



State of Idaho

DEPARTMENT OF WATER RESOURCES

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April 9, 2009

C. L. "BUTCH" OTTER
Governor

DAVID R. TUTHILL, JR.
Director

South Gimlet Water Users Association
c/o Wayman Taylor
PO Box 2382
Ketchum, ID 83340

Re: Order Requiring Measuring Devices for the Rinker 11 and 11-A Diversion in Water District 37

Dear Gentlemen,

The Idaho Department of Water Resources (IDWR or Department) has issued the enclosed preliminary order requiring installation of measuring devices for the above referenced diversions and their return flow in Water District No. 37, Big Wood River and tributaries. Pursuant to Section 67-5243, Idaho Code, the preliminary order will become a final order without further action of the Department unless a party petitions for reconsideration or files an exception and/or brief as explained in the enclosed information sheet.

This order requires users receiving the order to contact the Water District 37 watermaster or the Department with plans for measuring devices on or before May 8, 2009. Please refer to the enclosed document "*Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices*" for information on types of measuring devices acceptable to IDWR. This document and other information on the topic are available on IDWR's Internet site at the following address: http://www.idwr.idaho.gov/water/districts/water_measurement.htm

If you have questions concerning this order, please contact me directly at 208-287-4959 or the Water District 37 watermaster, Kevin Lakey, at 208-886-2451.

Respectfully,

Tim Luke
Water Distribution

Encl: *Preliminary Order Requiring Measuring Devices - Rinker Diversions 11 & 11A in Water District 37; Explanatory Information to Accompany a Preliminary Order; IDWR Minimum Acceptable Standards: Open Channel & Closed Conduit Measuring Devices*

Cc: Kevin Lakey, Watermaster, Water District 37
Dr. Charles G. Brockway, Brockway Engineering
IDWR Southern Region

**EXPLANATORY INFORMATION
TO ACCOMPANY A
PRELIMINARY ORDER**

(To be used in connection with actions when a hearing was not held)

(Required by Rule of Procedure 730.02)

The accompanying order or approved document is a "**Preliminary Order**" issued by the department pursuant to section 67-5243, Idaho Code. It can and will become a final order without further action of the Department of Water Resources ("department") unless a party petitions for reconsideration, files an exception and brief, or requests a hearing as further described below.

PETITION FOR RECONSIDERATION

Any party may file a petition for reconsideration of a preliminary order with the department within fourteen (14) days of the service date of this order. The department will act on a petition for reconsideration within twenty-one (21) days of its receipt, or the petition will be considered denied by operation of law. See Section 67-5243(3) Idaho Code.

EXCEPTIONS AND BRIEFS

Within fourteen (14) days after (a) the service date of a preliminary order, (b) the service date of a denial of a petition for reconsideration from this preliminary order, or (c) the failure within twenty-one (21) days to grant or deny a petition for reconsideration from this preliminary order, any party may in writing support or take exceptions to any part of a preliminary order and may file briefs in support of the party's position on any issue in the proceeding with the Director. Otherwise, this preliminary order will become a final order of the agency.

REQUEST FOR HEARING

Unless a right to a hearing before the Department or the Water Resource Board is otherwise provided by statute, any person aggrieved by any final decision, determination, order or action of the Director of the Department and who has not previously been afforded an opportunity for a hearing on the matter may request a hearing pursuant to section 42-1701A(3), Idaho Code. A written petition contesting the action of the Director and requesting a hearing shall be filed within fifteen (15) days after receipt of the denial or conditional approval.

ORAL ARGUMENT

If the Director grants a petition to review the preliminary order, the Director shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. If oral arguments are to be heard, the Director will within a reasonable time period notify each party of the place, date and hour for the argument of the case. Unless the Director orders otherwise, all oral arguments will be heard in Boise, Idaho.

CERTIFICATE OF SERVICE

All exceptions, briefs, requests for oral argument and any other matters filed with the Director in connection with the preliminary order shall be served on all other parties to the proceedings in accordance with IDAPA Rules 37.01.01302 and 37.01.01303 (Rules of Procedure 302 and 303).

