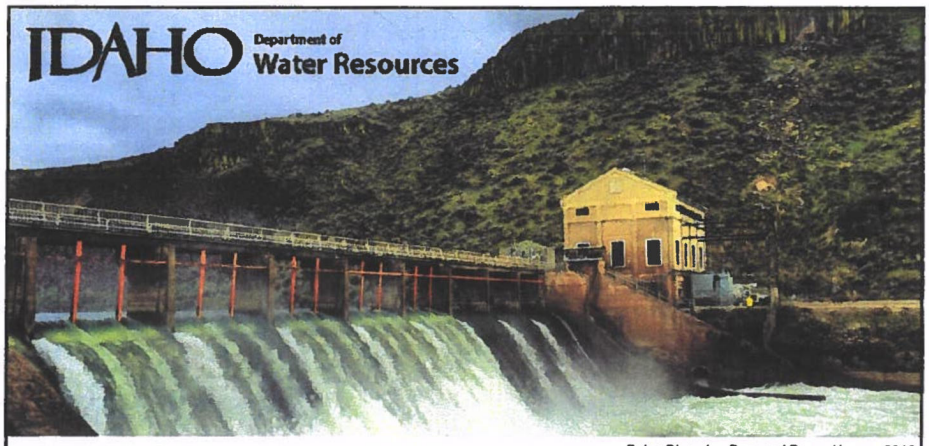

Boise Diversion Dam and Power House , 2016

A Review of Idaho Water Use Standards

Presented to the Association of Western State Engineers

May 9, 2016

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Duty of Water vs. Water Use Standard

Water Law Handbook, Givens Pursley LLP (2007)

Duty of Water. This is the amount of water customarily required to accomplish the purposes of the water right. One's water right is limited to this duty of water.

For example, if people in an area ordinarily use three acre-feet of water per acre per year to irrigate corn, that amount will be declared to be the water duty, and, without specific proof no agricultural water user will be permitted to take more than that amount.

The rather odd phrase "duty of water" is understood more easily in the context of the following quotation from an early Idaho case: *"It is a cardinal principle established by law and the adjudications of this court that the highest and greatest duty of water be required."* Munn v Twin Falls Canal Co., 43 Idaho 198, 207, 252P. 865 (1926).

IDWR Beneficial Field Report, 1940

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Sparse Statutory Guidance

1. §42-1805(3) – Additional Duties of the Director
2. § 42-111 – Domestic Use
3. § 42-202(3) – Irrigation Storage
4. §42-202, 202(B), 217,219, 222 – Municipal Water Right Act

Little Wood River, 2015

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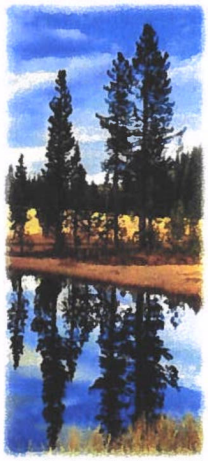
Even Sparser Admin. Rule Guidance

Beneficial Use. One (1) or more of the recognized beneficial uses of water including but not limited to, domestic, municipal, irrigation, hydropower generation, industrial, commercial, recreation, stockwatering, and fish propagation uses for which permits to appropriate water can be issued as well as other uses which provide a benefit to the user of the water as determined by the Director. Industrial use as used for purposes of these rules includes, but is not limited to, manufacturing, mining, and processing uses of water.

(IDAPA 37.03.08.10.06)



Boulder Creek, McCall Area, 2014

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Water Right Processes

Water Right Licensing:
Application » Permit » License

Adjudication of Water Rights:
Claim » Recommendation » Decree

Water Right Transfers

Water Supply Bank Transaction:
Lease » Rental

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IDWR Policy, i.e. Admin. Memo's

<u>Established Guidance and Duties of Water</u>
Domestic, Stockwater, Irrigation, Storage, Municipal

<u>No Guidance or Established Duties of Water</u>
Commercial, Industrial, Mitigation, Heating, Hydropower

<u>Recent Progress</u>
Pond loss, Mitigation, Modeling for Transfers and WSB

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Beneficial Uses
With Water Use Standards

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Domestic Water Use Standards

I.C. § 42-111 – Domestic Purposes Defined

"Domestic purposes" means use of water for homes, livestock, and for any other purpose in connection therewith, including irrigation of up to ½ acre of land, where the total use does not exceed thirteen thousand (13,000) gallons per day.

