State of Idaho
DEPARTMENT OF WATER RESOURCES
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C. L. "BUTCH" OTTER
Governor

DAVID R. TUTHILL, JR.
Director

February 20, 2008

Re: Order Requiring Measuring Devices and Controlling Works in Water District 11

Dear Water User,

The Idaho Department of Water Resources (Department or IDWR) has issued the enclosed preliminary order requiring installation of measuring devices and control works for certain diversions in Water District No. 11, Bear River, prior to the 2008 irrigation season. 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 submit plans for measuring devices and control works (head gates or control gates) to the Department on or before March 21, 2008. The order only applies to the control and measurement of water at the head of the main canals, ditches, or points of diversions from the Bear River listed in the order, not the points of re-diversion or laterals from those main ditches. 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 the Department's web site as follows: http://www.idwr.idaho.gov/water/districts/water_measurement.htm

Note that water users are required to provide written plans to the Department by March 21, 2008 that describe the types of measuring devices and/or controlling works to be installed. Plans should include a written description and diagram of the devices or works, and show the locations of planned installations.

If you have questions concerning this order, please contact the watermaster for Water District 11, Rock Holbrook, or contact Cindy Bird at the IDWR's Soda Springs Satellite Office (208-547-3993), or either Corbin Knowles, or Tim Luke, IDWR Water Distribution Section, Boise (208-287-4800).

Respectfully,

Tim Luke
Water Distribution Section Manager

Enclosures:
Preliminary Order Requiring Controlling Works and Measuring Devices in Water District 11, Dated February 20, 2008
Explanatory Information to Accompany a Preliminary Order (2 pages)
IDWR Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices

Cc: Rock Holbrook, Watermaster, Water District 11
Cindy Bird, IDWR, Soda Springs
IDWR Eastern Region

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF REQUIRING MEASURING	)	
	)	
DEVICES AND CONTROLLING WORKS ON	)	PRELIMINARY
	)	ORDER
BEAR RIVER, WATER DISTRICT 11	)	
	)	

During the 2007 irrigation season, staff from the Idaho Department of Water Resources (Department), working in coordination with the Water District No. 11 watermaster, determined that a number of water diversions from the Bear River either had no measuring devices and controlling works (headgates) or lacked sufficient measuring devices and controlling works. A number of these diversions are pumps from the Bear River that were not previously measured or regulated by the water district watermaster prior to 2007. 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 headgates 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 headgates, 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 headgates, 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 headgates, 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 headgates, controlling works or measuring devices, depending upon the size and extent thereof, when due diligence has been used in the prosecution of such work.

ORDER

IT IS HEREBY ORDERED AS FOLLOWS:

1. Those water right holders or water users identified in Attachment A of this order that divert water from the Bear River shall install measuring devices and lockable controlling works of a type acceptable to the Department prior to diverting water during the 2008 irrigation season.

2. Those water users identified in Attachment A of this order diverting water from the Bear River must submit written plans for measuring devices and controlling works to the Department no later than March 21, 2008. Plans shall be reviewed by the Department to determine whether proposed measuring devices and controlling works are of a type acceptable to the Department. If measuring devices and/or controlling works are already in place, a written description of the devices or works shall be submitted to the Department by March 21, 2008.

3. The watermaster shall shut off and refuse to deliver water to any water right holder or water user with a diversion from the Bear River that does not have an adequate measuring device and/or lockable controlling works at any and all times during the 2008 irrigation season.

Dated this 20th day of February, 2008.

