



Oregon Water Resources Department  
 725 Summer Street NE, Suite A  
 Salem OR 97301-1266  
 503-986-0900  
 www.oregon.gov/owrd

# Application for Instream Water Right Certificate

## SECTION 1: ORGANIZATION INFORMATION AND SIGNATURE

### Organization Information

NAME OREGON DEPT. OF FISH AND WILDLIFE		PHONE 503-947-6000	FAX 503-947-6202
ADDRESS 4034 FAIRVIEW INDUSTRIAL DR. SE			CELL
CITY SALEM	STATE OR	ZIP 97302-1142	E-MAIL *

### Agent Information – The agent is authorized to represent the applicant in all matters relating to this application.

AGENT / BUSINESS NAME ANNA PAKENHAM STEVENSON / OREGON DEPT. OF FISH AND WILDLIFE		PHONE 503-947-6084	FAX 503-947-6202
ADDRESS 4034 FAIRVIEW INDUSTRIAL DR. SE			CELL
CITY SALEM	STATE OR	ZIP 97302-1142	E-MAIL * ANNA.P.STEVENSON@STATE.OR.US

\* By providing an e-mail address, consent is given to receive all correspondence from the Department electronically. (Note that paper copies of the Final Order documents will also be mailed.)

Anna Pakenham Stevenson  
 Water Program Manager

12/1/16

Applicant Signature

Print Name and Title

Date

Applicant Signature

Print Name and Title

Date

## SECTION 2: NOTIFICATION TO DEQ, ODFW, AND PARKS

Please indicate the date you notified other state agencies of your intent to file an instream water right application.

Oregon Department of Environmental Quality was notified on: October 17 2016

Oregon Department of Fish and Wildlife was notified on: N/A

Oregon Parks and Recreation Department was notified on: October 17, 2016

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## SECTION 3: NOTIFICATION TO AFFECTED LOCAL GOVERNMENTS

Please provide copies of letters of your intent to file an instream water right application to each affected local government within whose jurisdiction the instream use is proposed. Affected local government means any city, county or metropolitan service district formed under ORS Chapter 268 or an association of local governments performing land-use planning functions under ORS 197.190.

**SECTION 4: SOURCE AND REACH**

Stream or lake name: Neal Creek Tributary to: Hood River

If the source is a stream, indicate the reach delineated by river mile (the upstream point to the downstream point) of the proposed instream water right:

Beginning at the mouth of Neal Cr, tributary to Hood River, river mile 0.0 in the NENE quarter of Section 14, Township 2 N, Range 10 E W.M. in Hood River County (45.6639, -121.5256), and continuing upstream to the confluence of West Fork Neal Creek and Neal Creek, river mile 5.8 in the SESW quarter of Section 6, Township 1 N, 11 E W.M. in Hood River County (45.5951, -121.4995).

If the source is stored water that is authorized under a water right permit, certificate, or decree, attach a copy of the document or list the document number (for decrees, list the volume and page, or decree name). \_\_\_\_\_

If the source is stored water and you do not, or will not, own the reservoir(s), please enclose a copy of your written agreement with the owner of the reservoir to release flows identified in this application.

**SECTION 5: PUBLIC USES AND AMOUNTS**

The public uses to be served by the requested instream water right are: For the conservation, maintenance and enhancement of aquatic and fish life, wildlife, and fish and wildlife habitat. Applied flows include water for fish and wildlife migration, spawning, nesting, brooding, egg incubation, larval or juvenile development, juvenile and adult rearing and aquatic life. Flow levels will vary based on life cycle and life stage development needs.

The monthly (or half-monthly) flows in cubic feet-per-second (CFS) or acre-feet (AF) or by lake elevation (LE) necessary to support the public uses are:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit
45	45	45	45	45	45	45	45	45	25	25	25	CFS

If this is a multi-agency request, please indicate the monthly (or half-monthly) flows in cubic feet-per-second (cfs) or acre-feet (af) or by lake elevation (le) that are necessary to support the public uses for each category of public use.

