

DEQ DIVISION 33 APPLICATION REVIEW SHEET

Recommendations for Water Right Applications that may affect the
Habitat of Sensitive, Threatened or Endangered Fish Species, OAR 690-33-310 through 340.

Application #: G-18437 Applicant's Name: Schutt Tuten Family Trust et al

1) Is there a connection to a 303(d) listed water quality limited water body? NO YES

Explain:

The applicant proposes to withdraw .027 cfs from 2 wells in the Deschutes Basin for irrigation from April 1 through November 1 each year. OWRD has determined that the proposed use occurs in the Deschutes Groundwater Study Area and that the use will have the potential for substantial interference with the Deschutes River. The Deschutes River near the wells is water quality limited for dissolved oxygen (year round), temperature (September 1st to June 30th), and pH (fall, winter, spring). The Deschutes River is also a potential concern for biological criteria (year round) and phosphate phosphorus (summer).

Water Body (Stream/Lake)	River Miles	Parameter	Season	Criteria	Beneficial Uses	Status
Deschutes River	0 to 244.2	Biological Criteria	Year Round	Biocriteria: Waters of the state must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.	Aquatic life	Cat 3B: Insufficient data, potential concern
Deschutes River	0 to 244.8	Phosphate Phosphorus	Summer	Total phosphates as phosphorus (P): Benchmark 50 ug/L in streams to control excessive aquatic growths	Aquatic life	Cat 3B: Insufficient data, potential concern
Deschutes River	83.8 to 99.8	Dissolved Oxygen	October 15 - June 15	Spawning: Not less than 11.0 mg/L or 95% of saturation		Cat 5: Water quality limited, 303(d) list, TMDL needed
Deschutes River	46.4 to 99.8	pH	Fall, Winter, Spring	pH 6.5 to 8.5	Salmonid fish rearing; Water contact recreation; Salmonid fish spawning; Resident fish and aquatic life; Anadromous fish passage	Cat 5: Water quality limited, 303(d) list, TMDL needed
Deschutes River	46.4 to 99.8	Temperature	September 1 - June 30	Spawning: 12.8 C	Salmonid fish spawning	Cat 5: Water quality limited, 303(d) list, TMDL needed
Deschutes River	83.4 to 111.3	Dissolved Oxygen	Year Round (Non-spawning)	Cold water: Not less than 8.0 mg/l or 90% of saturation		Cat 5: Water quality limited, 303(d) list, TMDL needed

2) What is the potential for this use to impact a water quality limited water body: HIGH MEDIUM LOW

Explain:

OWRD has determined that this use has the potential for substantial interference with the Deschutes River.

3) If the answer to question (2) is HIGH or MEDIUM, will the proposed use still result in diminution of water quality for the habitat of sensitive, threatened, or endangered fish species? NO YES

If YES, how?

Temperature

Oregon's stream temperature standards are based on the life cycle needs of salmonids. Stream temperatures that exceed the standards can disrupt the life cycle of a sensitive, threatened, or endangered fish species and may even cause death. Temperatures are already known to exceed standards in Whychus Creek in the warmer months. Summertime withdrawals from the stream will reduce the stream's heat capacity and cause greater fluctuation in daytime and nighttime stream temperatures. Non-summer withdrawals will reduce floodplain recharge from high flow events, thus reducing the volume of cool water released from floodplain storage into the stream throughout the

year. This will result in the diminution of habitat of sensitive, threatened, or endangered fish species.

Dissolved Oxygen

Fish and other aquatic organisms require different concentrations of dissolved oxygen based on their species and life history stage. Oregon's dissolved oxygen standards are based on the most sensitive species and life history stage at the location and season of concern. Dissolved oxygen levels are affected by temperature, flow, nutrient loading, algae growth, and other factors. If dissolved oxygen drops too low enough levels, it can result in fish kills. In waterbodies where dissolved oxygen concentrations are known to be insufficient for the habitat of sensitive, threatened, and endangered fish, any additional reduction in dissolved oxygen concentrations would result in the diminution of habitat.