Domestic Water Use Standards

Indoor Use: 0.02 cfs/home and 0.6 AFA/home

Indoor & Outdoor: 0.04 cfs/home and 1.2 AFA/home

Other: 2,500 gpd/use

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Stockwater Water Use Standards

Range cattle, horses, and mules:
12 gpd/head

Dairy cattle:
35 gpd/head

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Irrigation Water Use - Resources

1. Application Processing Memo 17 – Acceptable Rates of Irrigation Flow for Small Acreages (1979)
2. Application Processing Memo 52 – Standards for Irrigation Consumptive Use Requirements, Irrigation Field Headgate Requirements, and Irrigation Season of Use (1999)
3. Guidelines for the Evaluation of Irrigation Diversion Rates (1991)
   - Determining Field Application Efficiencies
   - Determining On-Farm Irrigation Requirements
   - Determining Conveyance Lasses
   - Determining Irrigation Diversion Requirements
4. ET_{Idaho} 2012 – Evapotranspiration and Consumptive Irrigation Requirements for Idaho (http://data.kimberly.uidaho.edu/ETIdaho/)

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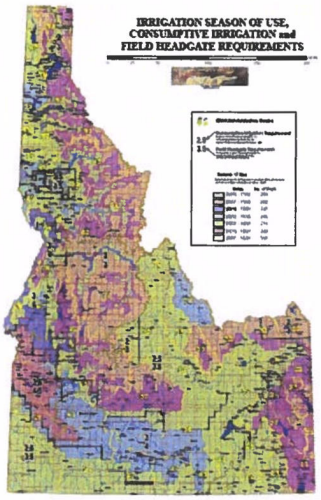
Irrigation Volume Water Use Standards

<u>Season of Use</u>
Spatial delineation on map (color coded)

<u>Consumptive Irrigation Requirement</u>
Based on the most water-consumptive crop in the area generally rounded to the next highest 0.5 AFA/acre.

<u>Field Headgate Requirement</u>
Consumptive irrigation requirement divided by irrigation application efficiency (70-75%) round to nearest 0.5 AFA/acre.



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Irrigation Div. Rate Water Use Standards

1. Irrigated area ≤ 5 acres:
   - 0.02 ≤ Q ≤ 0.03 cfs/acre (AP Memo 17)
2. Irrigated area > 5 acres:
   - ≤ 0.02 cfs per acre (standard practice)

Wheel line on spuds, Aberdeen Area, 2015

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Fish Propagation Water Use Standards

Resources:
- AP Memo 15 Fish Propagation (1979)
- Fish Propagation Guidelines (2012)

Carrying Capacity (cold water fish):
- Density Index
- Flow Index
- Standard Length Weight Ratio

"Rules of Thumb":
- Trout and Salmon
- Cool and Warm Water Fish (sturgeon, catfish, tilapia)

Snake River rainbow, 2015

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Storage, Ponds, and Reservoirs Water Use Standards

<u>AP Memo 73 – 24-hour Fill Allowance (2013)</u>

- If the volume that the applicant wishes to impound is greater than the volume which could be diverted in 24 hours, a storage water right is required
- (Q) x (24 hours) > V Storage WR Required

Little Wood Reservoir, 2015

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Storage, Ponds, and Reservoirs Water Use Standards

Water Right Volume = S + E + C

- S = soil seepage rate
  - Based on USCS soil classification from NRCS
  - AP Memo 76 – Seepage Loss Standards for Ponds (2015)
- E = evaporation rate
  - Monthly averages from state-wide weather station network
  - *ET Idaho 2012: Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho*
- C = physical capacity of pond plus refill volume

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I.C. §42-202(3) – Application to Appropriate Water

(3) Whenever it is desired to appropriate and store flood or winterflow waters, the applicant shall specify in acre feet the quantity of such flood or winterflow waters which he intends to store, but for irrigation purposes he shall not claim more than five (5) acre feet of stored water per acre of land to be irrigated, nor, in the event of the filing of an application claiming both normal flow and flood water and winterflow water, shall the total amount of water claimed exceed the equivalent of a continuous flow during the irrigation season of more than one (1) cubic foot per second for each fifty (50) acres of land to be irrigated, or more than five (5) acre feet of stored water for each acre of land to be irrigated.