USE	J	F	M	A	M	J	J	A	S	O	N	D	
													<input type="checkbox"/> CFS <input type="checkbox"/> AF <input type="checkbox"/> LE
													<input type="checkbox"/> CFS <input type="checkbox"/> AF <input type="checkbox"/> LE

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## **SECTION 6: DATA, METHODS, AND COMPLIANCE**

### **Please describe the technical data and methods used to determine the requested amounts.**

ODFW relied on an IFIM/PHABSIM study to determine the requested amounts (Hood River Tributaries Instream Flow Study, Normandeau Associates 2014. See attached). This method quantifies physical habitat at different streamflow rates for all life stages of fish, based on stream hydraulics (Bovee et al 1998; Bovee 1997; Bovee 1982). It typically requires measurements at one to three flows, and uses hydraulic simulation to predict habitat over a wide range of flows. Results are tabulated for spawning and incubation, fry, juvenile and adult rearing, and passage flows. Criteria for spawning, rearing, and incubation include depth, velocity, substrate and cover. Fish passage is based on depth and velocity only.

ODFW used the habitat vs. flow relationships produced by this study to derive recommended flows in Neal Creek. ODFW used the habitat vs. flow relationships for appropriate species and life stages to recommend flow levels specifically designed to meet the seasonal biological requirements of important fish species in Neal Creek. These recommended flows were used in this instream water right application. The desired flow levels are determined by examining habitat vs. flow over the range of flows simulated, for each species and life stage according to the appropriate time periods.

### **Please provide written documentation of how your agency complied with the requirements contained in your own administrative rules for instream water rights, including application of the required methods to determine requested flows.**

The methodology used in the study was IFIM/PHABSIM (Hood River Tributaries Instream Flow Study, Normandeau Associates 2014. See attached). As such, it conformed to the procedures laid out in the agency's rules- Determination of Instream Flow Measurement Methodologies, Oregon Administrative Rules Division 400, 635-400-0015. Specifically, the studies on Neal Creek used IFIM/PHABSIM to produce a relationship between physical habitat and flow. ODFW is satisfied that correct field and computer procedures were followed to produce the results (Bovee et al 1998; Bovee 1997; Bovee 1982). ODFW examined and interpreted the results of the study to determine the requested flows.

ODFW will also coordinate with OWRD instream water rights monitoring (635-400-0025). Specifically, ODFW will coordinate with OWRD to develop monitoring plans for instream water rights and to revise the existing Memorandum of Understanding between the Department and WRD to include issues related to instream water rights, such as measuring, monitoring and enforcement of instream water rights.

#### References:

- Bovee, K.D., B.L. Lamb, J.M. Bartholow, C.B. Stalnaker, J. Taylor, and J. Henriksen. 1998. Stream habitat analysis using the Instream Flow Incremental Methodology. U.S. Geological Survey, Biological Resources Division Information and Technology Report USGS/BRD-1998-0004. viii+131 pp. <https://www.fort.usgs.gov/publication/3910>
- Bovee, K.D. 1997. Dave collection procedures for the Physical Habitat Simulation System. U.S. Geological Survey, Biological Resources Division Information and Technology Draft Report USGS/BRD-1997-146pp. <https://www.fort.usgs.gov/sites/default/files/products/publications/20002/20002.pdf>
- Bovee, K.D. 1982. A guide to stream habitat analysis using the instream flow incremental methodology. Instream Flow Information Paper 12. U.S. Fish and Wildlife Service FWS/OBS-82/26. 248 pp. <http://www.arlis.org/docs/vol1/Susitna/1/APA193.pdf>

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**SECTION 7: WITHIN A DISTRICT**

If the reach is located within an irrigation district or other water district, please provide their contact information.

Irrigation District Name East Fork Irrigation District	Address PO Box 162	
City Odell	State OR -	Zip 97044

**SECTION 8: REMARKS**

Use this space to clarify any information you have provided in the application. \_\_\_\_\_

**SECTION 9: MAP**

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**YOU ARE ENCOURAGED TO PROVIDE THIS INFORMATION:**

A means and location for measuring the instream water right:

The strategy and responsibility for monitoring flows for the instream right:

Any provisions needed for managing the water right to protect the public uses: None

**WE ARE RETURNING YOUR APPLICATION FOR THE FOLLOWING REASON(S):**

- SECTION 1: \_\_\_\_\_
- SECTION 2: \_\_\_\_\_
- SECTION 3: \_\_\_\_\_
- SECTION 4: \_\_\_\_\_
- SECTION 5: \_\_\_\_\_
- SECTION 6: \_\_\_\_\_
- SECTION 7: \_\_\_\_\_
- SECTION 8: \_\_\_\_\_
- SECTION 9: \_\_\_\_\_
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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# Oregon Water Resources Department Attribute Report