pH

pH is a measure of how acidic or basic (alkaline) the water is. Water with a pH greater than 7 is alkaline, water with a pH of less than 7 is acidic. Every species of fish has adapted to a specific range of pH. Fish exposed to changes in pH outside their normal range can be stressed or even die. Stress leaves fish vulnerable to disease, degrading their health. Additionally, alkaline conditions can transform nitrogen in the water column into a more toxic form of ammonia that can poison fish. Withdrawals from the stream will reduce the stream's heat capacity and cause greater fluctuation in daytime and nighttime stream temperatures. When nutrients and sunlight are sufficiently present, higher stream temperatures lead to more algal growth. During the day, algae absorb carbon dioxide from the water for cell growth, raising pH. At night, photosynthesis stops and algae continue to respire, releasing carbon dioxide and lowering pH. This cycle creates diel fluctuations in pH. Additional withdrawals from a stream that is already impaired for pH will lead to larger diel fluctuations in pH. Fish and aquatic insects are sensitive to imbalances in pH. Low pH levels (below 5) may lead to death and high pH levels (9-14) can harm fish by denaturing cellular membranes. These pH imbalances result in the diminution of the habitat of sensitive, threatened, or endangered fish species.

Flow Reduction

Water quality standards are established to protect aquatic life. In scientific literature, researchers have identified ecological harm occurring when flows are reduced by 6-35% of daily flow¹. The flows in the Deschutes River basin are already reduced by a large percent of natural flow year round. Any additional withdrawals will further diminish water quality for the habitat of sensitive, threatened, or endangered fish species.

The two proposed wells are in the following water availability basins: Deschutes R > Columbia R – Ab Eagle Cr and Deschutes R > Columbia R – Ab Shitike Cr. OWRD's water availability data show that from April to November, the amount of flow withdrawn in these two basins are already at levels that would cause ecological harm.

DESCHUTES R > COLUMBIA R - AB EAGLE CR at 50% exceedance (average natural flow)

Month	Natural Stream Flow (cfs)	Consumptive Uses and Storages (cfs)	Expected Stream Flow (cfs)	% of Flow Withdrawn
JAN	5280	646	4634	12%
FEB	6160	708	5452	11%
MAR	6650	1040	5610	16%
APR	7350	1080	6270	15%
MAY	6720	1040	5680	15%
JUN	6160	1090	5070	18%
JUL	4960	859	4101	17%
AUG	4600	782	3818	17%
SEP	4630	674	3956	15%
OCT	4770	735	4035	15%
NOV	4840	835	4005	17%
DEC	5110	760	4350	15%

¹ Richter BD, Davis MM, Apse C, Konrad C. 2011. *Short Communication, A Presumptive Standard For Environmental Flow Protection*. River Research and Applications. Published online in Wiley Online Library (wileyonlinelibrary.com), DOI: 10.002/rra.1551

DESCHUTES R > COLUMBIA R - AB SHITIKE CR at 50% exceedance (average natural flow)

Month	Natural Stream Flow (cfs)	Consumptive Uses and Storages (cfs)	Expected Stream Flow (cfs)	% of Flow Withdrawn
JAN	4660	642	4018	14%
FEB	5190	700	4490	13%
MAR	5710	1050	4660	18%
APR	6380	1150	5230	18%
MAY	5890	1170	4720	20%
JUN	5590	1240	4350	22%
JUL	4560	1020	3540	22%
AUG	4260	893	3367	21%
SEP	4320	765	3555	18%
OCT	4430	775	3655	17%
NOV	4440	837	3603	19%
DEC	4590	759	3831	17%

4) Can conditions be applied to mitigate the impact of the use?

- NO YES; recommend from Menu of Conditions and skip to question 7.


OWRD has determined that the proposed use would require an annual mitigation obligation of 74.88 AF in the General Zone of Impact. DEQ concurs with OWRD's stated mitigation obligation.

5) If conditions cannot be identified to offset impacts, would the proposed use affect the Habitat of Sensitive, Threatened, or Endangered Fish Species? NO YES

If YES, please explain:

6) If a permit is issued, are there any conditions you would like to see included in the permit?

7) Your recommendation under OAR 690-033-0330 (2): Approval with conditions
 Approval without conditions
 Denial

DEQ Representative signature:  Date: 10/12/2017

WRD Contact: Caseworker: Kim French, Water Rights Division, 503-986-0900 / Fax 503-986-0901

MENU OF CONDITIONS FOR WRD, ODFW, DEQ AND AG

The following condition will be included in any permit issued unless ODFW explicitly requests that it be omitted:

The permittee shall not construct, operate or maintain any dam or artificial obstruction to fish passage in the channel of the subject stream without providing a fishway to ensure adequate upstream and downstream passage for fish, unless the permittee has requested and been granted a fish passage waiver or exemption through the Oregon Department of Fish and Wildlife. The permittee is hereby directed to contact an Oregon Department of Fish and Wildlife Fish Passage Coordinator before beginning construction of any in-channel obstruction.

