

Bates, Luke

From: Nathan Jensen <njensen@kootenai.org>
Sent: Wednesday, January 26, 2022 9:45 AM
To: Bates, Luke
Cc: William Barquin; Pamela Rentz; Shawn Young; Chris Chaney; Nathan Jensen; Shawn Young; Jose Ponce
Subject: Status of IDWR 98-7913, 98-8041, 98-8054
Importance: High

Good Morning Luke,

I am following up with you clarify the status of 98-7913, 98-8041, 98-8054 and provide some information regarding a turnover rate (TO) inquiry from the State Office.

First, can you please delineate what permits are still active? Are any of these inactive and no longer necessary? After reviewing past correspondence it appears that only 98-7913 and 98-8041 may be necessary and you have everything needed (e.g., Fees paid) to license the water use.

Regarding TO inquiry, KTOI has extensive fish culture manuals for both sturgeon and burbot. The State Office asked KTOI to verify why 1 TO is used. The simple answer is flows and TO KTOI applies in-hatchery vary significantly based on species (Burbot, Sturgeon, and/or both at same time), life-stage (adult vs. juvenile), time of year, weather, density, tank type/size/shape, feed rates, stocking schedule(s), water quality/clarity and foremost water temperature. Burbot and Sturgeon require specific temperatures be maintained depending on life-stage and time of year. Thus, TO are adjusted continuously on a tank-by-tank basis (or egg-incubator); sometimes multiple times in a single day, and the 1 TO reported is simply a minimum that KTOI considers for rearing/grow-out. Flow rates are typically higher than 1 TO for incubation and grow-out; however for some rearing strategies (e.g., spawning where a single adult sturgeon resides in a single 4,000 gal circular tank) the flow is well below 1 TO. Dissolved Oxygen and Temperature are monitored continuously to maintain fish health.

The fish culture manuals are too large to send electronically (>450 files, 80 folders); however here are a couple 'clips' for you to further clarify KTOI in-hatchery TOs:

<https://protect-us.mimecast.com/s/RqYGC2kNqWUVmrV6FnbkGC?domain=1.3.4.3> **Early Rearing**

- The rectangular tanks used for early rearing are set up prior to loading eggs in incubators. Start-up procedures are described in detail in **Appendix 1a**, pages 5-14 to 5-15 and Chapter 5, Section 5.8.1. See also the **Early Rearing Tank Start-up checklist (Appendix 5b, Form 1)**. A review of the key setup details for Sturgeon early rearing is provided here:
 - Flows to early rearing tanks should be maintained at around 2 gpm (1 turnover per hour).
- Early rearing of Sturgeon takes place in 36 rectangular start tanks (8 feet by 2 feet by 9 inches deep). Initially, Sturgeon embryos are hatched into 18 early rearing tanks. Approximately 8 weeks after hatch, fry from each family are split into 2 early rearing tanks, and all 36 tanks are used for the rest of the early rearing stage. Target rearing densities are 13,500 individuals per tank at beginning of this stage and 6,750 per tank at the end of early rearing.
- Flow rates should be set at 2 gpm during early rearing. This provides a turnover rate of about 1.3 turnovers per hour. The total water budget is 72 gpm during early rearing if all 36 tanks are in use. The water source during

early rearing is primarily ARW, but may be heated early in the season or mixed with groundwater during summer months to maintain water temperatures within the 13-14°C target range.

<https://protect-us.mimecast.com/s/sZcyC31XrwuX43XxSqMxct?domain=1.4.3.1>

Sturgeon

Broodstock Holding

Sturgeon broodstock are held in six 15-foot diameter round tanks (4,000 gallons) supplied with ARW. Heated or chilled water sources may be used to provide appropriate water temperatures within the specified range of 8 to 14°C. Some male broodstock may be held in the hatchery during the spawning season (May to July) to ensure that fresh milt is available when females ripen. Males may be induced to express milt more than once during the spawning season by manipulating the water temperature in the holding tank. Flows are set at 10 gpm per tank for a turnover rate of approximately 0.15/hour (6.6 hours/turnover). The total water budget is 60 gpm for all six tanks.

I hope this helps clarify your questions and validates the calculations. Please respond regarding the status of the license at your earliest convenience so we may close this file.