Report Date: Dec 27, 2016

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**General:**

TRSQQ:	WM1.00N11.00E7NWNW WM1.00N11.00E6SWSW WM1.00N11.00E6NWSW WM1.00N11.00E7NENW WM1.00N11.00E6NESW WM1.00N11.00E6SESW
DLC:	-
Latitude:	45.5950604244
Longitude:	-121.4994740967
Buffer (ft):	1320
Elevation (ft):	1053
Basin Name:	Hood
Basin Plan:	1-Hood River
County:	Hood River
WM District:	3
WM Region:	NORTH CENTRAL
ODFW Region, District:	High Desert, Mid-Columbia District
Irrigation District AOI:	<u>EAST FORK IRRIGATION DISTRICT</u>
Irrigation District, Other:	
Dams (Permit):	-
Water Rights:	<u>Platcard for WM1.00N11.00E7</u> <u>Platcard for WM1.00N11.00E6</u>

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	<u>Platcard for WM1.00N11.00E6</u> <u>Platcard for WM1.00N11.00E7</u> <u>Platcard for WM1.00N11.00E6</u> <u>Platcard for WM1.00N11.00E6</u>
Well Logs:	<u>Logs for WM1.00N11.00E7</u> <u>Logs for WM1.00N11.00E6</u> <u>Logs for WM1.00N11.00E6</u> <u>Logs for WM1.00N11.00E7</u> <u>Logs for WM1.00N11.00E6</u> <u>Logs for WM1.00N11.00E6</u>
<b>Rules:</b>	
Withdrawn Authority:	-
Groundwater Retriected:	-
GW Retriected Subunit:	-
GW ODEQ Management Area:	-
GW Umatilla Muni Wells (5mile):	-
Rule 4D:	Rules apply
Division 33 (Area, Watershed, species):	UPPER COLUMBIA, Hood River, Bull Trout, Coho Salmon, Redband Trout, Coastal Cutthroat Trout, Chinook Salmon, Steelhead
Water Quality Limited Pollutant:	<b>Neal Creek</b> R. Mile: 0 to 5.6 HUC4: 17070105 Pollutant: Iron Season: NaN Uses: Aquatic life; Human health; Drinking water; Fishing Status: Cat 5: Water quality limited, 303(d) list, TMDL needed Action: No 2010 action
	<b>West Fork Neal Creek</b> R. Mile: 0 to 9

HUC4: 17070105  
 Pollutant: Dissolved Oxygen  
 Season: NaN  
 Uses:  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: EPA addition to 303(d) list

**Neal Creek**  
 R. Mile: 0 to 5.6  
 HUC4: 17070105  
 Pollutant: Chlorpyrifos  
 Season: NaN  
 Uses: Salmonid fish rearing; Aquatic life; Resident fish and aquatic life; Anadromous fish passage  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: No 2010 action

**Neal Creek**  
 R. Mile: 5.6 to 11.1  
 HUC4: 17070105  
 Pollutant: Iron  
 Season: NaN  
 Uses: Aquatic life; Human health  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: No 2010 action

**Neal Creek**  
 R. Mile: 0 to 6  
 HUC4: 17070105  
 Pollutant: Biological Criteria  
 Season: NaN  
 Uses: Aquatic life  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: Status modification - EPA addition to 303(d) list

**Neal Creek**  
 R. Mile: 0 to 6.40

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HUC4: 17070105  
 Pollutant: Dissolved Oxygen  
 Season: NaN  
 Uses: Salmon and steelhead spawning  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: Status modification - EPA addition to 303(d) list

**Neal Creek**  
 R. Mile: 0 to 5.6  
 HUC4: 17070105  
 Pollutant: Temperature  
 Season: NaN  
 Uses: Anadromous fish passage; Salmonid fish rearing  
 Status: TMDL approved  
 Action: No 2010 action

**Neal Creek**  
 R. Mile: 0 to 6  
 HUC4: 17070105  
 Pollutant: Manganese  
 Season: NaN  
 Uses: Human health  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: No 2010 action

**Neal Creek**  
 R. Mile: 0 to 11.1  
 HUC4: 17070105  
 Pollutant: Beryllium  
 Season: NaN  
 Uses: Human health  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: No 2010 action

