

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-10240
Exam Date: May 7, 2019

1. Current Owner:
BOISE PROJECT BOARD OF CONTROL
2465 OVERLAND RD
BOISE ID 83705

The Boise Project Board of Control (BPBC) was one of the protestants to the US Bureau of Reclamation's (USBR)'s 1984 application for this permit. The BPBC is now the permit holder. An assignment of the application for permit was processed in 1991.

2. Accompanied by: Ashley Ritter (IDWR State Office personnel), and Boise Project Board of Control personnel: Derek Fitzwater, operator and Mike Kukla, Project Administrator/District Coordinator Lucky Peak Power Plant Project To contact Mike Kukla directly, use the following:
Phone No: 208-344-7022
Address: (mike@luckypeakpower.org)

3. **SOURCE:** BOISE RIVER Tributary
SNAKE RIVER

Method of Determination: comparison of the permit with the USGS DRG image available in ArcMap

B. OVERLAP REVIEW

1. Other water rights with the same place of use: No Overlap

Water Right No.	Source	Purpose of Use	Basis
none			

Comments: _____

2. Other water rights with the same point-of-diversion: Yes Overlap

Water Right No.	Source	Purpose of Use	Basis
several rights			

Comments: _____

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

BOISE RIVER L7 NW¼ SE¼, Sec. 13, Twp 03N, Rge 04E, B.M. ELMORE County
BOISE RIVER L7 NW¼ SE¼, Sec. 13, Twp 03N, Rge 04E, B.M. ELMORE County

Method of Determination: The two intakes which lead to the two turbine penstocks are located close to each other on the upstream face of the dam. GPS coordinates were taken during the site visit.

2. PLACE OF USE: POWER

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
03N	04E	13														X Lt 7			

Method of Determination:

The powerhouse is visible in aerial photography. It is located at the toe and near the left abutment of the Arrowrock Dam on the Boise River.

Both the penstock intakes and the powerhouse are located in government lot 7 (NWSE) not in the NWSE as authorized by the permit. An amendment will be needed.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.

X Indicate weir size/pipe as applicable. See engineering drawings

X Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

X Aerial Photo Attached (required for irrigation of 10+ acres).

X Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Generator Make	Hp	Generator Serial No.	Turbine Make	Turbine Serial No. or Discharge Size
Unit 1	Kunming Electrical Machinery Co., Ltd	10360 Hp or 7500 kW	F2009-50	Kunming Electrical Machinery Co., Ltd	S2009-50 400-840 cfs
Unit 2	Kunming Electrical Machinery Co., Ltd	10360 Hp or 7500 kW	F2009-51	Kunming Electrical Machinery Co., Ltd	S2009-51 400-840 cfs

The turbine-generator sets are twins. The turbines are vertical shaft Francis type turbines paired with synchronous generators. Powerhouse personnel refer to them as units #1 and #2.

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements:

Turbine flows are measured by acoustic Doppler sensors which are installed in each penstock. (See field exam photos). Maintenance had been completed on the sensors earlier this year.

According to instrument gages in the powerhouse, the project was generating approximately 15.96 MW total at the time of the exam. Unit #1 was generating ~8.57 MW (note that this exceeds that generator's 8.5 MW nameplate capacity.) Unit #2 was generating ~7.5 MW. See the attached photos of the gages and photo of a schematic of the plant as seen on the operator's computer.

The project has not yet utilized the full permitted rate of 5470 cfs and the resident turbine-generator sets cannot beneficially use that much water.

At my request, additional information was provided by BPBC employees which confirmed beneficial use during the development period.

- On 5/22/2019 Rick Martin provided four small Excel spreadsheets showing daily average flow through the plant with companion generation. See his email and spreadsheets as attachment 1.
- On 5/30/2019 Mike Kukla provided Turbine/Generator Field Test Worksheets from tests done in March, June and August 2010. See his email and test working sheets as attachment 2.

This data shows that the maximum rate of water used for power generation during the development period was 1679.61 cfs. That use occurred on May 24, 2010.

E. FLOW CALCULATIONS

Additional Computation Sheets Attached

Measured Method:

The flow through the Arrowrock Hydroelectric project is measured with acoustic Doppler sensors installed in the penstocks.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: Not applicable

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$$

2. Volume Calculations for Other Uses:

Effective 3/29/2012, the Beneficial Use Examination Rules exempt on-stream, run-of-the-river, power generation from the volume reporting requirement. Because this is an on-stream storage project, it does not fit the description, but I am not recommending a volume for this license. Refer to the volume section in the narrative below.

G. NARRATIVE/REMARKS/COMMENTS**Applicant**

Ownership of this hydropower project is complex. The US Bureau of Reclamation (USBR) owns the dam and the land on the north side of the dam. The US Forest Service - Boise National Forest owns the land on the south side of the dam. The turbines discharge into the upper end of Lucky Peak Lake which is the headwater pool for the Lucky Peak Power Plant Project and inundates lands owned by the US Army Corps of Engineers-Walla Walla District (see Lucky Peak WR# 63-11069)

The Boise Project Board of Control (BPBC) holds both the FERC license (#4656) and the water right permit (#63-10240) applicable to the project and BPBC personnel operate the Arrowrock powerhouse. (Boise Project Board of Control is the operating agent for five irrigation districts: Boise-Kuna Irrigation District, Big Bend Irrigation District, Nampa & Meridian Irrigation District, New York Irrigation District, and Wilder Irrigation District. BPBC's purpose is to manage irrigation facilities and related works and to deliver water to the districts' landowners. It was created in 1926 as a result of contracts between the U.S. Bureau of Reclamation and the five irrigation districts. The contracts are not water rights but they do define the space allocations for water that is stored in reservoirs on the Boise River system.)

When the application for permit was assigned from the USBR (the original applicant) to the BPBC in 1991, the assignment should have been accompanied by information which satisfied the statutory requirements of Idaho Code § 42-205 and 42-206. Typically that information is provided by completing an IDWR form titled "Affidavit for Water Rights to be Used for Power Purposes". In this case, the right was not yet a permit and no completed affidavit has been found in the water right file.

BPBC is not listed with ISOS and I was unable to locate the required § 42-205 and 42-206 information either by searching the internet or searching the files for BPBC's other water rights. I requested and received a surrogate for the affidavit via email from Mike Kukla on 5/30/2019. It had been prepared by their attorney Al Barker, and signed by Bob Carter, manager of the Boise Project Board of Control.

Source, POD and POU

According to the available DRG layer in ArcMap, the confluence of the South Fork of Boise River with the Boise River near river mile 75, is inundated by the water stored in Arrowrock Reservoir. Some FERC documents show the source as the South Fork of the Boise River. But the source of water stored in the reservoir is considered to be the Boise River without a qualifier.

The National Inventory of Dams identifies Arrowrock Dam as ID00280.

Both the POU and the two PODs were found to be located within government lot 7. A review of the BLM's Government Land Office historical maps confirmed that this location has been identified as government lot 7 for decades. An amendment of the permit will be required before a license can be issued.

Water Use

Although the permit holder had requested an extension of time to fully develop the beneficial use and had been granted until August 1, 2012, to submit proof, the Proof-of-Beneficial-Use statement for this right was received at IDWR's State office on June 7, 2010. The project had been online only a few months in the spring of 2010 which meant that the development period was cut very short.

During the field exam, I found a relatively small indirect use of water for power production in addition to the direct turbine flow. It was water associated with cooling the generator during its operation. Approximately 0.5 cfs water is diverted from the water destined for a turbine. This small water use is included in the total plant flow and is also included in my recommended rate. It's not an addition to it. (Notice that the turbine/generator field test sheets in appendix 2 show a similar small flow amount in the third column from the left, labeled Est. Flow Usage*)

In 2018, a FERC inspector found a discrepancy between the approved capacity and the as-built capacity of the project. As a consequence in February 2019, BPBC provided FERC an amended project description and generation capacity. The revisions more accurately describe the as-built project and clarify how the turbine penstocks are bifurcations from outlets 1 and 2. Discharge from those outlets can be independent of power generation.

Operation strategy

Arrowrock Dam and Reservoir pre-existed construction of the powerhouse so although the Arrowrock project looks like a storage project, no storage for power use is authorized by this permit. The water stored in the Arrowrock reservoir is authorized by several water rights held by others. The primary purpose for Arrowrock's impounded water was and is irrigation but Arrowrock is a multipurpose project within a multipurpose reservoir system.

Operation of the Arrowrock project is coordinated by the US Army Corps of Engineers (USACE). To meet the varying USACE and USBR requirements, it does not operate as a pure run-of-river project either. A Water Control Plan¹ has been developed to define the reservoir regulation practices and the procedures for joint use of the storage spaces. The plan represents compromises between the various established uses for the entire Boise System.

No water is released from Arrowrock Reservoir solely for the purpose of generating electricity. The power plant utilizes other authorized releases to generate electricity.

Rate

I am recommending 1680 cfs as the maximum rate for the license. This recommendation is based on the data provided by Rick Martin via email on 5/22/2019. The maximum instantaneous flow through the power plant during the development period was 1679.61 cfs. It occurred on May 24, 2010. Mr. Martin's plant flow data was accompanied by companion generation data which confirmed beneficial use.