Thank you for your time,
Nate

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Bates, Luke

From: Chris Chaney <cchaney@kootenai.org>
Sent: Monday, December 6, 2021 8:52 AM
To: Bates, Luke
Subject: RE: IDWR
Attachments: 98-7913 water use data for Twin Rivers Hatchery corrected.xlsx

Good morning Luke,

I have gone over the numbers with my supervisor; and it appears they were little off. Please see the attached Excel sheet and let me know if you have any further questions. Thank you.

V/r
Chris Chaney
Facility Engineer
Kootenai Tribe of Idaho
C: 208-304-0312
O: 208-267-3620
O: 208-267-1689

From: Bates, Luke <Luke.Bates@idwr.idaho.gov>
Sent: Friday, December 3, 2021 8:59 AM
To: Chris Chaney <cchaney@kootenai.org>
Subject: RE: IDWR

Thanks for the heads up Chris.

Appreciate all your help with finalizing this one.

From: Chris Chaney <cchaney@kootenai.org>
Sent: Friday, December 3, 2021 8:44 AM
To: Bates, Luke <Luke.Bates@idwr.idaho.gov>
Subject: Re: IDWR

Good morning Luke,

Any emails sent from me containing a hyperlink is spam. It appears my email is being used for that purpose, please do not open any of those. I will send you the required documents in an excel spreadsheet attached. I apologize for the inconvenience

Sent from my Verizon, Samsung Galaxy smartphone
Get [Outlook for Android](#)

From: chris chaney <outlook_E99418095E57A52C@outlook.com>
Sent: Monday, April 26, 2021 2:04 PM
To: Bates, Luke
Subject: Yearly data flow

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APR 27 2021

IDWR / NORTH

Good afternoon Luke,

Please let me know if this will work for what you are wanting. Some of the data off of the S.C.A.D.A logger was incomplete so I filled it in the best I could.

Average yearly gallons in Millions: 2016-2020

2016-

Moyie: 93.6 MG

Kootenai: 102.17 MG

Ground Water: 11.77 MG

2017-

Moyie: 2.34 MG

Kootenai: 5.75 MG

Ground Water: .06 MG

2018-

Moyie: .11 MG

Kootenai: .22 MG

Ground Water: 0 MG

2019-

Moyie: .1 MG

Kootenai: 121.92 MG

Ground Water: .25 MG

2020-

Moyie: .75 MG

Kootenai: .4 MG

Ground Water: 42,300 Gallons

V/r

Chris Chaney

Facility Engineer

Kootenai Tribe of Idaho

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From: Chris Chaney <cchaney@kootenai.org>
Sent: Monday, April 5, 2021 11:26 AM
To: Bates, Luke
Subject: RE: IDWR Permit 98-7913

Good morning Luke, Hope you enjoyed the nice weekend.

In regards to the tank turn over rate, this is hard to determine but we went ahead and did it on the high side. Please see below for those rates on the tanks along with the influent and effluent pond. For the purpose of the domestic use, I again went with the high side of things. Please let me know if there are any more questions.

Sturgeon:

Brood stock- 10GPM (3-4 Turnover per Hour per tank)
Incubation- 2GPM (1 Turnover per hour per tank)
Rearing 8GPM (2 hour turnover per tank)

Burbot:

Brood stock- 17.61 GPM (1-2 turnovers per hour)
Incubation- 0.066 GPM @168 Cones (15 Turnovers per hour per Cone)
Rearing- 9.68GPM (4-5 turn overs per hr. per tank)

Influent Pond: 72'x52' (Water depth is about 5') – 18,720 ft³

Effluent Pond: 40'x42' (Water depth is around 1') – 1,680 ft³

Daily Restroom usage: x20 Individuals

Toilet @ 1.6 GPF -128 gallons per day
Urinal @ 1 GPF – 160 gallons per day
Sink @ 2.2 GPM – 264 gallons per day
Dishwasher @ 3 gallons per cycle – 6 gallons per week

Seasonal tour usage: Average 15 people per tour x 2 times a month for 3 months.