**Neal Creek**  
 R. Mile: 0 to 5.6  
 HUC4: 17070105

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Pollutant: Guthion  
 Season: NaN  
 Uses: Anadromous fish passage; Resident fish and aquatic life;  
 Salmonid fish rearing  
 Status: 303(d)  
 Action: No 2010 action

**Neal Creek**  
 R. Mile: 0 to 6  
 HUC4: 17070105  
 Pollutant: Arsenic  
 Season: NaN  
 Uses: Aquatic life; Human health  
 Status: Cat 5: Water quality limited, 303(d) list, TMDL needed  
 Action: No 2010 action

**West Fork Neal Creek**  
 R. Mile: 0 to 9  
 HUC4: 17070105  
 Pollutant: Flow Modification  
 Season: NaN  
 Uses: Salmonid fish rearing; Salmonid fish spawning; Resident  
 fish and aquatic life  
 Status: Water quality limited not needing a TMDL  
 Action: No 2010 action

Is in Deschutes Study Area: -

Deschutes Zone Impact: -

Deschutes Zone Overlay: -

Scenic Water Way: -

**Hydrography:**

OWRD Streamcode: 0417400070 - Neal Cr

04174000700120 - W Fk Neal Cr

04174000700130 - E Fk Neal Cr

Waterbody Name:	-
HUC 10:	1707010507
HUC Watershed:	Hood River
WAB Wshed Order:	4
WAB Analysis:	<u>NEAL CR &gt; HOOD R - AT MOUTH</u>
Streamflow:	OWRD Opportunities: Fair ODFW Needs: High Combined Priority: Not a priority
Gaging Station Data:	<u>99000136, E FK NEAL CR AT MT HOOD, OR, No Number</u> <u>99000242, W FK NEAL CR AT MT HOOD, OR, No Number</u>

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Sources:

**General**

*Oregon Public Land Survey Quarter-quarters.* Bureau of Land Management, Oregon Water Resources Department.. n.d. 1:24,000.

*Donated Land Claims.* Oregon Water Resources Department. January 1, 1995. 1:100,000.

*Elevation.* ESRI World Elevation. February 2000. 1:121,000.

*OWRD Administrative Basins.* Oregon Water Resources Department. January 1, 1995.

*Oregon Counties.* Bureau of Land Management (BLM), Oregon State Office.. January 1, 2008.

*OWRD Watermaster Districts.* Oregon Water Resources Department. March 31, 2014.

*OWRD Regions.* Oregon Water Resources Department. January 1, 1995.

*ODFW Districts and Regions.* Oregon Department of Fish and Wildlife. August 28, 2012.

*Water Organizations* Oregon Water Resources Department. April 1, 2013. 1:24,000.

*Large Dams Inventory.* Oregon Water Resources Department. August 12, 2014. 1:24,000.

**Rules**

*Withdrawn Authority Areas.* Oregon Water Resources Commission. January 1, 2007.

*OWRD Groundwater Restricted Areas.* Oregon Water Resources Department. October 5, 2016.

*OWRD Groundwater Restricted Areas - Subunits.* Oregon Water Resources Department. April 1, 2009.

*ODEQ Groundwater Management Areas (GWMAs).* Oregon Department of Environmental Quality. April 21, 2008.

*Groundwater Umatilla Municipal Wells 5-mile buffer.* Oregon Water Resources Department. June 28, 2012.

*National Marine Fisheries Service (NMFS) 4(d) Rule.* National Marine Fisheries Service. January 1, 2007.

*OAR Chapter 690, Division 33 - HUC 10 .* Oregon Department of Fish & Wildlife. January 1, 2003.

*Oregon Water Quality Assessment 2010.* This data set was assembled by the Oregon Department of Environmental Quality, Water

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Quality Division, Standards and Assessments Section. GIS data prepared by the Watershed Management Section, Drinking Water Program.. August 16, 2013.

*Deschutes USGS Groundwater Study Area*. Water Resources Commission, U.S. Geological Survey (USGS) Water Resources Division (Portland, OR), Oregon Water Resources Department.. January 1, 2001. 1:100,000.

*Deschutes Zones of Impact*. Oregon Water Resources Department.. October 25, 2007.

*Deschutes Zones Overlay*. Oregon Water Resources Department. October 25, 2007.

*Oregon State Scenic Waterway areas*. Oregon Water Resources Department, Oregon Parks and Recreation Department.. January 1, 2007.