FINAL ORDER

The Director will issue a final order within fifty-six (56) days of receipt of the written briefs, oral argument or response to briefs, whichever is later, unless waived by the parties or for good cause shown. The Director may remand the matter for further evidentiary hearings if further factual development of the record is necessary before issuing a final order. The department will serve a copy of the final order on all parties of record.

Section 67-5246(5), Idaho Code, provides as follows:

Unless a different date is stated in a final order, the order is effective fourteen (14) days after its issuance if a party has not filed a petition for reconsideration. If a party has filed a petition for reconsideration with the agency head, the final order becomes effective when:

- (a) the petition for reconsideration is disposed of, or
- (b) the petition is deemed denied because the agency head did not dispose of the petition within twenty-one (21) days:

APPEAL OF FINAL ORDER TO DISTRICT COURT

Pursuant to sections 67-5270 and 67-5272, Idaho Code, if this preliminary order becomes final, any party aggrieved by the final order or orders previously issued in this case may appeal the final order and all previously issued orders in this case to district court by filing a petition in the district court of the county in which:

- i. A hearing was held,
- ii. The final agency action was taken,
- iii. The party seeking review of the order resides, or
- iv. The real property or personal property that was the subject of the agency action is located.

The appeal must be filed within twenty-eight (28) days of this preliminary order becoming final. See section 67-5273, Idaho Code. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF REQUIRING MEASURING)	
)	
DEVICES ON DIVERSIONS 11 AND 11A FROM THE)	PRELIMINARY
)	ORDER
BIG WOOD RIVER IN WATER DISTRICT NO. 37)	
_____)	

This matter having come before the Idaho Department of Water Resources (Department or IDWR), as a result of its' ongoing review of questions related to the distribution of water on several diversions from the Big Wood River that are controlled by the watermaster of Water District No. 37, the Department finds, concludes and orders as follows:

FINDINGS OF FACT

1. On February 12, 2008 the Department received a letter from the Watermaster of Water District No. 37, the Big Wood River and tributaries, requesting guidance concerning delivery of water rights on the Rinker 11 and 11A diversions from the Big Wood River. The watermaster specifically sought guidance regarding the delivery of right 37-7822, which authorizes the diversion of 20 cubic feet per second (cfs) of water from the Big Wood River for year-round aesthetic and recreational uses. Department records show that South Gimlet Water Users Association, Inc. is the current owner of record of right 37-7822.

2. The Department responded to the watermaster's request via correspondence dated October 6, 2008 and June 16, 2008. In that correspondence, the Department noted that measuring devices should be installed on the 11 and 11A diversions to measure inflow to the aesthetic channels, and that a measuring device should be installed at the point where water is returned to the Big Wood River.

3. Condition 5 of water right license 37-7822 states that “the use of water under this right shall be regulated by the watermaster of State Water District No. 37.” Condition 6 of water right 37-7822 states that “use of water under this right shall be non-consumptive.” Condition 9 of the right states that “the Director retains jurisdiction of this right to require installation of measuring devices at the points where water returns to the Big Wood River.” Condition 11 of the right states that “upon a future determination by the Department of Water Resources that water is lost to the injury of prior right holders, the losses shall be replaced from a source acceptable to the Department.” The purpose for condition 6 requiring installation of a measuring device at the point or points where water diverted under the right returns to the river is to document any potential losses on the aesthetic channels, to help evaluate that the right is non-consumptive, and to help make any future determination as to whether the diversion of water causes injury to prior right holders which would require mitigation.

4. During 2008, the watermaster inspected the measuring devices for the Rinker 11 and 11-A diversions, as well as any measuring devices that may have been installed at the point or points where water is returned to the Big Wood River. The watermaster reported to the Department that the weir or measuring device installed on the 11-A diversion is generally submerged and does not provide accurate measurements. The watermaster recommends this weir be corrected. The watermaster further reported that the two diversions flow together into one channel and return water is returned to the Big Wood River at one location but no measuring device exists to measure the return flow. The measuring device installed on the Rinker 11 diversion is satisfactory according to the watermaster.

CONCLUSIONS OF LAW

1. Section 42-701, Idaho Code, provides in pertinent part:

42-701. INSTALLATION AND MAINTENANCE OF CONTROLLING WORKS AND MEASURING DEVICES BY WATER APPROPRIATORS – PROCEDURE UPON FAILURE TO INSTALL AND MAINTAIN – MEASURING AND REPORTING OF DIVERSIONS – PENALTY FOR FAILURE TO COMPLY – REPORT FILING FEE.