Turbine-generator sets typically use the most water when they are not generating the most power. They use more water when they are generating less efficiently but IDWR doesn't require that they be operated at their most efficient. (Note that the daily average generation for May 24, 2010, the day of max flow through the turbines was 194.22 MW. And note that 194.22 MW was not the maximum generation on that spreadsheet.)

I understood from the power plant operators that more recent tests of the turbine-generator sets indicated that they could each safely handle flows up to 950 cfs. The operators stated that after the turbine warranty period ended in 2012, the turbines have been operated at higher flowrates. An additional permit will be required to authorize that additional rate.

According to operators, the project needs approximately 300-400 cfs to begin generating. Flows below 300 cfs would be considered spill if a calculation of volume is needed for the license.

Volume

Similar to the argument made in licensing the power use water rights at Lucky Peak (63-9019 and 63-11069), I am not recommending a volume for this license.

The Arrowrock power plant is operated in compliance with condition #12 of the permit. The rate and volume of water released from Boise's system of reservoirs is not under the control of Arrowrock's power plant operators. Power production at Arrowrock is an additional, incidental use of water which is delivered from the reservoir for other authorized purposes.

In the event that both the operation priorities for the Boise system and the ownership of the Arrowrock storage rights change, then a volume limit for this water right may be needed. A volume can be applied to the license when it comes up for review at the end of a term.

SOU

Permit 63-10240 authorized SOU of 1/1 - 12/31. A year-round SOU will appear on the license and is consistent with power generation incidental to all releases, not just to releases for irrigation.

¹ Water Control Manual for Boise River Reservoirs approved by U.S. Army Corps of Engineers, Walla Walla District, April 1985. The manual was been revised in 1987, 1988 and 2011. A copy is available in the Dam Safety archive.

Point-of-Discharge

The Arrowrock hydroelectric powerhouse was retrofit into the existing Arrowrock Dam (built in 1915). The turbine penstocks divert water from the Arrowrock reservoir pool on the Boise River system and the turbines discharge that water into a short tailrace channel which returns the water back to the Boise River system.

Conditions

I found that the project was being operated in compliance with the conditions of the permit.

Permit condition 3 Watermaster administration

On 6/28/2019, I spoke with the watermaster about the measuring device and lockable controlling works required by IDWR's 2014 order expanding Water District No. 63². The Arrowrock hydropower project is included in the diversions above Lucky Peak Reservoir which are administered by the watermaster and he stated that he was happy with how the Arrowrock project is being operated. I confirmed for him that the project had measuring devices and we discussed controlling works. He stated that there was likely an existing control panel located at the project that he could access and use as a lockable control device if necessary.

I then called one of the Arrowrock power plant operators and confirmed that there are several fail-safe devices that could be used by the watermaster to shut down the power plant and the water diverted for power use. I am leaving selection of the device up to the watermaster.

The license will be issued with updated conditions requiring the right holder to maintain measuring devices and a mechanism suitable for watermaster control.

Permit condition 9

On December 11, 1984, the Arrowrock Hydroelectric Project was granted a section 401 water quality certificate. An updated 401 certification was issued January 1, 2008 in response to the amendment of the project's FERC license. A copy of that later certification is now in the water right file.

A review of the submittals posted on FERCs elibrary shows compliance with the relevant articles of the FERC license. Satisfactory compliance with this condition is presumed to be occurring and the condition will be dropped from the license.

Permit condition 10 Term review

The energy generated by this project is wheeled through Idaho Power Company's transmission lines for use in Oregon by the Clatskanie People's Utility District. I found that neither the Idaho nor the Oregon Public Utilities Commissions have jurisdiction over the Clatskanie People's Utility District. I contacted Paul Dockery, the Power Manager for Clatskanie and requested confirmation of an agreement to purchase the power produced at Arrowrock. He confirmed that there is a sales agreement and provided the expiration date which coincides with the FERC license term.

The project is known to FERC as the Arrowrock Hydroelectric Project, and is identified by FERC as docket or project #4656. On March 27, 1989, FERC issued an order granting major license (50 year) for this project to the five irrigation districts which are represented by the Boise Project Board of Control. Relicensing is expected on or before midnight of February 28, 2039 and this is the date that I selected as the term review date.

Permit conditions 12, 13 and 14.

Permit conditions 12 and 13 originate from a protest settlement agreement and will be carried forward as license conditions with only minor changes to the wording. "This right" will replace the words "(T)his permit or subsequently issued license" on both conditions.

Condition 14 also comes from the settlement agreement. It holds open the option for the protestants to raise objections to any changes in permit conditions 12 and 13. No changes in the meaning of those two conditions have occurred, so this condition will be dropped from the license.

Permit condition 15

Condition 15 requires that the right holder shall submit plans, drawings, and specifications to the department as

² <https://idwr.idaho.gov/files/legal/orders/2014/20140815-Final-Order-Requiring-Measuring-Devices-WD63.pdf>

required in Section 42-1712, Idaho Code, and IDAPA 37.03.06010.23.b (Safety of Dams Rule 10.23.b). The content of the water right file includes sufficient plans, drawings and specifications for most review purposes and additional documents can be obtained from the Dam Safety archives.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
POWER	1/01 to 12/31	1680.0 CFS	N/A

Totals: 1680.0 CFS N/A

2. Recommended Amendments

☒ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None
☒ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name Michele D. Edl Date 7/9/2019

Edl, Michele

From: Loren.Moore@deq.idaho.gov
Sent: Monday, July 01, 2019 12:59 PM
To: Edl, Michele
Subject: RE: Arrowrock project 401 water quality compliance
Attachments: Arrowrock Dam FERC 4650-020.pdf

We project was relicensed and we issued 401 certification in 2008...attached.

Loren Moore
401 Certification Lead
Idaho Dept. of Environmental Quality
1410 North Hilton
Boise, ID 83706

(208)373-0158

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Friday, June 28, 2019 5:39 PM
To: Loren Moore
Subject: Arrowrock project 401 water quality compliance

Loren,
You provided good service in the not too distance past related to hydropower. So I am hoping that I can tap your willingness again.

I am working on issuing a water right license for the Arrowrock hydropower project. One of the conditions on the permit states "Use of water under this approval shall comply with applicable water quality standards of the Department of Environmental Quality."

Based on information gleaned from the FERC website, the Arrowrock project was granted a section 401 water quality certificate in Dec 1984.

My questions: Have they been in compliance with their certificate? Is that information posted on your website somewhere?

Thanks again.

Michele Edl
322 E Front St
Boise, ID 83720
208-287-4946



Idaho Department of Environmental Quality
FINAL §401 Water Quality Certification

January 31, 2008

FERC Permit 4656-020, Arrowrock Dam

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 USC Section 1341 (a)(1), and Idaho Code §§ 39-101 et.seq., and 39-3601 et.seq., the Idaho Department of Environmental Quality (DEQ) has authority to review Federal Energy Regulatory Commission (FERC) permits and issue water quality certification decisions.

On November 21, 2007, Boise-Kuna Irrigation District, Nampa & Meridian Irrigation District, New York Irrigation District, Wilder Irrigation District, Big Bend Irrigation District (Districts) requested that the Idaho Department of Environmental Quality (DEQ) issue a certification, pursuant to section 401 of the Clean Water Act, regarding the Districts' application for an amendment of the license for the Arrowrock Dam Project that was filed by the Districts on August 1, 2007. The original license was issued by the Federal Energy Regulatory Commission (FERC) on March 27, 1989. This original license was certified by DEQ on December 11, 1984.

DEQ has considered the application to amend license and all other documents filed with FERC relating to the application to amend license, including specifically the Amendments to the Environmental Assessment attached as Exhibit E to the application. Based upon its review of this information, DEQ hereby certifies, pursuant to section 401 of the Clean Water Act, that, if the Districts comply with the terms set forth in the application to amend the license, the terms and conditions of the license as amended and the terms and conditions set forth in this 401 certification, there is a reasonable assurance the operation of the Arrowrock Dam Project will comply with the applicable requirements of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and the Idaho Water Quality Standards, IDAPA 58.01.02.

This certification does not constitute authorization of the permitted activities by any other local, state or federal agency or private person or entity. This certification does not excuse the permit holder from any obligation that may exist to obtain any other necessary approvals, authorizations or permits.

**THE FOLLOWING CONDITIONS ARE NECESSARY TO ENSURE
COMPLIANCE WITH IDAHO WATER QUALITY STANDARDS:**

1. The Licensee is required under the existing license to develop a plan for erosion, stream sedimentation, dust and soil mass movement (Article 105) and a plan for spoil disposal (Article 108). The existing license Article 401 requires the Licensee

to consult with certain federal and state agencies regarding the plans. Before submitting these plans to the Commission, the Licensee shall submit the plans to, and consult with, DEQ, in addition to consulting with the agencies listed in the existing license Article 401.

2. The Licensee is required under the existing license Article 404 to develop a dissolved oxygen contingency plan that:
 - a. Outlines water quality monitoring to ensure maintenance of 6 mg/L dissolved oxygen in the discharge during operation of the Project; and
 - b. Describes how the Licensee shall rapidly modify Project operation if dissolved oxygen levels in the powerhouse discharge fall below 6 mg/L. Before submitting the dissolved oxygen contingency plan to the Commission, the Licensee shall submit the plan to DEQ for approval. Once approved by DEQ, the Licensee shall file the plan with the Commission.

