



State of Idaho

DEPARTMENT OF WATER RESOURCES

322 E Front Street, Suite 648 • PO Box 83720 • Boise ID 83720-0098

Phone: (208) 287-4800 • Fax: (208) 287-6700

Website: idwr.idaho.gov • Email: idwrinfo@idwr.idaho.gov

BRAD LITTLE
Governor

GARY SPACKMAN
Director

June 24, 2020

RE: Boise Front Geothermal Aquifer Monitoring and Reporting Plan

Dear Interested Parties:

As per our discussion at the March 10, 2020 meeting ("meeting") among representatives of the Idaho Department of Water Resources ("IDWR") and the parties to the 2017 Stipulated Agreement ("Agreement") for Permit 63-34326, Mike McVay has taken over the data analysis responsibilities for the Boise Front Low Temperature Geothermal Ground Water Management Area (GWMA)¹ from Ken Neely, who recently retired. Mike needs to better understand the monitoring methods and the data submitted to IDWR. As a result, the Department has begun reviewing the measuring, monitoring, and reporting expectations found within the Boise Front Geothermal Aquifer Monitoring and Reporting Plan ("M/R Plan").

The M/R Plan has been present for quite some time, preceding permit 63-34326, with its origin dating back to the 2002 Stipulated Agreement¹ regarding currently relinquished water permit 63-9138 and existing licensed water right 63-9139. Monitoring and record keeping of the Boise Front Low Temperature Geothermal ("LTG") Resource has been in existence and ongoing for over 30 years, originating in 1987 when an order was issued establishing the GWMA². The GWMA was established as a result of declining water levels reported in the low temperature geothermal resource system. The establishment of the GWMA led to an Order Requiring Monitoring and Record Keeping, dated July 29, 1987, issued to Veterans Administration Medical Center, Boise Geothermal LTD, Boise Warm Springs Water District, and the State of Idaho.

The M/R Plan's Monitoring Methodology section (pages 2 and 3 of the M/R Plan) calls for a detailed description of monitoring methods for each party. The Department was unable to locate an inventory of the information required within the Monitoring Methodology section of the plan and would like to visit each monitoring site and work individually with each party to compile the information called for in the Monitoring Methodology Section.

The Department will review the information compiled in the inventory and, if needed, discuss ways each party can improve its monitoring and reporting methods and frequency to be consistent with the M/R Plan. Improved monitoring and reporting will improve Mike's ability to generate the annual reports that the parties and IDWR rely upon for decision-making.

¹ 2002 Stipulated Agreement for Settlement in Part and Stay of Proceedings Regarding Remainder of Petition: In the Matter of Petition for Order Authorizing Additional Use Under Existing Permit and Moratorium Order for Water Rights 63-9138 and 63-9139 in the name of the City of Boise

² Section 42-233b, Idaho Code, authorizes the Director of the Department to require all water right holders within a designated GWMA to report withdrawals and other necessary information for the purpose of assisting him in determining water usage and available ground water supplies.

Mike and I will be contacting the parties individually to arrange site visits during 2020. Please email me the contact information of a technical person (person to contact to arrange site visit) at ashley.ritter@idwr.idaho.gov.

If you have any questions in regards to this matter, please do not hesitate to contact myself at (208) 287-4907 or Mike McVay at (208) 287-4840.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ashley Ritter', with a stylized flourish at the end.

Ashley Ritter
Associate Engineer

Attachments: Boise Front Geothermal Aquifer Monitoring and Reporting Plan

EXHIBIT C

BOISE FRONT GEOTHERMAL AQUIFER MONITORING AND REPORTING PLAN

Designated Long-Term Observation Well Monitoring. Commencing on the effective date of this Plan, water level/wellhead pressure data shall be collected at least weekly and reported at least quarterly to IDWR for the wells listed on Table 1. The Party designated in the table as responsible for each well ("Party" or collectively "Parties") shall complete the collection and reporting of data for that well at the Party's own expense. For the wells listed in Table 1 that are equipped with pressure transducers and data loggers, manual measurements (steel tape, electric line, or pressure gage) shall be collected at least weekly during the months of September and February for verification purposes. Transducer/data loggers shall be downloaded semiannually in June and December.

Production and Injection Well Monitoring. Commencing on the effective date of this Plan, each Party designated in Table 1 shall at its own expense collect at least weekly and report at least quarterly to IDWR (1) the production (instantaneous and totalized flow) and discharge temperature data for the geothermal production wells operated by the Party and (2) injection volume (instantaneous and totalized flow) and injection temperature in any injection well operated by the Party within the BFGMA (Boise Front Groundwater Management Area). These wells are listed in Table 2. Each Party shall also collect water level/well head pressure from their respective production and injection wells on a weekly basis during the following 6-week periods: September 1 through October 12 and February 1 through March 14. For purposes of this Agreement, the City shall collect and report production, discharge temperature and water level/pressure data for each of the operating City production wells.