1. The appropriators or users of any public waters of the state of Idaho shall maintain to the satisfaction of the director of the department of water resources suitable head gates and controlling works at the point where the water is diverted. Each device shall be of such construction that it can be locked and kept closed by the watermaster or other officer in charge, and shall also be of such construction as to regulate the flow of water at the diversion point. Each such appropriator shall construct and maintain, when required by the director of the department of water resources, a rating flume or other measuring device at such point as is most practical in such canal, ditch, wellhead or pipeline for the purpose of assisting the watermaster or department in determining the amount of water that may be diverted into said canal, ditch, wellhead or pipeline from the stream, well or other source of public water. Plans for such head gates, rating flumes or other measuring devices shall be approved by the department of water resources.

3. Any appropriator or user of the public waters of the state of Idaho that neglects or refuses to construct or maintain such head gates, controlling works, or measuring devices..., upon receiving ten (10) days' notice from the director of the department of water resources within which to begin and diligently pursue to completion the construction or installation of the required device or devices or to begin and diligently pursue to completion a remedy to such defects as exist in accordance with said notice, then the director of the department of water resources may order the duly qualified and acting watermaster of the water district to shut off and refuse to deliver at the point of diversion, the water owned by such appropriator or user until the user does construct and maintain such head gates, controlling works or measuring devices or remedy the defects which exist or the director may take action pursuant to section 42-1701B, Idaho Code, to enforce the requirement to construct, install or maintain such devices.

4. The appropriators or users of the public waters of the state of Idaho shall be given a reasonable time within which to complete construction of such head gates, controlling works or measuring devices, depending upon the size and extent thereof, when due diligence has been used in the prosecution of such work.

2. The Director should require the owner or owners of water right 37-7822 to maintain the measuring devices installed on the points of diversion authorized by the right. Specifically, the owner should repair or replace the measuring device installed at diversion 11A, or fix any downstream conditions that may cause submergence of the measuring device. The Director should also require the owner or owners of right 37-7822 to install a measuring device at or near the point where water diverted under right 37-7822 is returned to the Big Wood River to determine losses to the system.

ORDER

IT IS HEREBY ORDERED AS FOLLOWS:

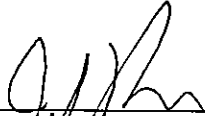
1. The owner of right 37-7822, South Gimlet Water Users Association Inc., shall repair, update or replace the measuring device installed at the Rinker 11A diversion so that the device provides for proper measurement of water. The water right owner may need to modify or correct any downstream conditions that may cause submergence of the existing measuring device installed on the Rinker 11-A diversion. The actions taken to correct or replace the measuring device must be made on or before June 1, 2009.

2. South Gimlet Water Users Association Inc. shall install a measuring device to measure water returned to the Big Wood River from the Rinker 11 and 11-A diversions. The measuring device shall be installed at or near the point of return to the river on or before June 15, 2009.

3. South Gimlet Water Users Association Inc. must contact the Water District 37 watermaster or the Department no later than May 8, 2009 regarding plans for installation of measuring devices and controlling works for the 2009 irrigation season. Plans shall be reviewed by the watermaster or the Department to determine whether proposed measuring devices and controlling works are of a type acceptable to the Department. If the measuring devices and/or measuring device corrections required by Order items 1 and 2 above are already in place, the right owner shall contact the watermaster or provide a written description to either the watermaster or Department by May 8, 2009.

4. The watermaster shall shut off and refuse to deliver water to the Rinker 11-A diversion if the measuring device near the head of the diversion is not corrected or replaced by June 1, 2009. The watermaster shall shut off and refuse to deliver water to the Rinker 11 and 11-A diversions if the right owner fails to install a measuring device to measure the return flows at or near the point of return to the Big Wood River by June 15, 2009.