RIGHT TO APPEAL FINAL CERTIFICATION

This final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5), and the Rules of Administrative Procedure Before the Board of Environmental Quality, IDAPA 58.01.23, within 35 days of the date of this certification.

Questions regarding the actions taken in this certification should be directed to Craig Shepard, Boise Regional Office IDEQ at (208) 373-0557 or craig.shepard@deq.idaho.gov.



Barry N. Burnell
Water Quality Division Administrator

Edl, Michele

From: Paul Dockery <PDockery@clatskaniepud.com>
Sent: Thursday, May 30, 2019 8:12 AM
To: Edl, Michele
Subject: RE: exchange agreement with Idaho Power

Michele,

Thanks for reaching out. Clatskanie PUD acquires the power from the generating facility under a Power Purchase Contract which expires at midnight on March 1, 2039.

Clatskanie PUD has a separate exchange agreement with Idaho Power which enables Clatskanie PUD to better manage the output for marketing and load service, but the exchange agreement separate from our power purchase from the project.

Feel free to call to discuss.

Thanks,

Paul Dockery
Power Manager
Energy Resources and Services Department
Clatskanie People's Utility District

495 E. Columbia River Hwy
PO Box 216
Clatskanie, OR 97016
503-308-4622 (direct)
503-308-2074 (mobile)
pdockery@clatskaniepud.com

New Expanded Office Hours
Open Monday – Thursday from 7:00 am to 5:30 pm
Closed Friday – Sunday

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Tuesday, May 28, 2019 4:37 PM
To: Paul Dockery
Subject: [EXTERNAL] exchange agreement with Idaho Power

Mr. Paul Dockery,

Your name and email were provided to me in response to a phone call that I made this afternoon. I understand that you are the "go-to" person for information related to the Arrowrock hydropower agreements.

I am working to issue a long overdue water right license for the water used in hydropower generation at the Arrowrock Hydroelectric Project. I need to determine that the power is purchased and by whom. The information I have is dated from 2011 and it states that the Clatskanie PUD had an energy exchange agreement with Idaho Power Company that expired in 2015.

I have searched the Idaho Public Utilities' Commission orders and electric cases but have not been successful finding the documents which would have provided that information.

Would you please confirm for me whether the Clatskanie PUD has renewed their power exchange agreement with Idaho Power Company and if renewed, what date is end-date of that agreement? If you would rather I collect the date from public record again, I'll be happy to do so but I'll need a couple hints. What is the order or case number? And is that case or order available from Oregon's or Idaho's PUC?

Sincerely,
Michele Edl

Idaho Department of Water Resources
322 E Front St
Boise ID 83720
208-287-4946

Attachment 1

to Beneficial Use Field Report for 63-10240

Edl, Michele

From: Rick <rmartin@boiseproject.org>
Sent: Wednesday, May 22, 2019 7:37 AM
To: Edl, Michele
Subject: RE: 63-10240 field exam follow up questions encore
Attachments: MWPerDayApril.csv; MWPerDayJune.csv; MWPerDayMarch.csv; MWPerDayMay.csv

Hello Michele, here are the run numbers for those months. You can just open them in Excel and move the column over to see the full dates, MWP is mega watts per day, HMI P FLOW is plant flow for that time run. Thanks any questions feel free to contact me . Rick Martin

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Tuesday, May 14, 2019 12:47 PM
To: rmartin@boiseproject.org
Subject: 63-10240 field exam follow up questions encore

Richard Martin

I apologize. For item 1) meant to request data from late **March** 2010 through June 7, 2010 not late May 2010 through June 7, 2010.

Michele Edl

From: Edl, Michele
Sent: Tuesday, May 14, 2019 11:42 AM
To: 'rmartin@boiseproject.org' <rmartin@boiseproject.org>
Cc: 'Mike Kukla' <mike@luckypeakpower.org>
Subject: 63-10240 field exam follow up questions

Richard Martin,

I am making good progress writing up the beneficial use report for the Arrowrock hydropower Permit 63-10240. Your colleagues recommended that I connect with you for answers to any follow-up questions I might have. From our May 7, 2019 field visit, I have confirmed that the Arrowrock project is using water to generate power and is operating in compliance with the conditions of the permit. However, before I make the recommendations for a license I would like some additional information.

1) I need historical data showing that power was generated coincident to the diversion of water through the turbines during the development period of the permit.

The proof statement for this permit was submitted on June 7, 2010 and ended the development period for the permit. I have found some evidence that the project's commercial operation day was April 1, 2010. Which means that I need records of power generation and turbine discharge from late May 2010 through June 7, 2010.

I would be especially interested in records documenting the commissioning tests. Those documents typically demonstrate the absolute maximum and minimum quantities of water that a turbine can use in its setting.

Although I visited the Arrowrock project on a day with respectable water diversion and generation quantities, I hope to issue the license with the maximum flowrate that the project has ever used.

2) I am required to condition the license with a term review date. I can piggy-back on the expiration date of an energy sales agreement, some other long term contract or agreement or on the date of expiration for the project's FERC license. I believe that the FERC license will expire in February 2039. I don't know the expiration dates of either the agreement with Idaho Power Company or the agreement with the Clatskanie PUD. Can you confirm whether either agreement has an expiration date further out than 2039?

Don't hesitate to connect with me if either of these requests need clarification.

Sincerely,
Michele Edl

208-287-4946

data from the development period of WR #63-10240		
Date	MW_P_DAY_VAL0	HMI_P_FLOW_VAL0
3/27/2010	315.43	1447.02
3/28/2010	217.37	1447.45
3/29/2010	217.04	1448.13
3/30/2010	216.91	1448.07
3/31/2010	217	1448.43
Monthly Average	236.75	1447.82

data from the development period of WR #63-10240		
Date	MW_P_DAY_VAL0	HMI_P_FLOW_VAL0
4/6/2010	314.59	1401.83
4/14/2010	268.99	1448.77
4/15/2010	273.42	1450.25
4/16/2010	307.92	1450.55
4/21/2010	324.12	1243.46
4/22/2010	137.68	1017.01
4/23/2010	219.25	1446.49
4/24/2010	220.47	1445.25
4/25/2010	220.91	1444.29
4/26/2010	221.73	1444.96
4/27/2010	222.16	1444.68
4/28/2010	175.37	1132.18
4/29/2010	219.14	1416.87
4/30/2010	218.44	1410
Monthly Average	238.8707143	1371.185

data from the development period of WR #63-10240		
Date	MW_P_DAY_VAL0	HMI_P_FLOW_VAL0
5/1/2010	218.24	1408.42
5/2/2010	218.02	1410.03
5/3/2010	207.84	1252.97
5/4/2010	212.9	1379.13
5/5/2010	216.22	1410.28
5/6/2010	199.42	1303
5/7/2010	214.08	1409.83
5/8/2010	212.52	1409.53
5/9/2010	211.19	1409.75
5/10/2010	209.72	1409.66
5/11/2010	208.02	1409.31
5/12/2010	207.26	1429.04
5/13/2010	212.4	1474.44
5/14/2010	209.56	1474.56
5/15/2010	206.41	1484.11
5/16/2010	203.5	1490.09
5/17/2010	203.87	1539.3
5/18/2010	200.12	1453.27
5/19/2010	202.1	1578.99
5/20/2010	200.88	1610.63
5/21/2010	201.63	1646.4
5/22/2010	200.56	1669.56
5/23/2010	198.14	1679.6
5/24/2010	194.22	1679.61
5/25/2010	184.02	1634.53
5/28/2010	0	0
Monthly Average	198.1861538	1425.232308

data from the development period of WR #63-10240		
Date	MW_P_DAY_VAL0	HMI_P_FLOW_VAL0
6/11/2010	0	0
6/17/2010	301.69	1654.69
6/18/2010	45.07	751.03
6/19/2010	208.58	1640.09
6/20/2010	207.25	1598.97
6/21/2010	206.25	1599.34
6/24/2010	0	0
6/23/2010	196.34	1538.69
6/24/2010	202.48	1584.03
6/25/2010	202.97	1616.15
6/26/2010	203.85	1639.44
6/27/2010	204	1654.6
6/30/2010	205.43	1669.39
6/30/2010	205.43	1669.39
6/28/2010	205.43	1669.39
6/30/2010	90.57	422.64
6/30/2010	24.29	566.79
Monthly Average	159.39	1251.448824

AFFIDAVIT FOR WATER RIGHTS TO BE USED FOR POWER PURPOSES

The Boise Project Board of Control was formed as the operating agent on behalf of several Irrigation Districts located in the Boise River Valley to operate and maintain the irrigation works being constructed by the United States Bureau of Reclamation. The Boise Project Board of Control has its principal place of business located at 2465 Overland Road, Boise, Idaho. The Boise Project Board of Control is treated under Idaho law as a political subdivision of the State of Idaho because it is an operating agent of Irrigation Districts whose Board consists of directors of its member districts. *See* Idaho Code § 6-902(2). As such the Boise Project Board of Control is a bonafide resident of the State of Idaho within the meaning of Idaho Code § 42-206.

In fact, the Boise Project also holds other water rights issued by the Idaho Department of Water Resources for power purposes including Fargo Drop, 63-33599, Arena Drop 63-33329, Mora Drop 63-9206, and Lucky Peak 63-9019 and 63-11069.

