under the snow. Photos of the diversion location are provided in Attachment 1. The diverter is also seeking the approval of an alternative measurement method. Diverted water is utilized in three micro-hydro power stations and six irrigation sprinklers. Flow at each Pelton wheel nozzle and irrigation sprinkler may be calculated based on pressure and nozzle diameter at each location. The flow is steady state, as changes in head at the diversion location have an insignificant effect on pressure at the outlet locations. Duration of use at each of these locations is logged, providing the ability to calculate the volume of water used based on the calculated flow rate and duration of use at each location.

(5000 character max.)

3

(4) Alternative Compliance Plans shall include alternative, objective measurement and performance standards that achieve the closest attainable compliance. Describe the measurement or alternative to measurement that will be used at each point of diversion in the plan to achieve closest attainable compliance. *

Diverted water is utilized in three micro-hydro power stations and six irrigation sprinklers. Flow at each Pelton wheel nozzle and irrigation sprinkler may be calculated based on pressure and nozzle diameter at each location. The flow is steady state, as changes in head at the diversion location have an insignificant effect on pressure at the outlet locations (static head differential between diversion location and nozzles is approximately 159-194 ft). Pressure and nozzle diameter at each location were measured and the following equation was used to determine flow rate: $Q = 28.9 \times D^2 \times P^{1/2}$ where: Q = flow rate of water from nozzle (gpm) D = nozzle diameter (inches) P = pressure at nozzle (psi) The measured nozzle diameter, pressure and resulting flow rate are listed below: Power Generation Location 1 Nozzle 1: 61 psi, 3/8-inch diameter, 31.8 gpm Nozzle 2: 61 psi, 3/8-inch diameter, 31.8 gpm Power Generation Location 2 Nozzle 1: 75 psi, 3/8-inch diameter, 35.2 gpm Irrigation Line Sprinklers 1-6: 75 psi, 5/32-inch diameter, 6.1 gpm Using the flow rates listed above, the diverted records the hours of operation and determines the volume of water used with the following equation: $V = Q \times t$ Where: V = Volume of water diverted (gallon) Q = Flow at nozzle (gpm) t = duration of usage (min) This volume of water may then be converted to acre-feet for reporting using the conversion 1 acre-ft = 325,851 gallons.

(5000 character max.)

SECTION E - AREA COVERED BY THE ALTERNATIVE COMPLIANCE PLAN

Summarize the following for each water right covered by the Alternative Compliance Plan. In Section I, attach maps, aerial photographs, or other renderings showing the area covered by the Alternative Compliance Plan and delineating the acreage of each place of use served. For the area covered by the Alternative Compliance Plan, include a list of assessor's parcel numbers and the current owner of each parcel.

(1) Provide a general description of the area covered by the Alternative Compliance Plan. *

The area covered by the Alternative Compliance Plan includes three parcels located along Bear Creek Loop, adjacent to the Trinity River, in Trinity Center, California. The parcels are surrounded by National Forest and are partially forested, with gravel access roads, trails, cleared lawn areas, landscaped areas, dwelling units and out buildings.

(5000 character max.)

(2) Describe all diversion and conveyance works covered by the Alternative Compliance Plan. *

Diverted water is utilized in a gravity micro-hydro system and for lawn irrigation. Power is generated and stored on an as-needed basis year-round and supplemented with a small photovoltaic system. Lawn irrigation is implemented during the dry summer months as needed. The point of diversion is located on an unnamed tributary to the Trinity River. A single pipe diverts a portion of the flow from the unnamed creek to a spring box located along the stream side at elevation 3,330 ft. Three separate 2-inch diameter pipes then convey diverted water for power supply and irrigation to lower elevations. Excess water that is not conveyed through the three system pipes is returned to the stream. Two separate, 1,280 feet long pipes, each convey flow to a power generation location with two separate Pelton wheels at elevation 3,171 feet for power supply to two dwelling units. Pressures at each of the 3/8-inch diameter discharge nozzles is 61 psi, resulting in a 31.8 gpm stream of water directed against the impulse blades of each Pelton wheel. Discharge from the Pelton wheels is conveyed through a series of pipes, small ponds and open channels before being returned to the Trinity River. One 2,120 foot pipe conveys flow to a

power generation location with one Pelton wheel at elevation 3,136 feet. Pressure at the 3/8-inch diameter discharge nozzle is 75 psi, resulting in a 35.2 gpm stream of water directed against the impulse blades of each Pelton wheel. Discharge from the Pelton wheels is conveyed through a series of pipes, small ponds and open channels before being returned to the Trinity River. Flow from the single 2,120 foot pipe is split for lawn irrigation, upstream of the power generation location. Flow for irrigation is services six sprinklers. Pressure at the 5/32-inch diameter sprinkler heads is 75 psi, resulting in a flow rate of 6.1 gpm at each of the six sprinklers.

(5000 character max.)

(3) Describe the type(s) of Beneficial Use(s). *

Consistent with the Beneficial Uses identified in the North Coast Basin Plan for the Upper Trinity River Hydrologic Area, diverted water has the following Beneficial Uses: • domestic supply • groundwater recharge • hydropower generation • wetland habitat

(5000 character max.)