***Hydrography***

*Routed OWRD Streamcodes (conflated to the NHD)*. Oregon Water Resources Dept.. August 11, 2014.

. Unknown. n.d.

*Watershed Boundary Dataset (WBD), 10-digit (watershed)*. Pacific Northwest Hydrography Framework, U.S. Geological Survey (USGS), National Resources Conservation Service (NRCS).. June 11, 2014. 1:24,000.

*Water Availability Basins*. Oregon Water Resources Department.. n.d. 1:100,000.

*Priority Watersheds for Streamflow Restoration*. Oregon Water Resources Dept. and the Oregon Dept. of Fish & Wildlife.. January 15, 2004.

*Stream Gage Stations*. Oregon Water Resources Department and US Geological Survey. n.d.

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# Water Availability Analysis

NEAL CR > HOOD R - AT MOUTH  
HOOD BASIN  
Water Availability as of 12/27/2016

Watershed ID #: 195 [\(Map\)](#)  
Date: 12/27/2016

Exceedance Level: 50%  
Time: 1:55 PM

[Download Data](#)

## Water Availability

Select any Watershed for Details

Nesting Order	Watershed ID #	Stream Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	192	HOOD R> COLUMBIA R- AT MOUTH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	30410575	HOOD R> COLUMBIA R- AT RM 0.75	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes
3	195	NEAL CR> HOOD R- AT MOUTH	No	Yes	Yes	No	No	No	No	No	No	No	No	No	Yes

## Limiting Watersheds

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

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Month	Limiting Watershed ID #	Stream Name	Water Available?	Net Water Available
JAN	195	NEAL CR > HOOD R - AT MOUTH	No	-1.39
FEB	195	NEAL CR > HOOD R - AT MOUTH	Yes	3.32
MAR	195	NEAL CR > HOOD R - AT MOUTH	Yes	2.78
APR	195	NEAL CR > HOOD R - AT MOUTH	No	-7.69
MAY	195	NEAL CR > HOOD R - AT MOUTH	No	-16.10

JUN	30410575	HOOD R > COLUMBIA R - AT RM 0.75	No	-29.70
JUL	30410575	HOOD R > COLUMBIA R - AT RM 0.75	No	-292.00
AUG	30410575	HOOD R > COLUMBIA R - AT RM 0.75	No	-430.00
SEP	30410575	HOOD R > COLUMBIA R - AT RM 0.75	No	-407.00
OCT	30410575	HOOD R > COLUMBIA R - AT RM 0.75	No	-295.00
NOV	195	NEAL CR > HOOD R - AT MOUTH	No	-17.20
DEC	195	NEAL CR > HOOD R - AT MOUTH	No	-6.87
ANN	195	NEAL CR > HOOD R - AT MOUTH	Yes	357.00

### Detailed Reports for Watershed ID #192

HOOD R > COLUMBIA R - AT MOUTH  
HOOD BASIN  
Water Availability as of 12/27/2016

Watershed ID #: 192 ([Map](#))  
Date: 12/27/2016

Exceedance Level: 50%  
Time: 1:55 PM

### Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

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Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1,260.00	74.30	1,190.00	184.00	170.00	832.00
FEB	1,380.00	77.40	1,300.00	205.00	270.00	828.00
MAR	1,300.00	76.60	1,220.00	183.00	270.00	771.00
APR	1,320.00	125.00	1,200.00	117.00	270.00	808.00
MAY	1,310.00	195.00	1,120.00	111.00	250.00	754.00
JUN	1,040.00	240.00	800.00	79.30	250.00	470.00
JUL	739.00	281.00	458.00	0.00	250.00	208.00
AUG	559.00	239.00	320.00	0.00	250.00	70.40
SEP	511.00	168.00	343.00	0.00	250.00	93.30
OCT	517.00	69.90	447.00	22.20	220.00	205.00
NOV	870.00	71.40	799.00	43.60	100.00	655.00
DEC	1,160.00	73.00	1,090.00	122.00	170.00	795.00
ANN	721,000.00	102,000.00	619,000.00	64,000.00	164,000.00	391,000.00