The Boise Project does use the Arrowrock Dam, a man-made irrigation facility, to generate power. At this facility, the Boise Project Board of Control has the right and permission of the owner of the facility, U.S. Bureau of Reclamation, to do so and also holds a FERC license to generate at this federal facility. FERC Project No. 4656.

DATED this 30 day of May, 2019.



BOB CARTER
Manager
Boise Project Board of Control

Attachment 2

to Beneficial Use Field Report for 63-10240

Edl, Michele

From: Mike Kukla <mike@luckypeakpower.org>
Sent: Thursday, May 30, 2019 10:55 AM
To: Edl, Michele
Subject: RE: Arrowrock project affidavit for power use
Attachments: Affidavit.pdf; Arrowrock Field Test Turbine Performance Work Sheet - Test 1.pdf; Arrowrock Field Test Turbine Performance Work Sheet - Test 2.pdf; Arrowrock Field Test Turbine Performance Work Sheet - Test 3.pdf

Good morning Michele,

Attached is the information you requested. AL Barker drafted a new affidavit for the Board of Control to sign and also I have attached the performance work sheets from testing the units and Rick is still looking for some more paper work after the warranty period when we tested to see if we have the ability to run 950 cfs without causing damage, which we can. Please let me know if you need any further information.

Sincerely,
Mike Kukla

Mike Kukla
Project Administrator/District Coordinator Lucky Peak Power Plant Project
9731 E Highway 21
Boise, ID 83716
Office (208) 344-7022
Fax (208) 343-5976
mike@luckypeakpower.org

-----Original Message-----

From: Edl, Michele <Michele.Edl@idwr.idaho.gov>
Sent: Wednesday, May 29, 2019 10:43 AM
To: Rick <rmartin@boiseproject.org>
Cc: Mike Kukla <mike@luckypeakpower.org>
Subject: Arrowrock project affidavit for power use

Gentlemen,

I have made good progress in completing the work for issuing a license to the Arrowrock Hydropower project. I expect to satisfy the requirements of a licensing review and present my recommendations to management early next week.

I have one gap in the file that I need to fill. This project has a colorful past and a lengthy water right backfile to document that past. I have searched the contents of file 63-10240 looking for a completed Affidavit for Water Rights to be Used for Power Purposes form (or equivalent) and have failed to find it.

The information requested by the affidavit form is a statutory requirement of Idaho Code § 42- 205 and 42-206. This right was assigned from the US Bureau of Reclamation to the Boise Project Board of Control in 1991 while it was an application. I believe that IDWR should have collected an affidavit at that time but did not.

This link will take you to the form on our website. <https://idwr.idaho.gov/files/forms/power-purposes.pdf>

Turbine/Generator Field Test Efficiency Working Sheet

Test Date: 03/16/10

Unit No. #1

* for Bearing Cooling water/Shaft seal/Air Cooler Cooling Water

** including usage for excitation system

Test No.	Flow (total)	Est.Flow Usage*	Flow For Turbine	Downstream TSV PSI	Tailrace Elevation	Dead Weight Elevation Constant	Velocity Head	Net Head	Generator Output**	T/G Efficiency	Guaranteed T/G Efficiency at 170 ft
	cfs	cfs	cfs	psi	ft	ft	ft	ft	kW	%	%
10	703.2		703.2	66.9	7.72	2.92	3.04	168.22	8997	89.85%	
11	707.4		707.4	66.9	7.66	2.92	3.08	168.20	9001	89.36%	
12	701.6		701.6	66.9	7.66	2.92	3.03	168.15	8990	90.02%	
Ave	704.1		704.1	66.9	7.68	2.92	3.05	168.19	8996	89.74%	87.88%
19	608.4		608.4	68.5	7.97	2.92	2.28	171.40	7579	85.85%	
20	609.1		609.1	68.5	7.97	2.92	2.28	171.41	7548	85.40%	
21	602.5		602.5	68.5	7.95	2.92	2.23	171.34	7580	86.74%	
Ave	606.7		606.7	68.5	7.96	2.92	2.26	171.38	7569	86.00%	84.39%
28	503.1		503.1	69.9	7.97	2.92	1.56	173.92	6105	82.42%	
29	499.4		499.4	69.9	7.98	2.92	1.53	173.90	6081	82.71%	
30	502.3		502.3	69.9	7.97	2.92	1.55	173.91	6129	82.88%	
Ave	501.6		501.6	69.9	7.97	2.92	1.55	173.91	6105	82.67%	79.86%
37	401.7		401.7	71.0	8.09	2.92	0.99	176.01	4529	75.67%	
38	403.1		403.1	71.0	8.14	2.92	1.00	176.07	4526	75.33%	
39	399.8		399.8	71.0	8.08	2.92	0.98	175.99	4558	76.52%	
Ave	401.5		401.5	71.0	8.10	2.92	0.99	176.03	4538	75.84%	73.29%

Unit No. #2

Test 1

Test No.	Flow (total)	Est.Flow Usage*	Flow For Turbine	Downstrea m TSV PSI	Tailrace Elevation	Dead Weight Elevation Constant	Velocity Head	Net Head	Generator Output**	T/G Efficiency	Guaranteed T/G Efficiency at 170 ft
	cfs	cfs	cfs	psi	ft	ft	ft	ft	kW	%	
47	704.9		704.9	67.0	7.79	2.92	3.06	168.54	8827	87.77%	
48	699.0		699.0	67.0	7.78	2.92	3.01	168.48	8845	88.72%	
49	705.5		705.5	67.1	7.74	2.92	3.06	168.72	8830	87.63%	
Ave	703.1		703.1	67.0	7.77	2.92	3.04	168.58	8834	88.04%	87.88%
56	600.1		600.1	68.5	8.07	2.92	2.22	171.44	7440	85.43%	
57	607.6		607.6	68.6	8.11	2.92	2.27	171.77	7319	82.84%	
58	607.4		607.4	68.5	8.14	2.92	2.27	171.56	7440	84.34%	
Ave	605.0		605.0	68.5	8.11	2.92	2.25	171.59	7400	84.20%	84.39%
65	500.1		500.1	69.9	8.12	2.92	1.54	174.05	6042	82.00%	
66	498.0		498.0	69.9	8.10	2.92	1.53	174.01	5979	81.50%	
67	500.1		500.1	69.9	8.11	2.92	1.54	174.04	5984	81.22%	
Ave	499.4		499.4	69.9	8.11	2.92	1.53	174.03	6002	81.57%	79.86%
74	404.1		404.1	71.1	8.20	2.92	1.00	176.37	4506	74.69%	
75	401.4		401.4	71.0	8.18	2.92	0.99	176.10	4499	75.19%	
76	399.5		399.5	71.1	8.20	2.92	0.98	176.34			
Ave	401.7		401.7	71.1	8.19	2.92	0.99	176.27	4503	74.94%	73.29%

Turbine/Generator Field Test Efficiency Working Sheet

Test Date: 08/23/10

Unit No. #1

* for Bearing Cooling water/Shaft seal/Air Cooler Cooling Water

** including usage for excitation system

*** not guaranteed point

Test No.	Flow (total)	Est.Flow Usage*	Flow For Turbine	Downstream TSV PSI	Tailrace Elevation	Dead Weight Elevation Constant	Velocity Head	Net Head	Generator Output**	T/G Efficiency	Guaranteed T/G Efficiency at 80-90 ft
	cfs	cfs	cfs	psi	ft	ft	ft	ft	kW	%	%
7	785	0.5	784.5	43.9	-24.776	2.854	3.79	83.27	4265	77.12%	
8	785	0.5	784.5	43.9	-24.755	2.854	3.79	83.29	4373	79.05%	
9	784	0.5	783.5	43.9	-24.776	2.854	3.78	83.26	4381	79.33%	
Ave	784.7	0.5	784.2	43.9	-24.77	2.854	3.78	83.28	4340	78.50%	***
10	702	0.5	701.5	45.7	-24.776	2.854	3.03	86.67	4455	86.56%	
11	699	0.5	698.5	45.7	-24.797	2.854	3.00	86.63	4432	86.52%	
12	699	0.5	698.5	45.6	-24.797	2.854	3.00	86.40	4493	87.95%	
Ave	700.0	0.5	699.5	45.7	-24.79	2.854	3.01	86.56	4460	87.01%	83.35%
25	596	0.5	595.5	47.4	-24.755	2.854	2.18	89.77	3712	82.02%	
26	599	0.5	598.5	47.3	-24.755	2.854	2.20	89.57	3691	81.34%	
27	598	0.5	597.5	47.4	-24.776	2.854	2.20	89.77	3730	82.15%	
Ave	597.7	0.5	597.2	47.4	-24.76	2.854	2.19	89.70	3711	81.84%	81.09%
28	495	0.5	494.5	48.9	-24.765	2.854	1.50	92.55	3059	78.96%	
29	495	0.5	494.5	48.8	-24.765	2.854	1.50	92.32	3054	79.02%	
30	495	0.5	494.5	48.8	-24.797	2.854	1.50	92.29	3099	80.22%	
Ave	495.0	0.5	494.5	48.8	-24.78	2.854	1.50	92.39	3071	79.40%	77.65%
43	396	0.5	395.5	50.0	-24.734	2.854	0.96	94.58	2131	67.30%	
44	395	0.5	394.5	50.0	-24.713	2.854	0.96	94.60	2114	66.92%	
45	394	0.5	393.5	50.0	-24.734	2.854	0.95	94.57	2115	67.14%	
Ave	395.0		394.5	50.0	-24.73	2.854	0.96	94.58	2120	67.12%	64.82%