(4) Have you attached a list of assessor's parcel numbers and the current owner of each parcel covered by the Alternative Compliance Plan? (Attachments may be made under Section I of this form.) *

☒ Yes | ☐ No

SECTION F - MEASUREMENT AND MONITORING

(1) For each Point of Diversion listed in the Alternative Compliance Plan, describe how the water is measured. *

Diverted water is utilized in three micro-hydro power stations and six irrigation sprinklers. Flow at each Pelton wheel nozzle and irrigation sprinkler may be calculated based on pressure and nozzle diameter at each location. The flow is steady state, as changes in head at the diversion location have an insignificant effect on pressure at the outlet locations (static head differential between diversion location and nozzles is approximately 159-194 ft). Pressure and nozzle diameter at each location were measured and the following equation was used to determine flow rate: $Q=28.9 \times D^2 \times P^{1/2}$ where: Q= flow rate of water from nozzle (gpm) D= nozzle diameter (inches) P= pressure at nozzle (psi) The measured nozzle diameter, pressure and resulting flow rate are listed below: Power Generation Location 1 Nozzle 1: 61 psi, 3/8-inch diameter, 31.8 gpm Nozzle 2: 61 psi, 3/8-inch diameter, 31.8 gpm Power Generation Location 2 Nozzle 1: 75 psi, 3/8-inch diameter, 35.2 gpm Irrigation Line Sprinklers 1-6: 75 psi, 5/32-inch diameter, 6.1 gpm Using the flow rates listed above, the diverted records the hours of operation and determines the volume of water used with the following equation: $V=Q \times t$ Where: V=Volume of water diverted (gallon) Q=Flow at nozzle (gpm) t=duration of usage (min) This volume of water may then be converted to acre-feet for reporting using the conversion 1 acre-ft = 325,851 gallons.

(5000 character max.)

(2) Identify the measurement accuracy associated with the measurement devices. *

A Orbit water pressure gage (Model #91130) used to measure the pressure resulted in an accuracy of approximately 6%.

(5000 character max.)

(3) Describe how the accuracy of the Alternative Compliance Plan was calculated. *

An Orbit water pressure gage (Model #91130) was used to measure the pressure at each discharge location. The measured pressure of 61 psi and 75 psi resulted in calculated flow rates of 31.74 gpm and 34.24 gpm, respectively. The resulting range of pressure and flow to achieve 15% accuracy would be as follows: For the measured 31.74 gpm; a range of 27.0 to 36.5 gpm is acceptable, which translates to a psi range of 44.1-80.7 psi For the measured 34.24 gpm; a range of 29.9 to 40.5 gpm is acceptable, which translates to a psi range of 54.2-99.2 psi An accuracy of 15% was confirmed at location 1 by timing how long a 5 gallon bucket took to fill. A flow rate of approximately 30 gpm was determined from this approach, which is well within the 15% accuracy at this location with a range of 27.0 gpm to 36.5 gpm.

(5000 character max.)

SECTION G - IMPLEMENTATION SCHEDULE (IF NECESSARY)

(1) If applicable, describe the implementation schedule for the Alternative Compliance Plan, including objective milestones from date of filing through final implementation. Milestones should include date of completion for construction and testing, expected dates of issuance of required permits, and expected date for compliance with the California Environmental Quality Act:

The diverter has been tracking hours of operation for power generation and irrigation and is ready to implement the Alternative Compliance Plan's method for measuring flow on January 1, 2018.

(5000 character max.)

An Alternative Compliance Plan shall be submitted and implemented by the established regulatory deadlines (see form instructions for additional information) unless a Request for Additional Time has been granted.

SECTION H - OTHER PERMITS

(1) Describe any other permits required to implement the Alternative Compliance Plan. Include information on the agency that will issue the permit, and the expected date of issuance.

No other permits are required to implement the Alternative Compliance Plan.

(5000 character max.)

SECTION I - ATTACHMENTS



(1) Attach documents that support the Alternative Compliance Plan.

Choose File

No file selected

Upload

(Uploaded files:)

[Attachment 1- Site Photos.pdf](#)

[Attachment 2- Assessor's Parcel Numbers.pdf](#)

[Attachment 3- Site Map.pdf](#)

0%

(2) Provide a brief description of the attached documents.

The following attachments are referenced in the survey and described below: Attachment 1: Site Photos- The photos are intended to show the diversion system to support the need for alternative compliance for water diversion requirements. Attachment 2: Assessor's Parcel Numbers- listed parcel numbers for the diversion site and parcels serviced by the diverted water Attachment 3: System Site Map- Map of the site to provide system detail and measured parameters.

(5000 character max.)

SECTION J - IMPORTANT INFORMATION AND SIGNATURES

Each participant in an Alternative Compliance Plan (Plan) must sign this form or an "opt-in" form that must be retained by the Plan manager. Attach a listing of participants, as needed, in Microsoft Excel .xlsx, comma-separated .csv, or tab-separated .txt format. By signing this form or the Plan's "opt-in" form, each Plan participant acknowledges that the Plan will be timely implemented and that the measurement of diversions will substantially comply with the Measurement Regulation. Further, each Plan participant acknowledges that the water rights covered by the Plan will not be exercised outside the scope of the Plan. Each Plan participant is responsible for promptly informing the Division of Water Rights or Delta Watermaster, as appropriate, if the participant withdraws from the Plan. The Plan manager is responsible for promptly informing the Division of Water Rights or the Delta Watermaster, as appropriate, if the Plan is modified or abandoned or if the Implementation Schedule is adjusted.

I hereby certify that the information in this Alternative Compliance Plan is true to the best of my knowledge and belief and that the Alternative Compliance Plan is in compliance with the requirements of Title 23, Division 3, Chapter 2.8, Section 931 through 938 of the California Code of Regulations. *

☒ Yes | ☐ No

Printed Name *

Brett Vivyan

Division of Water Rights and Delta Watermaster staff may or may not evaluate the contents of an Alternative Compliance Plan at the time of receipt. Staff will initially determine if all the information has been filled out, and accept the Alternative Compliance Plan as complete or return it as incomplete. An Alternative Compliance Plan may be reviewed for compliance purposes at any time or as part of a systematic audit.