## Detailed Report of Consumptive Uses and Storage

### Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	1.87	0.00	37.10	2.96	0.23	2.16	29.40	0.64	74.30
FEB	2.34	0.00	39.80	2.96	0.23	2.16	29.40	0.64	77.40
MAR	2.47	0.00	38.80	2.96	0.23	2.16	29.40	0.64	76.60
APR	2.27	48.80	38.30	2.96	0.06	2.16	29.40	0.64	125.00
MAY	0.12	114.00	45.20	2.96	0.06	2.16	29.40	0.64	195.00
JUN	0.09	157.00	48.10	2.96	0.06	2.16	29.40	0.64	240.00
JUL	0.06	205.00	40.30	2.96	0.06	2.16	29.40	0.64	281.00
AUG	0.05	167.00	36.50	2.96	0.06	2.16	29.40	0.64	239.00
SEP	0.04	96.80	35.60	2.96	0.06	2.16	29.40	0.64	168.00
OCT	0.05	0.15	34.50	2.96	0.06	2.16	29.40	0.64	69.90
NOV	1.33	0.00	34.90	2.96	0.06	2.16	29.40	0.64	71.40
DEC	1.74	0.00	36.10	2.96	0.06	2.16	29.40	0.64	73.00

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### Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

Application #	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RN80401A	39.50	43.00	36.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.60
RN80402A	130.00	136.00	122.00	104.00	111.00	79.30	0.00	0.00	0.00	22.20	41.60	86.10
RN80403A	14.80	25.50	24.30	13.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01	4.44
<b>Total</b>	<b>184.30</b>	<b>204.50</b>	<b>182.30</b>	<b>117.18</b>	<b>111.00</b>	<b>79.30</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>22.20</b>	<b>43.61</b>	<b>122.14</b>

### Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF191A	CERTIFICATE	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
MF192A	CERTIFICATE	170.00	270.00	270.00	270.00	170.00	170.00	130.00	100.00	100.00	100.00	100.00	170.00
IS83969A	CERTIFICATE	0.00	0.00	0.00	0.00	250.00	250.00	250.00	250.00	250.00	220.00	0.00	0.00
<b>Maximum</b>		<b>170.00</b>	<b>270.00</b>	<b>270.00</b>	<b>270.00</b>	<b>250.00</b>	<b>250.00</b>	<b>250.00</b>	<b>250.00</b>	<b>250.00</b>	<b>220.00</b>	<b>100.00</b>	<b>170.00</b>

### Detailed Reports for Watershed ID #30410575

HOOD R > COLUMBIA R - AT RM 0.75  
HOOD BASIN

Water Availability as of 12/27/2016

Watershed ID #: 30410575 ([Map](#))  
Date: 12/27/2016

Exceedance Level: 50%  
Time: 1:55 PM

### Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

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Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1,260.00	574.00	686.00	184.00	170.00	332.00
FEB	1,380.00	577.00	803.00	205.00	270.00	328.00
MAR	1,300.00	577.00	723.00	183.00	270.00	271.00
APR	1,320.00	625.00	695.00	117.00	270.00	308.00
MAY	1,310.00	695.00	615.00	111.00	250.00	254.00
JUN	1,040.00	740.00	300.00	79.30	250.00	-29.70
JUL	739.00	781.00	-42.00	0.00	250.00	-292.00
AUG	559.00	739.00	-180.00	0.00	250.00	-430.00
SEP	511.00	668.00	-157.00	0.00	250.00	-407.00
OCT	517.00	570.00	-52.90	22.20	220.00	-295.00
NOV	870.00	571.00	299.00	43.60	100.00	155.00
DEC	1,160.00	573.00	587.00	122.00	170.00	295.00
ANN	721,000.00	464,000.00	283,000.00	64,000.00	164,000.00	117,000.00

## Detailed Report of Consumptive Uses and Storage

### Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	1.84	0.00	37.10	2.96	0.23	2.16	29.40	501.00	574.00
FEB	2.30	0.00	39.80	2.96	0.23	2.16	29.40	501.00	577.00
MAR	2.44	0.00	38.80	2.96	0.23	2.16	29.40	501.00	577.00
APR	2.27	48.80	38.30	2.96	0.06	2.16	29.40	501.00	625.00
MAY	0.12	114.00	45.20	2.96	0.06	2.16	29.40	501.00	695.00
JUN	0.09	157.00	48.10	2.96	0.06	2.16	29.40	501.00	740.00
JUL	0.06	205.00	40.30	2.96	0.06	2.16	29.40	501.00	781.00
AUG	0.05	167.00	36.50	2.96	0.06	2.16	29.40	501.00	739.00
SEP	0.04	96.80	35.60	2.96	0.06	2.16	29.40	501.00	668.00
OCT	0.04	0.15	34.50	2.96	0.06	2.16	29.40	501.00	570.00
NOV	1.30	0.00	34.90	2.96	0.06	2.16	29.40	501.00	571.00
DEC	1.71	0.00	36.10	2.96	0.06	2.16	29.40	501.00	573.00