Average 78.84% 76.73%

 Test 3
not in development period

Unit No. #2

Test No.	Flow (total)	Est.Flow Usage*	Flow For Turbine	Downstream TSV PSI	Tailrace Elevation	Dead Weight Elevation Constant	Velocity Head	Net Head	Generator Output**	T/G Efficiency	Guaranteed T/G Efficiency at 80-90 ft
	cfs	cfs	cfs	psi	ft	ft	ft	ft	kW	%	%
7	785	0.5	784.5	44.4	-24.609	2.854	3.79	84.60	4250	75.65%	
8	789	0.5	788.5	44.4	-24.630	2.854	3.82	84.61	4133	73.18%	
9	801	0.5	800.5	44.5	-24.630	2.854	3.94	84.96	4373	75.95%	
Ave	791.7	0.5	791.2	44.4	-24.62	2.854	3.85	84.72	4252	74.93%	
10	704	0.5	703.5	46.3	-24.588	2.854	3.04	88.26	4480	85.23%	
11	710	0.5	709.5	46.3	-24.609	2.854	3.10	88.29	4452	83.95%	
12	698	0.5	697.5	46.2	-24.609	2.854	2.99	87.96	4435	85.39%	
Ave	704.0	0.5	703.5	46.3	-24.60	2.854	3.04	88.17	4456	84.86%	83.35%
25	599	0.5	598.5	48.0	-24.547	2.854	2.20	91.39	3766	81.33%	
26	593	0.5	592.5	48.0	-24.526	2.854	2.16	91.37	3680	80.30%	
27	600	0.5	599.5	48.0	-24.484	2.854	2.21	91.46	3695	79.61%	
Ave	597.3	0.5	596.8	48.0	-24.52	2.854	2.19	91.41	3714	80.41%	81.09%
28	503	0.5	502.5	49.3	-24.526	2.854	1.55	93.76	3072	77.02%	
29	490	0.5	489.5	49.3	-24.505	2.854	1.47	93.71	3031	78.06%	
30	497	0.5	496.5	49.3	-24.547	2.854	1.52	93.71	3044	77.29%	
Ave	496.7	0.5	496.2	49.3	-24.53	2.854	1.51	93.73	3049	77.46%	77.65%
43	401	0.5	400.5	50.3	-24.463	2.854	0.99	95.57	2137	65.95%	
44	404	0.5	403.5	50.3	-24.505	2.854	1.00	95.54	2142	65.63%	
45	399	0.5	398.5	50.3	-24.547	2.854	0.98	95.48	2104	65.32%	
Ave	401.3		400.8	50.3	-24.51	2.854	0.99	95.53	2128	65.64%	64.82%

Average 77.09% 76.73%

Turbine/Generator Field Test Efficiency Working Sheet

Test Date: 06/10/10

Unit No. #1

* for Bearing Cooling water/Shaft seal/Air Cooler Cooling Water

** including usage for excitation system

Test No.	Flow (total)	Est.Flow Usage*	Flow For Turbine	Downstream TSV PSI	Tailrace Elevation	Dead Weight Elevation Constant	Velocity Head	Net Head	Generator Output**	T/G Efficiency	Guaranteed T/G Efficiency at 140 ft
	cfs	cfs	cfs	psi	ft	ft	ft	ft	kW	%	%
7	835.6	0.5	835.1	68.8	-23.705	2.854	4.29	142.37	8980	89.22%	
8	834.6	0.5	834.1	68.8	-23.705	2.854	4.28	142.36	8958	89.12%	
9	833.2	0.5	832.7	68.8	-23.755	2.854	4.27	142.29	8935	89.08%	
Ave	834.5	0.5	834.0	68.8	-23.72	2.854	4.28	142.34	8958	89.14%	87.30%
10	804.5	0.5	804	69.4	-23.755	2.854	3.98	143.39	8649	88.62%	
11	800.8	0.5	800.3	69.4	-23.705	2.854	3.94	143.40	8723	89.79%	
12	802.3	0.5	801.8	69.5	-23.755	2.854	3.96	143.60	8580	88.03%	
Ave	802.5	0.5	802.0	69.4	-23.74	2.854	3.96	143.46	8651	88.81%	88.08%
25	702.5	0.5	702	71.4	-23.905	2.854	3.03	146.91	7851	89.92%	
26	702.9	0.5	702.4	71.4	-23.755	2.854	3.04	147.07	7857	89.85%	
27	700.1	0.5	699.6	71.3	-23.755	2.854	3.01	146.81	7843	90.20%	
Ave	701.8	0.5	701.3	71.4	-23.81	2.854	3.03	146.93	7850	89.99%	88.86%
28	597.8	0.5	597.3	72.9	-23.755	2.854	2.19	149.69	6599	87.18%	
29	604.8	0.5	604.3	72.9	-23.705	2.854	2.25	149.79	6629	86.51%	
30	600.2	0.5	599.7	72.9	-23.755	2.854	2.21	149.71	6658	87.60%	
Ave	600.9	0.5	600.4	72.9	-23.74	2.854	2.22	149.73	6629	87.10%	86.36%

Test 2

43	502.4	0.5	501.9	74.3	-23.755	2.854	1.55	152.28	5297	81.87%	
44	498.8	0.5	498.3	74.2	-23.755	2.854	1.53	152.03	5303	82.69%	
45	499.8	0.5	499.3	74.3	-23.755	2.854	1.53	152.27	5274	81.95%	
Ave	500.3	0.5	499.8	74.3	-23.76	2.854	1.54	152.19	5291	82.17%	81.79%
46	395.2	0.5	394.7	74.4	-23.705	2.854	0.96	151.97	3758	74.01%	
47	395.3	0.5	394.8	74.4	-23.705	2.854	0.96	151.97	3752	73.87%	
48	395.4	0.5	394.9	74.4	-23.705	2.854	0.96	151.97	3754	73.89%	
Ave	395.3		394.8	74.4	-23.71	2.854	0.96	151.97	3755	73.92%	76.03%

Average 85.19% 84.74%

Unit No. #2

Test No.	Flow (total)	Est.Flow Usage*	Flow For Turbine	Downstream TSV PSI	Tailrace Elevation	Dead Weight Elevation Constant	Velocity Head	Net Head	Generator Output**	T/G Efficiency	Guaranteed T/G Efficiency at 140 ft
	cfs	cfs	cfs	psi	ft	ft	ft	ft	kW	%	%
7	831.7	0.5	831.2	68.9	-23.605	2.854	4.25	142.66	8703	86.70%	
8	828.4	0.5	827.9	68.9	-23.655	2.854	4.22	142.57	8931	89.38%	
9	835.6	0.5	835.1	68.9	-23.655	2.854	4.29	142.65	8773	87.00%	
Ave	831.9	0.5	831.4	68.9	-23.64	2.854	4.25	142.63	8802	87.69%	87.30%
10	805.4	0.5	804.9	69.7	-23.705	2.854	3.99	144.14	8643	88.00%	
11	799.7	0.5	799.2	69.8	-23.705	2.854	3.93	144.32	8727	89.38%	
12	802.4	0.5	801.9	69.7	-23.655	2.854	3.96	144.16	8592	87.80%	
Ave	802.5	0.5	802.0	69.7	-23.69	2.854	3.96	144.21	8654	88.39%	88.08%
25	705	0.5	704.5	71.4	-23.605	2.854	3.05	147.24	7864	89.56%	
26	699.1	0.5	698.6	71.4	-23.605	2.854	3.00	147.19	7886	90.60%	
27	704.8	0.5	704.3	71.5	-23.555	2.854	3.05	147.52	7889	89.70%	
Ave	703.0	0.5	702.5	71.4	-23.59	2.854	3.04	147.31	7880	89.95%	88.86%
28	593.6	0.5	593.1	73.2	-23.555	2.854	2.16	150.56	6611	87.46%	
29	599.6	0.5	599.1	73.2	-23.555	2.854	2.21	150.60	6606	86.49%	
30	595.8	0.5	595.3	73.2	-23.555	2.854	2.18	150.57	6499	85.65%	
Ave	596.3	0.5	595.8	73.2	-23.56	2.854	2.18	150.58	6572	86.53%	86.36%
43	499.2	0.5	498.7	74.5	-23.505	2.854	1.53	152.97	5297	82.02%	
44	501.6	0.5	501.1	74.5	-23.505	2.854	1.54	152.99	5273	81.25%	

45	498.3	0.5	497.8	74.5	-23.455	2.854	1.52	153.02	5227	81.06%	
Ave	499.7	0.5	499.2	74.5	-23.49	2.854	1.53	152.99	5266	81.44%	81.79%
46	396.6	0.5	396.1	75.6	-23.505	2.854	0.97	154.95	3754	72.25%	
47	400.1	0.5	399.6	75.6	-23.455	2.854	0.98	155.02	3779	72.07%	
48	401.8	0.5	401.3	75.6	-23.455	2.854	0.99	155.03	3748	71.17%	
Ave	399.5		399.0	75.6	-23.47	2.854	0.98	155.00	3760	71.83%	76.03%

Average 84.31% 84.74%

Edl, Michele

From: Rick <rmartin@boiseproject.org>
Sent: Thursday, May 16, 2019 11:42 AM
To: Edl, Michele
Subject: RE: 63-10240 field exam follow up questions encore

Hello Michele , will get the information from March 2010 to June 2010 for Plant operations to you. I will pull CFS flows and power generation . Our minimum flows at the warranty break in period 2010 was 400cfs up to maximum 840cfs per unit as set up by the turbine contracts. So as stated low 400cfs per single unit and up to 1680cfs for both units max. After the warranty /break in period 2012 that was updated to 300cfs min and 950cfs per unit max. Thanks Rick

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Tuesday, May 14, 2019 12:47 PM
To: rmartin@boiseproject.org
Subject: 63-10240 field exam follow up questions encore

Richard Martin

I apologize. For item 1) meant to request data from late **March** 2010 through June 7, 2010 not late May 2010 through June 7, 2010.