Dated this 9th day of April, 2009



JEFF PEPPERSACK
WATER ALLOCATIONS BUREAU CHIEF

**STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES (IDWR)**

**MINIMUM ACCEPTABLE STANDARDS FOR
OPEN CHANNEL AND CLOSED CONDUIT
MEASURING DEVICES**

The source and means of diversion of water, whether surface or ground water, generally affects the selection of a measuring device. Surface water sources such as streams, springs and waste channels are normally diverted into open channels (ditches or canals), but closed conduits (pipes or culverts) are also used. Ground water is usually diverted into pipes (which may also discharge into open channels).

Measuring devices when required by IDWR are to be installed at or near the point of diversion from the public water source.

Open Channel

I. SURFACE WATER DIVERSIONS

The following discussion is applicable only to diversions from surface water sources. Measurement of a ground water diversion with an open channel measuring device must be pre-approved by the IDWR.

A. Standard Open Channel Measuring Devices

All open channel surface water diversions should be measured using one of the following standard open channel flow measuring devices commonly used in Idaho:

- contracted rectangular weir
- suppressed rectangular weir
- Cipolletti weir
- 90 degree V-notch weir
- Parshall flume
- trapezoidal flume
- submerged rectangular orifice
- constant head orifice
- ramped broad crested weir (or ramped flume)
- acoustic Doppler flow meter (ADFM)

Construction and installation of these devices should follow published guidelines. References are available upon request.

B. Non-standard open channel devices: Rated Structures or Rated Sections

IDWR may authorize the use of non-standard devices and rated sections provided the device or section is rated or calibrated against a set of flow measurements using an acceptable open channel current meter or a standard portable measuring device. Further restrictions and requirements are available from IDWR upon request.

II. CLOSED CONDUIT MEASURING DEVICES

Closed conduit or pipe line diversions require installation of a flowmeter. There are many flowmeters on the market, with costs ranging from several hundred dollars to several thousand dollars. In general, the higher priced meters are more accurate and require less maintenance. Most meters on the market have an acceptable accuracy rating for IDWR's guidelines. However, some types and designs are much more prone to maintenance problems. Moving parts tend to wear when sand or silt is present, and moss often plugs small orifices and slows moving parts. No single flowmeter is best for every situation. We recommend that you visit with qualified dealers and discuss your needs with them.

A. Flow Meter Specifications

Listed below are the flow meter requirements and specifications for full-flowing closed conduits or pipes. These specifications apply to all irrigation and non-irrigation water uses except domestic systems as defined in Section 42-111, Idaho Code. Water users may apply to IDWR for a variance to these specifications in accordance with Criteria for Request for Variance of measuring Device Requirements of Section II C. of this document

Meters shall be magnetic flow meters meeting the following minimum specifications:

- 1) Flow range of 0.1 to 33 feet per second (fps).
- 2) Listed manufacturer accuracy of $\pm 0.5\%$ of flow rate from 1.6 to 33 feet per second (fps), and $\pm 2\%$ of flow rate from 0.1 to 1.5 feet per second (fps).
- 3) The register or display unit shall:
 - a) Have a waterproof and tamperproof seal.
 - b) Have an LCD backlit display showing instantaneous flow rate and totalized volume.
 - c) Have a minimum of six (6) digits for flow rate.
 - d) Have a minimum of eight (8) digits for totalized volume display or a sufficient number of digits so that "rolling over" will not occur within two years operation, based on the maximum rate of flow and annual volume elements of the authorizing water rights. For totalizing data, IDWR recommends using the attached guidelines (see Table 1) for proper meter (totalizing units) selection for the intended use.
 - e) Have password or similar protection of all settings and data to protect against unauthorized change or accidental loss of data.
 - f) Contain a back up battery (according to manufacturers specifications) to prevent loss of data in the case of primary power failure.
 - g) The display unit must contain user programmable features that allow the selection of flow units. Available flow units must include, but are not limited to, gallons per minute (gpm) or cubic feet per second (cfs). The meter flow rate display must also allow decimal display formatting of up to three (3) places when using cubic feet per second units.
 - h) The volume totalizer display must contain user programmable features that allow the selection of volumetric units that must include but are not limited to, total gallons or acre feet. The meter must also allow decimal display formatting of up to four (4) places, and the application of unit multipliers ranging from .0001 to 10,000.