Toilet @ 1.6 GPF – 24 gallons per day
Urinal @ 1 GPF- 15 gallons per day
Sink @ 2.2 GPM – 16.5 gallons per day

From: Chris Chaney <cchaney@kootenai.org>
Sent: Wednesday, March 31, 2021 2:40 PM
To: Bates, Luke
Subject: RE: IDWR Permit 98-7913
Attachments: Discharge location.pdf

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MAR 31 2021
IDWR / NORTH

Luke,

Please find the answers to your questions listed below.

- In regards to PG1, Please see attached PDF of civil drawing named "Discharge Location" if a GPS point or camera photo is needed, please let me know. Yellow highlight indicates discharge line while 2- red highlights indicates the intake. For PG2 K, there are
- PG2- Will have to coordinate change over rate with the Hatchery manager, I do know it changes week to week.
 - Sturgeon
 - 6 Brood stock tanks- 15' Circulars: volume = 5, 287 Gal Ea.
 - 36 incubation tanks – 8' rectangular, Volume = 239 Gal Ea.
 - ~~36~~ 36 rearing tanks – 8' circulars, Volume = 1,504 Gal Ea. *revised 12/1/21*
 - Burbot
 - 12 Brood stock tanks – 10' Circulars: Volume = 2, 350 Gal Ea.
 - 52 Rearing tanks – 6' Circulars: Volume = 846 Gal Ea.
 - 28 Incubation Tanks- 4' Circulars: Volume = 376 Gal Ea.
 - 5 Head tanks - 5' circulars: Volume = 587 Gal Ea.
- PG3, As of right now, there are no other sturgeon or Burbot holding tanks outside of the hatchery. We do have an influent pond and an effluent pond. Will you need those dimensions and volumes as well?
- Well with I.D Tag D0058062 is indicated on our drawing as HW1. This is located right next to HW2 & HW3. Think of them as being one after the other in a straight line. This well is abandoned in place due to poor aquifer yield.

From: Chris Chaney <cchaney@kootenai.org>
Sent: Wednesday, March 31, 2021 12:26 PM
To: Bates, Luke
Cc: Nathan Jensen
Subject: IDWR Permit 98-7913
Attachments: water flow 2016.xlsx; Water flow 2017.xlsx; Water flow 2018.xlsx; Water flow 2019.xlsx; Water flow 2020.xlsx

MAR 31 2021

IDWR/NORTH

Good afternoon Luke,

I am the Facility Engineer for the Kootenai Tribe, and will be answering any further questions you have regarding this matter. Please do not hesitate to reach out to me through e-mail or call, whichever is easiest for you. Below you will find your previous questions to Jose with my Answers (A:) attached below them.

- 1) Of the three wells, please validate D0058062 & D0058099 are production wells that mix with water from the Kootenai and Moyie River(s) diversion points for hatchery fish propagation use.

A: The two wells associated with fish propagation are D0058065 (HW-2) & D0058099 (HW-3).

- 2) Is well D0058065 the sole diversion point for the two domestic dwellings and bathroom/kitchen use at the hatchery? Follow-up, please verify that this water system is separate from the other water systems. Does it co-mingle with the resorts existing water right diversion(s) for campground or any other uses?

A: From my understanding Well A0020020 does not co-mingle with any water right diversions and is the origin point for the two dwelling, hatchery bathroom/kitchen and the campground.

- 3) I note 3 wells associated with the Statement of Completion submitted in January of 2017. From the field exam notes taken by the previous water agent, I see a 4th well that doesn't have a "D" tag identified, but from which a 5-gallon bucket flow measurement was taken. The measurement was likely taken from a co-located frost free hydrant. Question – is there a 4th well that provides services for the resort that may be this well identified at time of field exam? Coordinates given for the well location are: -116 11.111, 48 43.304

A: Well A0020020 is the well you are looking for and is utilized for all domestic water for the campground, hatchery and houses.

- 4) IDWR requires volume metrics to license for Fish Propagation. I am requesting annual volume reports for both systems (domestic & hatchery). Ideally, these would reference years 2016-2018, but I will take any and all annual volume I can get my hands on. I am looking for the maximum diversion volume years to ensure I work toward licensing the largest amount I can. It is my hope your SCADA system can provide historical data that reaches back to the entirety of the permit's development period (Feb 2012 thru Jan 2017) plus 2018-2020

A: Please see Excel spreadsheets. Twin Rivers hatchery data only goes back as far as 2016.

V/r
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