Michele Edl

From: Edl, Michele
Sent: Tuesday, May 14, 2019 11:42 AM
To: 'rmartin@boiseproject.org' <rmartin@boiseproject.org>
Cc: 'Mike Kukla' <mike@luckypeakpower.org>
Subject: 63-10240 field exam follow up questions

Richard Martin,

I am making good progress writing up the beneficial use report for the Arrowrock hydropower Permit 63-10240. Your colleagues recommended that I connect with you for answers to any follow-up questions I might have. From our May 7, 2019 field visit, I have confirmed that the Arrowrock project is using water to generate power and is operating in compliance with the conditions of the permit. However, before I make the recommendations for a license I would like some additional information.

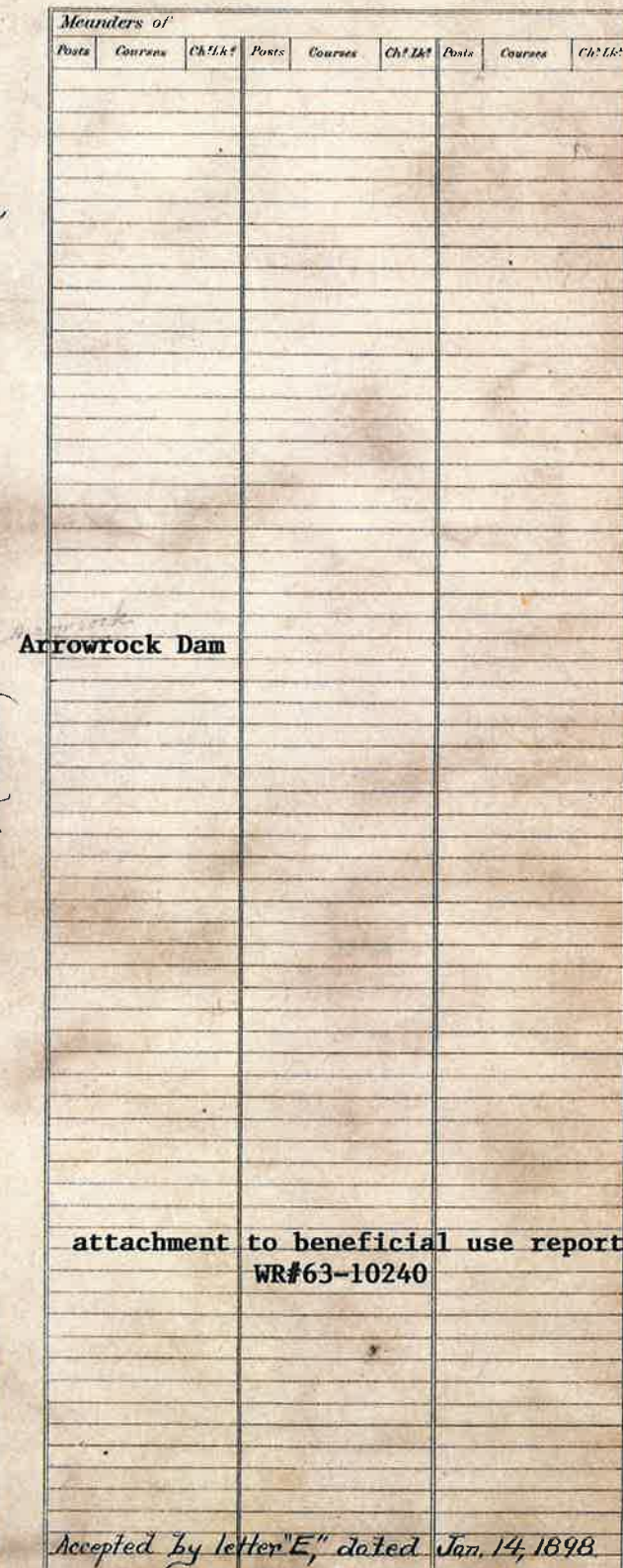
1) I need historical data showing that power was generated coincident to the diversion of water through the turbines during the development period of the permit. The proof statement for this permit was submitted on June 7, 2010 and ended the development period for the permit. I have found some evidence that the project's commercial operation day was April 1, 2010. Which means that I need records of power generation and turbine discharge from late May 2010 through June 7, 2010. I would be especially interested in records documenting the commissioning tests. Those documents typically demonstrate the absolute maximum and minimum quantities of water that a turbine can use in its setting. Although I visited the Arrowrock project on a day with respectable water diversion and generation quantities, I hope to issue the license with the maximum flowrate that the project has ever used.

2) I am required to condition the license with a term review date. I can piggy-back on the expiration date of an energy sales agreement, some other long term contract or agreement or on the date of expiration for the project's FERC license. I believe that the FERC license will expire in February 2039. I don't know the expiration dates of either the agreement with Idaho Power Company or the agreement with the Clatskanie PUD. Can you confirm whether either agreement has an expiration date further out than 2039?

Don't hesitate to connect with me if either of these requests need clarification.

TRACING OR COPY ON HAND

G *f* *F* *e* *E* *d* *D* *c* *C* *b* *B* *a* *A*



attachment to beneficial use report
WR#63-10240

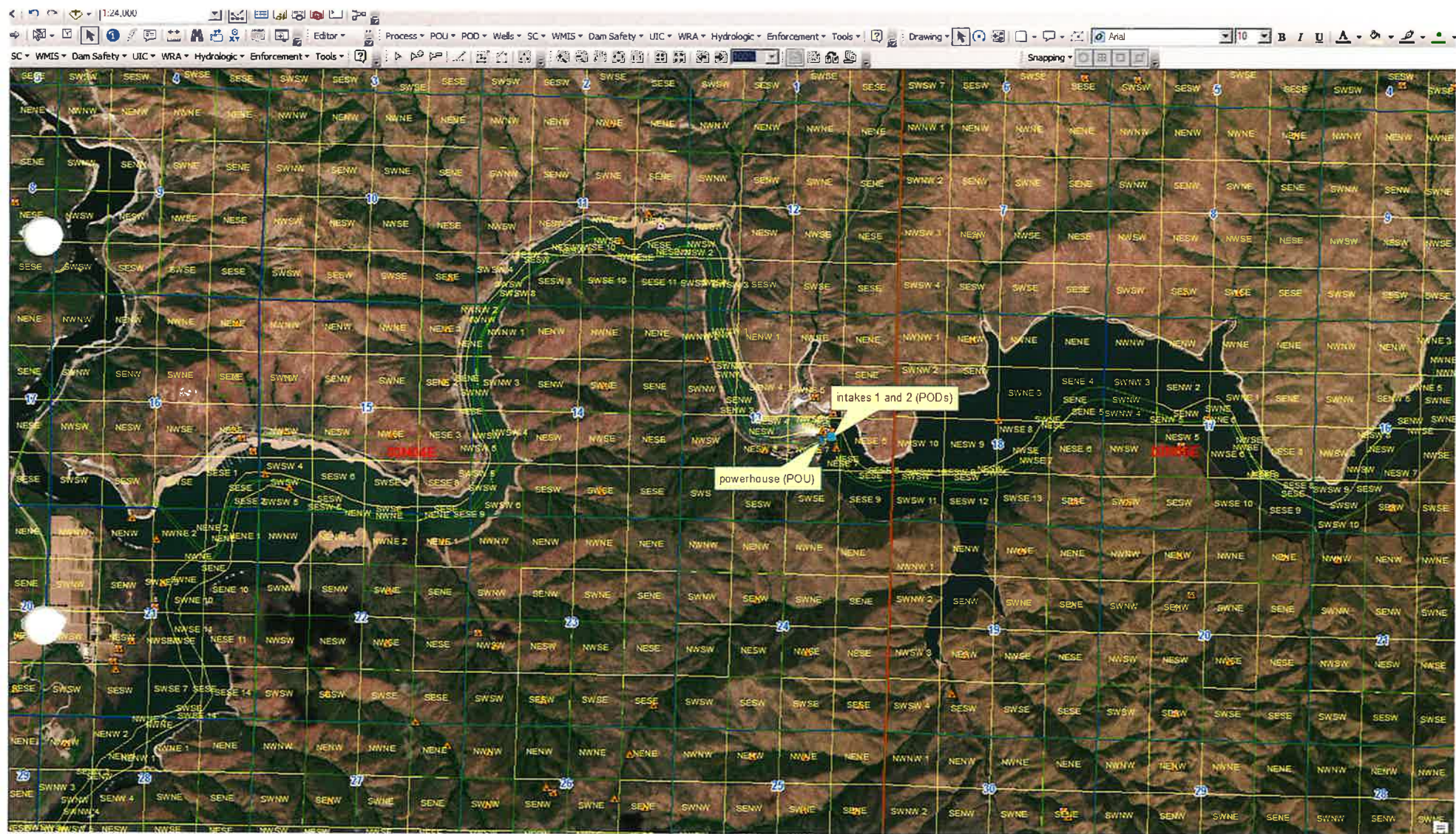
Accepted by letter "E," dated Jan. 14, 1898.