Arrowrock Dam, 2016

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North Kootenai Water District Municipal Water Tank, 2015

Municipal Water Use Resources

1. 1996 Municipal Water Rights Act
   - I.C. §42-202 – Application to Appropriate Water
   - I.C. §42-202(B) - Definitions
   - I.C. §42-217 – Proof of Beneficial Use
   - I.C. §42-219 – Issuance of License
   - I.C. §42-222 – Changes to Established Rights
2. AP Memo 18 – Processing Applications and Determining Beneficial Use for **non-RAFN** Municipal Water Rights (2009)
3. AP Memo 74 – Recommendations for the Processing of **Reasonably Anticipated Future Needs (RAFN)** Municipal Water Rights at the Time of Application, Licensing, and Transfer (2013)

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non-RAFN Municipal : Water Use Standards

- Typically, flow rate (Q) limit only (no volume limit)
- Delivery System w/ Storage:
  - Licensed Q = MDD during the development period
- Delivery System w/o Storage:
  - Licensed Q = PID during the development period
- At licensing permit holder may be required to demonstrate how water right permit represents an additional increment of beneficial use.

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RAFN Municipal : Water Use Standards

Applications for RAFN municipal water rights must demonstrate the following (I.C. §42-202) :

1. Service Area
2. Planning Horizon
3. Population Projection within Planning Horizon
4. Water Demand (necessary to serve the population during the planning horizon throughout the service area)

Additional detailed guidance in AP Memo 74

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Beneficial Uses
Without Water Use Standards

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Commercial and Industrial Uses

- No specific statutory, rule, or policy guidance
- Analysis handled on a case-by-case basis depending on the specific use
  - Example: food processing versus computer chip production
- Quantify the water right using the components necessary to accomplish the specific beneficial use

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Less Common Uses (Struggle for Consistency)

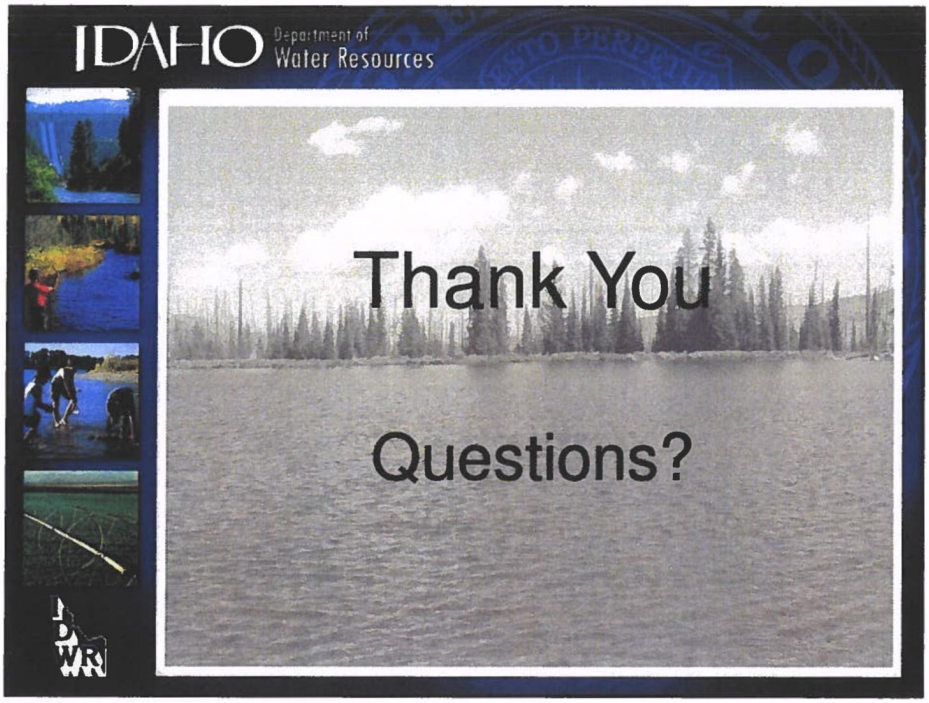
Heating & Cooling:
Minimal guidance, not applicable to all systems

Hydropower:
No formal guidance on standard quantities. Staff rely on past licensing methods or key employees with hydropower experience and/or expertise.

Mitigation:
Conceptually different than other beneficial uses

Water Supply Bank:
Change in nature of use » % consumptive

Selway R. gage, 2015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Thank You
Questions?
IDWR