Secondary Observation Well Monitoring. Any additional wells to be monitored for water levels are listed in Table 3. Data from this monitoring may be useful for aquifer modeling purposes or other studies.

BLM, Harris, Quail Hollow, and VA Wells. The Parties in Table 1 shall reasonably cooperate with each other and with the IDWR to assure that BLM, Harris Warm Springs Creek (Harris), Quail Hollow Golf Course (Quail Hollow), and VA well data continues to be collected and reported to IDWR and is available to each of the Parties. These non-party wells are listed in Table 4. The IDWR shall to the extent of its authority require the following: VA and Quail Hollow shall collect water level/well head pressure, production (instantaneous and totalized flow), and discharge temperature data for their respective geothermal production wells. The VA shall collect wellhead pressure, injection volume (instantaneous and totalized flow), and

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injection temperature in the VA injection well. Production and temperature data shall be collected at least monthly. VA and Quail Hollow shall collect water level/well head pressure from their respective wells on a weekly basis during the following 6-week periods: September 1 through October 12 and February 1 through March 14. BLM water levels shall be measured at least weekly on a year-around basis. Harris well monitoring and reporting shall be as provided in the March 29, 2002 Stipulated Agreement for Withdrawal of Harris Protest regarding the City Petition respecting Water Right Permits 63-9138 and 63-9139.

Calibration. The IDWR or another entity agreed upon by the Parties shall annually visit each well listed in Tables 1-4 over which a Party has possession or control or to which access is otherwise permitted for purposes of calibration checks of monitoring equipment. The calibration will include (1) comparison measurements of pressure (calibrated gages versus well gage and/or transducer) and (2) calibration checks of flow meters using the IDWR ultrasonic flow meter or other means.

Reporting. The Parties shall submit data to IDWR on a quarterly basis. The Parties shall submit data on a standard form if such a form is provided by IDWR. Each Party shall submit data to IDWR within 30 days after the end of each quarter. Upon the end of each quarter, IDWR shall notify each Party of the due date for submitting data. For this purpose, the end of each quarter shall be December 31, March 31, June 30, and September 30 of each year. The IDWR shall prepare an annual summary report regarding monitoring data and provide it to the Parties by February 15 following the water year data that the report summarizes. The IDWR shall also provide data in response to requests by any Party on a case-by-case basis. The IDWR shall promptly notify Parties who fail to report their data by the due date following each quarter, and such Parties shall be subject to IDWR assessing civil penalties for failure to report in accordance with IDWR authority. All Parties shall be copied on such notices and assessments of civil penalties.

Monitoring Methodology. Each Party shall prepare a detailed description of monitoring methods for the Party's own wells by the effective date of this Plan. These descriptions shall be attached to this plan as Appendices A through F. Each appendix will include the following information. A field trip to each well site for interested Parties is recommended to obtain standardized photographs and vertically accurate GPS measurements.

1. identification of monitored wells
2. reference point descriptions for water level measurements (with photographs)

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3. reference point elevation (GPS) National Geodetic Vertical Datum, 1929 ("NGVD 29")
4. description of measuring equipment (including model numbers, serial numbers and calibration information for flow meters)
5. name, address, and telephone number for individual responsible for submitting monitoring data
6. remarks regarding monitoring methods or protocol
7. All well heads where pressure measurements are taken shall be equipped with quality 0-50 psi double- pressure gage clusters with isolation valves.
8. Water level sounding tubes shall be installed as appropriate when pumps are pulled for servicing.

Effective Date: This Plan shall be effective upon acceptance by the Director of IDWR.

Review and Modification. This plan shall be subject to periodic review and modification. This plan may be modified only by means of a written agreement signed by each of the Parties. A modification shall not be binding upon IDWR unless accepted by the Director.

TABLE 1 - PRIMARY OBSERVATION WELLS

Well Name	Well Ownership	Monitoring Responsibility	Water Level Measurement Method	Minimum Measurement Frequency	Remarks
Kanta	State IDL	City	Transducer/data logger	Continuous**	City to purchase transducer, State to provide access
BWS#3	BWS	BWS	Electric line	Weekly	
BGL#1	City	City	Transducer/data logger	Continuous**	Measure shut-in pressure City to purchase transducer; well available following transfer approval
Edwards	Edwards	Edwards	Pressure Gages	Weekly	
Tiegs	Terteling	Terteling	Transducer/data logger	Continuous**	