LAT. 43° 33' N.
LONG. 115.56' W.

Area of Watersurface 356.67 Acr. - of Public Land 22777.42 Acr. Total number of Acres 23134.09

Survey Designated	By Whom Surveyed	Date of Contract	Amount of Survey M. Ch. Lk.	When Surveyed	Mean Declination
E. S. & M. and N. Township lines	Geo. B. Kendall	179 Nov. 17, 1896	24 05 65	Aug 23-Sept. 9, 1897	
Subdivisions			60 09 87	Sept. 10-30, 1897	19°50' N.

The above Map of Township N^o 3. North of Range N^o 4. East of the Boise Meridian, Idaho is strictly conformable to the field notes of the survey thereof on file in this Office, which have been examined and approved.



map attachment to beneficial use report
WR #63-10240

Edl, Michele

From: Ritter, Ashley
Sent: Wednesday, May 08, 2019 11:16 AM
To: Edl, Michele
Subject: arrowrock GPS info

Penstock:
N 43° 35' 42.4"
W 115° 55' 20.8"
Accuracy 23.5
Elevation 3218 feet

Place of Use/Power House:
N 43° 35' 41.6"
W 115° 55' 24.5"
Accuracy 31.1
Elevation 3089 feet

Ashley M. Ritter, E.I.T., G.I.T. | Associate Engineer
Idaho Department of Water Resources-State Office
(208) 287-4907 | www.idwr.idaho.gov



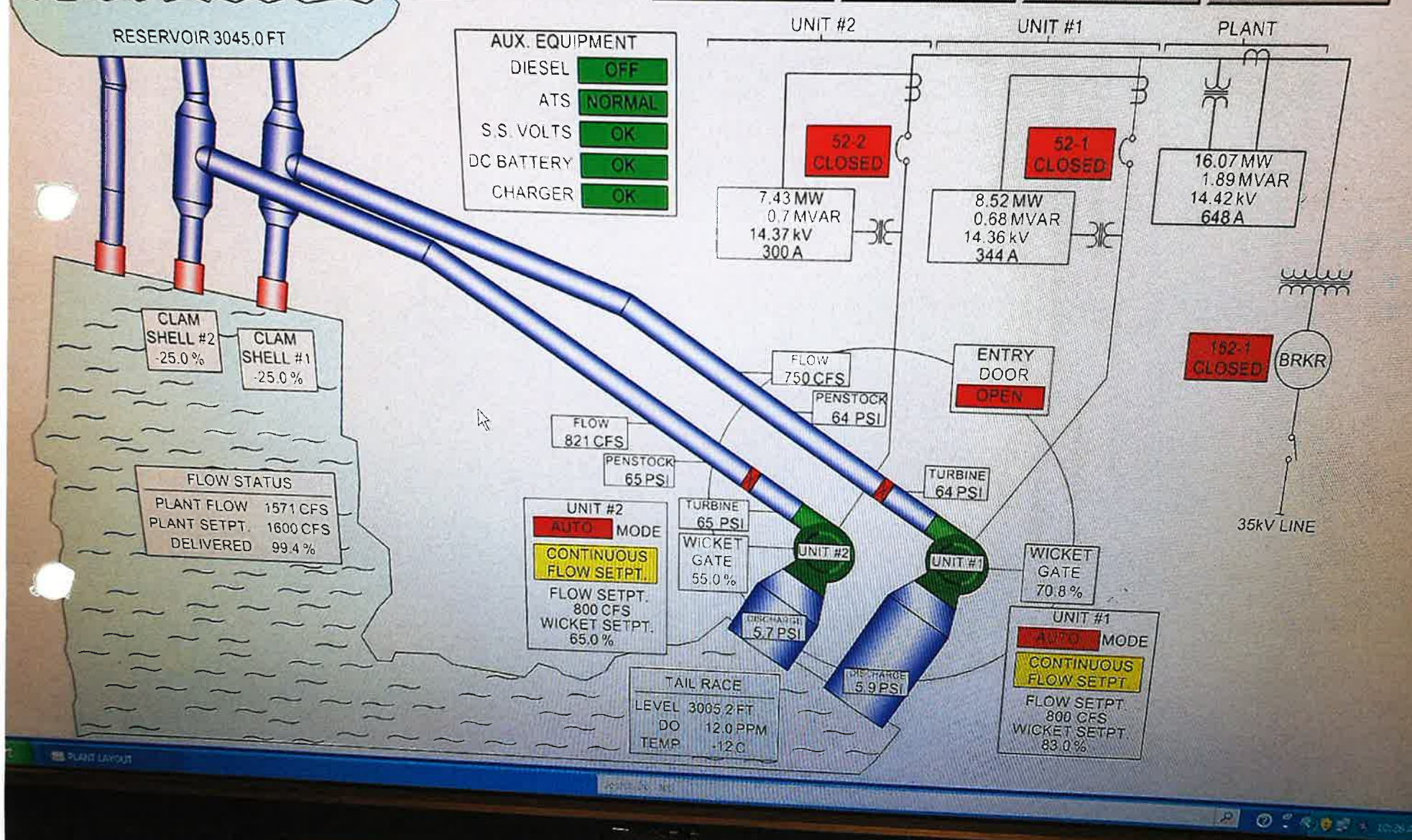
powerhouse generator floor
WR#63-10240

05/07/2019



flow sensors

WR#63-10240



FLOW METER 1

WR#63-10240

RISONIC 2000

rittmeyer

ARROWROCK DAM
UNIT 1

WR#63-10240

Q1	...	+	730	0	550	[	ft	^3	/s]
V1	...	+	990	0	1	[	ft	/s]	
V2	...	+	150	0	77	[	ft	/s]	
V3	...	+	150	0	100	[	ft	/s]	
V4	...	+	990	0	100	[	ft	/s]	
V5	...	+	130	0	72	[	ft	/s]	
V6	...	+	140	0	81	[	ft	/s]	
V7	...	+	990	0	1	[	ft	/s]	
V8	...	+	990	0	1	[	ft	/s]	

WARNING: Q1

~~PAR~~ PARE DIAG

TEST

F1

F2

F3

F4

F5

FLOW METER 2

WR#63-10240

RISONIC 2000

rittmeyer

ARROW ROCK DAM
UNIT 2

WR#63-10240

Q1	::	+	793	.	125	[	ft	^	3	/	ε	]
V1	::	+	990	.	01	[	ft	/	ε			]
V2	::	+	9	.	145	[	ft	/	ε			]
V3	::	+	19	.	234	[	ft	/	ε			]
V4	::	+	24	.	647	[	ft	/	ε			]
V5	::	+	990	.	05	[	ft	/	ε			]
V6	::	+	17	.	667	[	ft	/	ε			]
V7	::	+	990	.	07	[	ft	/	ε			]
V8	::	+	2	.	490	[	ft	/	ε			]

WARNING: 01
PARE DIAG

F1

F2

F3

F4

F5

• GEN 2 CONTROL SECTION •

WR#63-10240



• GENERATOR AMMETER •



• TACHOMETER •



• DIGITAL MULTIMETER •



• GENERATOR FREQUENCY •



• GENERATOR VOLTMETER •



• TURBINE FLOW METER •



• HOUR METER •



• WICKET GATE POSITION •



• GEN MULTI FUNCTION RELAY •

• GEN 1 CONTROL SECTION •

WR#63-10240



• GENERATOR AMMETER •



• TACHOMETER •



• DIGITAL MULTIMETER •



• GENERATOR FREQUENCY •



• GENERATOR VOLTMETER •



• TURBINE FLOW METER •



• HOUR METER •



• WICKET GATE POSITION •



• GEN MULTI FUNCTION RELAY •





水轮发电机组

HYDRAULIC TURBINE - GENERATOR UNIT

水轮机

HYDRAULIC TURBINE

型号 TYPE	HLA551-LJ-172	
额定出力 RATED OUTPUT	10360	HP
水头 HEAD	70-180	FT
流量 FLOW	400-840	CFS
重量 WEIGHT	49120	KG
产品编号 PRODUCT NO.	S2009-50	
额定转速 RATED SPEED	300	RPM

型号 TYPE	SF9000-24/3300	
额定容量 RATED POWER	7500	KW
过载系数 SERVICE FACTOR	1.2	
额定电压 RATED VOLTAGE	13800	V
额定电流 RATED CURRENT	348.6	A
额定频率 FREQUENCY	50	Hz
飞逸转速 RUNAWAY SPEED	630	RPM

发电机

GENERATOR

额定励磁电压 RATED EXCITING VOLTAGE	230	V
额定励磁电流 RATED EXCITING CURRENT	318	A
功率因数 POWER FACTOR	0.9	
连接方式 MODE OF CONNECT	Y	
绝缘等级 INSULATION CLASS	E/F	
GD ²	163 T·M ²	
重量 WEIGHT	84000	KG
产品编号 PRODUCT NO.	F2009-50	
制造日期 MANUFACTURING DATE	2009.10	