Gary Spackman

GARY SPACKMAN
ADMINISTRATOR

ATTACHMENT A

LARRY ALLEMAN
DIVERSION: PORTABLE PUMP
1630 LOWER BERN RD
BERN ID 83220

STEVEN BOBKA
DIVERSION: PERMANENT PUMP
3238 S 1600 W
PRESTON ID 83263

DAVID BOSEN
DIVERSION: PERMANENT PUMP
2545 W 2400 N
PRESTON ID 83263

HAL DRINKAUS
C/O EMMAUS FUND
DIVERSION: MILLER DITCH
1734 MILLBROOK RD
SLC UT 84106

HAL DRINKAUS
C/O EMMAUS FUND
DIVERSION: NUFFER DITCH
1734 MILLBROOK RD
SLC UT 84106

ROBERT W FITZGERALD
DIVERSION: PORTABLE PUMP
3167 S 2400 W
WESTON ID 83286

LAWRENCE FOX
DIVERSION: PERMANENT PUMP
16205 N CLEVELAND RD
PRESTON ID 83263

LORENZO GRIFFETH
DIVERSION: PERMANENT PUMP
PO BOX 618
PRESTON ID 83263

LEON HARDCASTLE
DIVERSION: PORTABLE PUMP
675 N 8TH E
PRESTON ID 83263

MCGEE HARRIS
DIVERSION: PUMP & BUDGE CANAL
1501 EIGHT MILE RD
SODA SPRINGS ID 83276

ROBERT HENDERSON
DIVERSION: PORTABLE PUMP
3655 N 1600 E
PRESTON ID 83263

JOHN HIGLEY
DIVERSION: PERMANENT PUMP
2003 E 3700 N
PRESTON ID 83263

JENSEN DITCH
C/O MARRINFER JENSEN
DIVERSION: JENSEN DITCH
8989 US HWY 30
MONTPELIER ID 83254

FLOYD JENSEN
DIVERSION: PERMANENT PUMP
1580 W 3200 S
PRESTON ID 83263

BEN JOHNSON ESTATE
C/O RALPH JOHNSON
DIVERSION: PORTABLE PUMP
5705 COTTONWOOD LN
HOLLADAY UT 84117

DARRELL & FERN KEETCH
DIVERSION: LAROCCO-KENT
723 WOODSIDE DR
LOGAN UT 84321

PAUL KEETCH
DIVERSION: LAROCCO-KENT
1052 DINGLE RD
MONTPELIER ID 83254

DEAN KUNZ
C/O CLAUDIA CONDOR
DIVERSION: PERMANENT PUMP
1407 W NORTH TEMPLE STE 110
SLC UT 84116

STEVEN J KUNZ
DIVERSION: PERMANENT PUMP
198 MAIN ST
BERN ID 83220

WAYNE KUNZ
C/O SAMUEL B ROWSER
DIVERSION: PERMANENT PUMP
PO BOX 216
HENEFER UT 84033

INGLET/LAMONT
C/O BRUCE LAMONT
DIVERSION: PERMANENT PUMP
3523 S 1600 W
PRESTON ID 83263

LARRY LINFORD
DIVERSION: LAROCCO-KENT
3163 DINGLE RD
MONTPELIER ID 83254

BLAIR MATHEWS
DIVERSION: PERMANENT PUMP
91 RIVER RD
GRACE ID 83241

NELSON IRRIGATION
C/O DELYLE BARRINGTON
DIVERSION: DITCH
3666 N 1600 E
PRESTON ID 83263

AARON PETERSON
DIVERSION: PUMP & BUDGE CANAL
971 E 300 N
ALPINE UT 84004

PETER PETERSON
DIVERSION: PERMANENT PUMP
PO BOX 349
PRESTON ID 83263

ALLYN PHELPS
DIVERSION: PORTABLE PUMP
128 S MAIN
BENNINGTON ID 83254

PUGMIRE DITCH
C/O GOLDEN KEETCH
DIVERSION: PUGMIRE
377 BERGREEN RD
MONTPELIER ID 83254

HENRY RIGBY
C/O RULON WISTISEN
DIVERSION: MILLER DITCH
1180 OLD HWY 34
BANCROFT ID 83217

HENRY RIGBY
C/O RULON WISTISEN
NUFFER CANAL DIVER
DIVERSION: RIGBY PUMP
1180 OLD HWY 34
BANCROFT ID 83217

ATTACHMENT A

RIVERDALE ESTATES ASSOC
DIVERSION: PERMANENT PUMP
PO BOX 465
PRESTON ID 83263

RIVERDALE PRESTON PUMP
STEVE A MEEK
DIVERSION: PERMANENT PUMP
3525 N 1600 E
PRESTON ID 83263

BILL ROBISON
DIVERSION: NUFFER DITCH
PO BOX 13
DINGLE ID 83233

DEMAR ROMRELL
DIVERSION: NUFFER DITCH
6000 PEGRAM RD
MONTPELIER ID 83254

DAVID E SKABELUND
DIVERSION: PERMANENT PUMP
1265 CLIFFSIDE DR
LOGAN UT 84321

JAMES SMITH
BROKEN HEART RANCH
DIVERSION: NUFFER DITCH,
8086 HWY 30
MONTPELIER ID 83254-0214

JAMES SMITH
BROKEN HEART RANCH
DIVERSION: LLOYD DITCH
8086 HWY 30
MONTPELIER ID 83254-0214

JAMES SMITH
BROKEN HEART RANCH
DIVERSION: SORENSEN DITCH
8086 HWY 30
MONTPELIER ID 83254-0214

KENT EGLY
WENDELL SMITH PUMP
DIVERSION: PERMANENT PUMP
2913 E HWY 36
PRESTON ID 83263

DAVID URE
DIVERSION: SORENSON DITCH
661 S LAMBERT
KAMAS UT 84036

DAVID URE
DIVERSION: UR NORTH HILLS(BAXTER)
661 S LAMBERT
KAMAS UT 84036

OREGON TRAIL COUNTRYCLUB
ATT: BOARD OF DIRECTYORS
DIVERSION: PERMANENT PUMP WIER
HWY 30
SODA SPRINGS ID 83276

RICHARD SORENSON
DIVERSION: PORTABLE PUMP
BOX 1013
CORDOVA AK 99574

CLIFTON STEELE
DIVERSION: MILLER DITCH
5470 S 700 E
SOUTH OGDEN UT 84405

ROGER STEPHENS
CLYDE COOK
DIVERSION: PORTABLE PUMP
530 S 1ST W
BERN ID 83260

JANET WHEELER
DIVERSION: PERMANENT PUMP
336 RIVER RD
THATCHER ID 83283

BRAD WOOLSTENHULME
C/O WOOLSTENHULME FARMS
DIVERSION: PORTABLE PUMP(2)
101 VALLEY VIEW DRIVE
MONTPELIER ID 83254

CLIFF JENSEN
SMITH BOSEN DITCH
DIVERSION: DITCH
4008 E STATION CRK RD
PRESTON ID 83263

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.

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 ± 0.5% of flow rate from 1.6 to 33 feet per second (fps), and ± 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 ± ***5.0***% as compared to a second, standard flow meter. The installed flow rate accuracy for mechanical flow meters is ± ***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 ±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 ±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:

a) Development of Power Consumption Coefficient to estimate water use volumes (generally acceptable for simple ground water irrigation diversion systems only)
b) 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)
c) 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 • 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 • 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