TABLE 2 - PARTY PRODUCTION AND INJECTION WELLS

Well Name	Well Ownership	Monitoring Responsibility	Water Level Measurement Method	Minimum Measurement Frequency	Remarks
Edwards	Edwards	Edwards	Pressure Gages	Weekly	Measure operating pressure, totalizer reading, flow rate, temp.
City Injection	City	City	Transducer/data logger	Continuous**	Measure operating pressure, totalizer reading, flow rate, temp.
BGL2	City	City	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp. BGL 3 is dormant
BGL4	City	City	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp.
BWS East	BWS	BWS	Air Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp.
BWS West	BWS	BWS	Air Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp.
Flora Shed	Terteling	Terteling	Pressure Gages	Weekly*	Measure shut-in pressure, totalizer reading, flow rate, temp.
Flora Office	Terteling	Terteling	Pressure Gages	Weekly*	Measure shut-in pressure, totalizer reading, flow rate, temp.
Pool	Terteling	Terteling	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp.
Windsock	Terteling	Terteling	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp.
Motorcycle Club	Terteling	Terteling	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp.
Capitol Mall #1	State DA	State DA	Pressure Gages	Weekly*	Measure operating pressure, totalizer reading, flow rate, temp.
Capitol Mall #2	State DA	State DA	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, totalizer reading, temp.

TABLE 3 - SECONDARY OBSERVATION WELLS

Well Name	Well Ownership	Monitoring Responsibility	Water Level Measurement Method	Minimum Measurement Frequency	Remarks
None					Tiegs and other primary observation wells are now adequate to cover monitoring needs

TABLE 4 - NON-PARTY WELLS

Well Name	Well Ownership	Monitoring Responsibility	Water Level Measurement Method	Minimum Measurement Frequency	Remarks
BLM	US	USGS	Transducer/data logger	Continuous**	City agrees to take over monitoring if USGS discontinues monitoring
VA Test Injection	VA	VA	Pressure Gages	Weekly*	Measure static pressure or water level
VA Production	VA	VA	Electric Line	Weekly*	Measure pumping water level, flow rate, temp.
VA Injection	VA	VA	Pressure Gages	Weekly*	Measure operating pressures, flow rate, temp.
Quail Hollow Lower	Quail Hollow	Quail Hollow	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, temp.
Quail Hollow Upper	Quail Hollow	Quail Hollow	Electric Line	Weekly*	Measure static water level or pumping water level, flow rate, temp.
Harris	Harris	Harris	Transducer/data logger	Continuous**	Per 3/29/02 Stipulated Agreement for Withdrawal of Harris Protest, City to purchase transducer

*Sept 1 - Oct 12 and Feb 1 - March 14 only

**supplement continuous monitoring with weekly hand measurements in September and October

Hersley, Jean

Subject: FW: City of Boise Letter

Attachments: Monitoring Methods Inventory Letter_updated.docx; Monitoring PPlan.pdf

*Jean Hersley
Technical Records Specialist II
Idaho Dept Water Resources
(208) 287-4942*

From: Ritter, Ashley

Sent: Wednesday, June 24, 2020 9:37 AM

To: Hersley, Jean <Jean.Hersley@idwr.idaho.gov>

Subject: City of Boise Letter

Jean,

You will find attached the final letter for the Boise Front Geothermal monitoring Plan. Can you please print the necessary seven (7) copies on the correct letterhead along with the attachment for each and I will sign the letters. The mailing list is as follows:

City of Boise
Public Works Dept.
Attn: Jon Gunnerson
150 N. Capitol Blvd
P.O. Box 500
Boise, ID 83701-0500

BOISE WARM SPRINGS WATER DISTRICT
C/O LYNDON NGUYEN AND CHERISE MCLAIN
MSBT LAW CHTD
950 W BANNOCK ST STE 520
BOISE ID 83702

EDWARDS FAMILY LLC
C/O DANA HOFSTETTER
HAWLEY TROXELL ENNIS & HAWLEY LLP
PO BOX 1617
BOISE ID 83701-1617

STATE OF IDAHO, DEPT OF LANDS
C/O ANGELA SCHAER KAUFMANN
OFFICE OF THE ATTORNEY GENERAL
PO BOX 83720
BOISE ID 83720-0010

STATE OF IDAHO, DEPT OF ADMIN
C/O JULIE WEAVER
OFFICE OF THE ATTORNEY GENERAL
PO BOX 83720
BOISE ID 83720-0010

TERTELING COMPANY INC
C/O CHARLES HONSINGER
HONSINGER LAW PLLC
PO BOX 517
BOISE ID 83701-0517

CITY OF BOISE
C/O ROBERT MAYNARD
PERKINS COIE LLP
PO BOX 737
BOISE ID 83701-0737

Perkins Coie LLP address has changed. This will be sent to:

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

CITY OF BOISE
C/O ROBERT MAYNARD
PERKINS COIE LLP
1111 W JEFFERSON ST STE 500
BOISE ID 83702