4) Signal Output when Data Logger is Required

Data loggers are required only for magnetic flow meters installed as per conditions of approval for water right transfers in the Eastern Snake Plain Aquifer, or as may be required by specific water right conditions of approval in other locations.

Scaled pulse frequency output (or pulse counting) is required for continuous recording of totalized volume data on data loggers. Output signals must be compatible with data logger inputs. Analog output signal for flow rate (usually 4-20mA) is also optional (most magnetic flow meters provide both analog and pulse frequency as standard output signals),

B. Meter Installation and Diversion System Requirements

Meters required under Section II A. above shall meet the following installation requirements:

- 1) The minimum and maximum system operating flows and pressures must be fully within the range of measurable flows and pressures identified in the meter specifications.
- 2) Pipes must be full flowing.
- 3) The installed flow rate accuracy of the installed magnetic flow meter must be $\pm 5.0\%$ as compared to a second, standard flow meter. The installed flow rate accuracy for mechanical flow meters is $\pm 10\%$ of rate of as compared to a second, standard flow meter.
- 4) Meters must be installed according to manufacturer's specifications. Most manufacturers' recommend that meters be installed a certain distance from turbulence-causing bends and fittings such as discharge heads, single elbows, and valves. Industry standards for such distances are listed below, but larger distances may be required if the turbulence is severe.
 - a. Magnetic flow meters require three (3) pipe diameters upstream of the meter and two (2) downstream.
 - b. Mechanical flow meters require ten (10) pipe diameters upstream of the meter and five (5) pipe diameters downstream.
- 5) Meter Certification: IDWR will certify the installed flow meter for accuracy using a second, standard flow meter. A location for measuring flow with a second standard meter must be provided as close to the installed meter as possible. A section of straight pipe with a minimum of 24 inches in length (for pipe diameters 16 inches and smaller) of unobstructed exposed pipe shall be provided for calibration purposes. The calibration section must be free of elbows, valves and other fittings, and must contain the same flows that are passing through the meter. The 24-inch certification section may be incorporated into the manufacturer's pipe requirements above or below the flow meter.

C. Requests for Variance of Closed Conduit Measuring Device Requirements

Owners of closed conduit diversions may request a variance of the standard magnetic flow meter requirements of section II A. above for the following reasons:

- a) An operable flow meter is already installed
- b) Installation and maintenance of the standard meter would be burdensome

If a meter is already installed, that meter may be used if the meter is field-tested by IDWR staff and/or the water district watermaster using a portable certified standard flow meter and upon a determination that the meter is installed properly and accurate to within $\pm 10\%$ of actual rate of flow and volume. *IDWR or the water district watermaster should apply a calibration factor to flow meters whenever the calibration measurement is greater than $\pm 1.0\%$.*

If a user demonstrates that installation and maintenance of the standard meter would be burdensome, then IDWR may consider alternate measurement options including:

- Development of Power Consumption Coefficient to estimate water use volumes (generally acceptable for simple ground water irrigation diversion systems only)
- Installation of one or more time clocks or hour meters (requires periodic flow measurements and recording of hours of water use from meter or clock)
- Installation of an alternative flow meter as shown in Table 2 below.

Users considering making a variance request may contact IDWR or the local water master for further information.

Table 1; Use for proper meter selection based on water right volume.

Volume Acre Feet (AF)	Multiplier X gallons (gal)	Multiplier X Acre Feet (AF)
0-150	1, 10, 100	.0001, .001
150-1000	10, 100, 1000	.001, .01
>1000	100, 1000	.001, .01

Table 2; Types of Measuring Devices for Closed Conduits

Types	Pipe Sizes	Maintenance Required	Relative Purchase Price
Differential Head <ul style="list-style-type: none"> Orifice Venturi Annubar 	small to large	Low to high. Sand wears on sharp edges, and particles can plug small orifices and tubes.	low to medium
Force Velocity <ul style="list-style-type: none"> Turbine Propeller Impeller 	small to large	Typically moderate to high. Often problematic when exposed to sand or moss. Some cannot measure low velocities	low to medium
Ultrasonic or Acoustic Doppler	small to large	Low. Typically non-invasive with no moving parts to wear	high
Vortex	small to medium (about 12 to 14 inch maximum pipe diameter)	Low. Few or no moving parts to wear.	high