中国 昆明电机厂有限公司
KUNMING ELECTRICAL MACHINERY CO., LTD. CHINA

WR#63-10240
unit 1



水轮发电机组

HYDRAULIC TURBINE - GENERATOR UNIT

水轮机

HYDRAULIC TURBINE

型号 TYPE	HLA551-LJ-172	
额定出力 RATED OUTPUT	10360	HP
水头 HEAD	70-180	FT
流量 FLOW	400-840	CFS
重量 WEIGHT	49120	KG
产品编号 PRODUCT NO.	S2009-51	
额定转速 RATED SPEED	300	RPM

型号 TYPE	SF9000-24/3300	
额定容量 RATED POWER	7500	KW
过载系数 SERVICE FACTOR	1.2	
额定电压 RATED VOLTAGE	13800	V
额定电流 RATED CURRENT	348.6	A
额定频率 FREQUENCY	60	Hz
飞逸转速 RUNAWAY SPEED	630	RPM

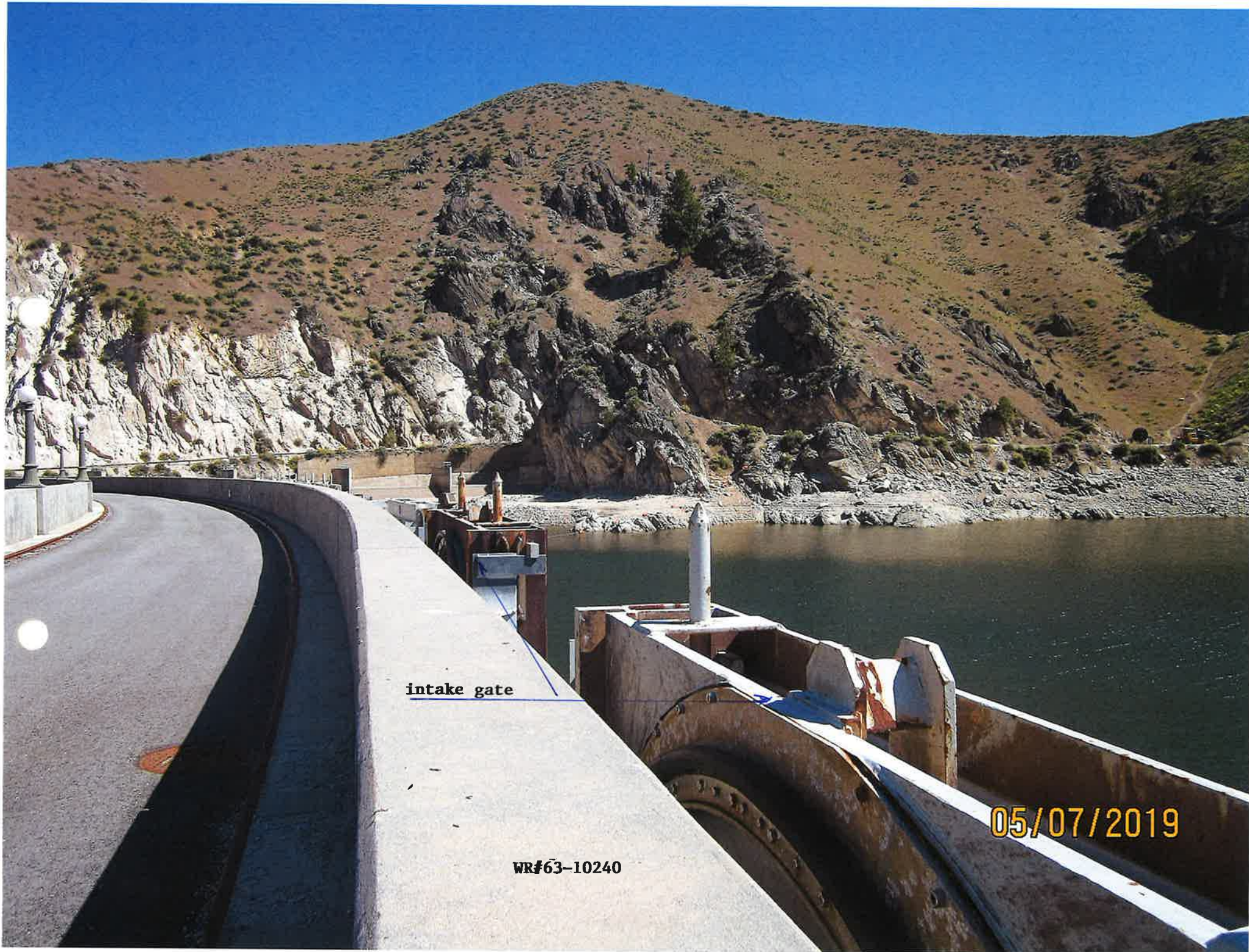
发电机

GENERATOR

额定励磁电压 RATED EXCITING VOLTAGE	230	V
额定励磁电流 RATED EXCITING CURRENT	318	A
功率因数 POWER FACTOR	0.9	
连接方式 MODE OF CONNECT	Y	
绝缘等级 INSULATION CLASS	3	相 PHASE
GD ²	163	T·M ²
重量 WEIGHT	84000	KG
产品编号 PRODUCT NO.	F2009-51	
制造日期 MANUFACTURING DATE	2009.10	

中国 昆明电机厂有限公司

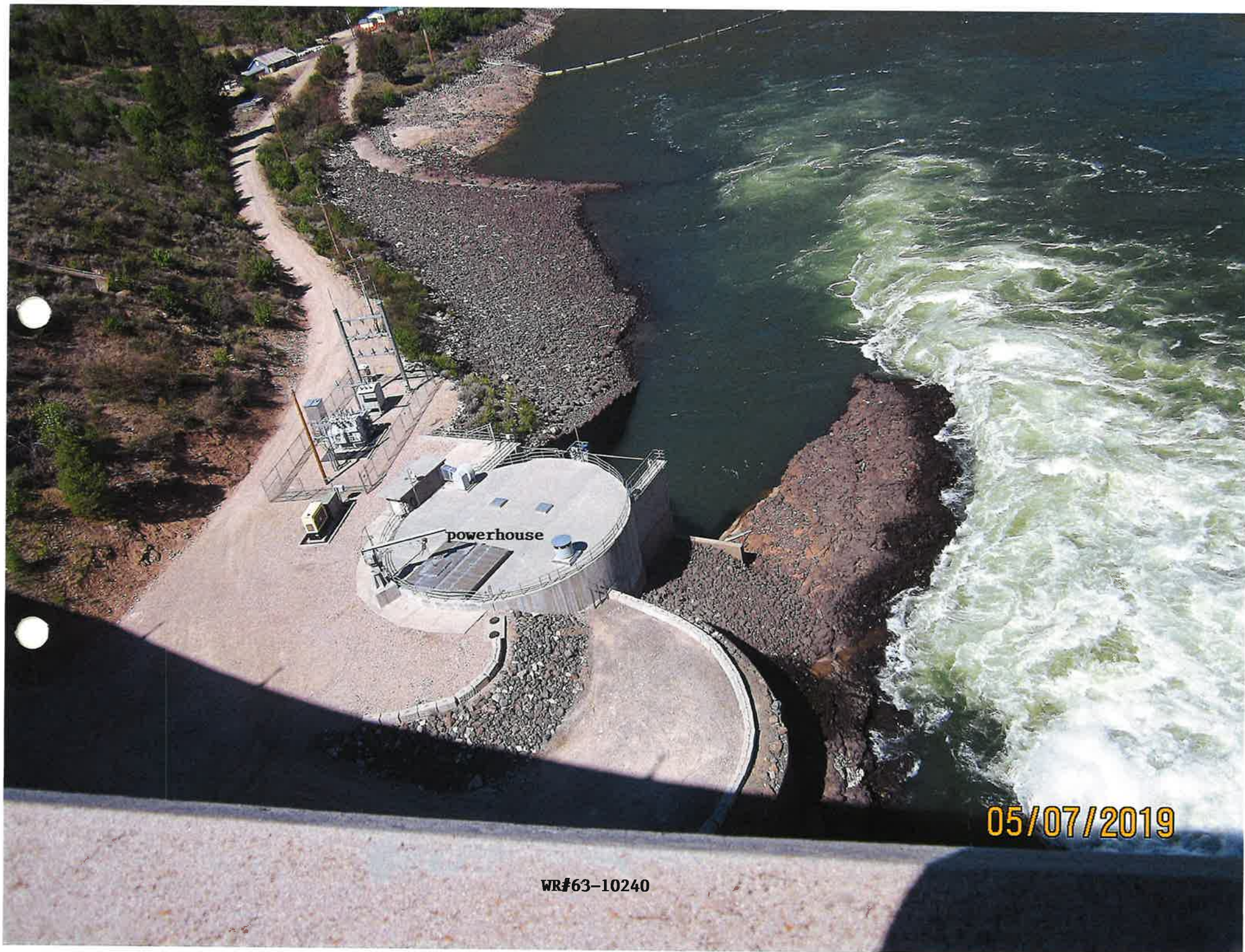
KUNMING ELECTRICAL MACHINERY CO., LTD. CHINA



intake gate

05/07/2019

WR#63-10240



powerhouse

05/07/2019

WR#63-10240