- fishself** The permittee shall install, maintain, and operate fish screening and by-pass devices consistent with current Oregon Department of Fish and Wildlife (ODFW) standards. Fish screening is to prevent fish from entering the proposed diversion while by-pass devices provide adequate upstream and downstream passage for fish. The required screen and by-pass devices are to be in place and functional prior to diversion of any water. Permittee shall obtain written approval from ODFW that the installation of the required screen and by-pass devices meets the state's criteria or the permittee shall submit documentation that ODFW has determined screens and/or by-pass devices are not necessary.
- fishapprove** The permittee shall install, maintain, and operate fish screening and by-pass devices consistent with current Oregon Department of Fish and Wildlife (ODFW) standards. Fish screening is to prevent fish from entering the proposed diversion while by-pass devices provide adequate upstream and downstream passage for fish. The required screen and by-pass devices are to be in place and functional, and approved in writing by ODFW prior to diversion of any water. The permittee may submit evidence in writing that ODFW has determined screens and/or by-pass devices are not necessary.
- fishdiv33** If the riparian area is disturbed in the process of developing a point of diversion, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with ODFW's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. For purposes of mitigation, the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards, OAR 635-415, shall be followed.
- The use may be restricted if the quality of the source stream or downstream waters decrease to the point that those waters no longer meet existing state or federal water quality standards due to reduced flows.
- The permittee shall install, maintain, and operate fish screening and by-pass devices consistent with current Oregon Department of Fish and Wildlife (ODFW) standards. Fish screening is to prevent fish from entering the proposed diversion while by-pass devices provide adequate upstream and downstream passage for fish. The required screen and by-pass devices are to be in place and functional, and approved in writing by ODFW prior to diversion of any water. The permittee may submit evidence in writing that ODFW has determined screens and/or by-pass devices are not necessary.
- fishmay** Notwithstanding that ODFW has made a determination that fish screens and/or by-pass devices are not necessary at the time of permit issuance, the permittee may be required in the future to install, maintain, and operate fish screening and by-pass devices to prevent fish from entering the proposed diversion and to provide adequate upstream and downstream passage for fish.
- b52** Water may be diverted only when Department of Environmental Quality sediment standards are being met.
- b5** The water user shall install and maintain adequate treatment facilities meeting current DEQ requirements to remove sediment before returning the water to the stream.
- b51a** The period of use has been limited to _____ through _____.
- b57** Before water use may begin under this permit, a totalizing flow meter must be installed at each diversion point.
- b58** Before water use may begin under this permit, a staff gage that measures the entire range and stage between full reservoir level dead pool storage must be installed in the reservoir. The staff gage shall be United States Geological Survey style porcelain enamel iron staff gage style A, C, E or I. Additionally, before water use may begin under this permit, if the reservoir is located in channel then weirs or other suitable measuring devices must be installed upstream and downstream of the reservoir, and, a gated valve outlet must be installed. A written waiver may be obtained from the local Watermaster if in his judgment the installation of the weir(s) will provide no public benefit.
- futile call** The use of water allowed herein may be made only at times when waters from the (NAME OF SURFACE WATER) would not otherwise flow into a tributary of the _____ River or sufficient water is available to satisfy all prior rights, including rights for maintaining instream flows.
- riparian** If the riparian area is disturbed in the process of developing a point of diversion, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with ODFW's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. For purposes of mitigation, the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards, OAR 635-415, shall be followed.
- wq** The use may be restricted if the quality of the source stream or downstream waters decrease to the point that those waters no longer meet existing state or federal water quality standards due to reduced flows.
- fence** The stream and its adjacent riparian area shall be fenced to exclude livestock.
- blv** Water must be diverted to a trough or tank through an enclosed water delivery system. The delivery system must be equipped with an automatic shutoff or limiting flow control mechanism or include a means for returning water to the stream source through an enclosed delivery system. The use of water shall not exceed 0.10 cubic feet per second per 1000 head of livestock.