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### Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

Application #	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RN80401A	39.50	43.00	36.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.60
RN80402A	130.00	136.00	122.00	104.00	111.00	79.30	0.00	0.00	0.00	22.20	41.60	86.10
RN80403A	14.80	25.50	24.30	13.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01	4.44
<b>Total</b>	<b>184.30</b>	<b>204.50</b>	<b>182.30</b>	<b>117.18</b>	<b>111.00</b>	<b>79.30</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>22.20</b>	<b>43.61</b>	<b>122.14</b>

### Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF191B	CERTIFICATE	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
MF192B	CERTIFICATE	170.00	270.00	270.00	270.00	170.00	170.00	130.00	100.00	100.00	100.00	100.00	170.00
IS83969B	CERTIFICATE	0.00	0.00	0.00	0.00	250.00	250.00	250.00	250.00	250.00	220.00	0.00	0.00
<b>Maximum</b>		<b>170.00</b>	<b>270.00</b>	<b>270.00</b>	<b>270.00</b>	<b>250.00</b>	<b>250.00</b>	<b>250.00</b>	<b>250.00</b>	<b>250.00</b>	<b>220.00</b>	<b>100.00</b>	<b>170.00</b>

### Detailed Reports for Watershed ID #195

NEAL CR > HOOD R - AT MOUTH  
HOOD BASIN

Water Availability as of 12/27/2016

Watershed ID #: 195 [\(Map\)](#)  
Date: 12/27/2016

Exceedance Level: 50%  
Time: 1:55 PM

### Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

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Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	26.40	0.03	26.40	14.80	13.00	-1.39
FEB	41.90	0.05	41.90	25.50	13.00	3.32
MAR	40.10	0.04	40.10	24.30	13.00	2.78
APR	27.60	2.24	25.40	13.00	20.00	-7.69
MAY	9.98	6.09	3.89	0.00	20.00	-16.10
JUN	4.91	5.07	-0.16	0.00	20.00	-20.20
JUL	2.41	1.54	0.87	0.00	13.00	-12.10
AUG	1.95	0.80	1.16	0.00	13.00	-11.80
SEP	2.15	0.79	1.36	0.00	5.00	-3.64
OCT	2.96	0.03	2.93	0.00	20.00	-17.10
NOV	4.80	0.03	4.77	2.01	20.00	-17.20
DEC	10.60	0.03	10.60	4.44	13.00	-6.87
ANN	10,500.00	1,010.00	9,500.00	5,000.00	11,100.00	357.00

## Detailed Report of Consumptive Uses and Storage

### Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.03
FEB	0.02	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.05
MAR	0.01	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.04
APR	0.00	2.21	0.00	0.00	0.01	0.02	0.00	0.00	2.24
MAY	0.00	6.06	0.00	0.00	0.01	0.02	0.00	0.00	6.09
JUN	0.00	5.04	0.00	0.00	0.01	0.02	0.00	0.00	5.07
JUL	0.00	1.51	0.00	0.00	0.01	0.02	0.00	0.00	1.54
AUG	0.00	0.77	0.00	0.00	0.01	0.02	0.00	0.00	0.80
SEP	0.00	0.76	0.00	0.00	0.01	0.02	0.00	0.00	0.79
OCT	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.03
NOV	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.03
DEC	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.03

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### Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

Application #	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RN80403A	14.80	25.50	24.30	13.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01	4.44
<b>Total</b>	<b>14.80</b>	<b>25.50</b>	<b>24.30</b>	<b>13.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2.01</b>	<b>4.44</b>

### Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF195A	CERTIFICATE	13.00	13.00	13.00	20.00	20.00	20.00	13.00	13.00	5.00	20.00	20.00	13.00
<b>Maximum</b>		<b>13.00</b>	<b>13.00</b>	<b>13.00</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>13.00</b>	<b>13.00</b>	<b>5.00</b>	<b>20.00</b>	<b>20.00</b>	<b>13.00</b>

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