Oregon DEQ Division 33 Review
Summary Sheet

Application Information

Applicant Name:	Carl Pearson	**Application Number:**	S-89923
Basin & Sub-basin:	Umpqua, Little River	**Requested Water Amount:**	0.033 CFS from Little River, tributary to North Umpqua River
Nearest Surface Water:	Little River	**Nearest Receiving Waterbody:**	Little River
Proposed Use:	Domestic use for one household	**Requested Period of Use:**	January 1 through December 31 of each year

Division 33 Geographic Area

☐ Lower Columbia ☐ Upper Columbia ☒ Statewide	
Upper and Lower Columbia Basins only: Based upon the review completed below, does the proposed use comply with existing state and federal water quality standards or may conditions be applied to bring the use into compliance?	☐ No ☐ Yes ☐ Insufficient data
Statewide: Will the proposed use result in water quality impacts that will cause either "loss" or "net loss" of essential habitat of sensitive threatened or endangered (ST&E) fish species? (Note: the presence of ST&E fish species is determined by Oregon Department of Fish and Wildlife.)	☐ No ☒ Yes ☐ Insufficient data

Recommended Pre-Proposed Final Order Actions

1. **Riparian:** If the riparian area is disturbed in the process of developing, modifying or repairing a point of diversion under this water use permit, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with the Oregon Department of Fish and Wildlife's Habitat Mitigation Policy described in Oregon Administrative Rule OAR Chapter 635-415. Prior to development, modification or repairs at the point of diversion, the permittee shall submit, to the Oregon Water Resources Department, either a Riparian Mitigation Plan approved in writing by Oregon Department of Fish and Wildlife (ODFW) or a written declaration from ODFW that riparian mitigation is not necessary. The permittee shall maintain the riparian area for the life of the permit and subsequent certificate per the approved Riparian Mitigation Plan. The permittee is hereby directed to contact the local Oregon Department of Fish and Wildlife Fish Biologist prior to development of the point of diversion.

Mitigation Obligation ☒ **No** ☐ **Yes**

Prior to issuance of a Proposed Final Order, the applicant shall submit a mitigation proposal that is of no less volume and rate than the permitted use. The proposal shall include water that is sourced upstream of the point of diversion or appropriation, or the uppermost point on the stream at which the potential for surface water interference occurs. If a surface water right is used for mitigation, it shall be transferred instream for the **[month-month]** time period and of similar water quality. The applicant should contact their OWRD caseworker to discuss flow mitigation options. Flow mitigation is site-specific, therefore DEQ recommends written approval of the mitigation proposal by DEQ prior to issuance of a proposed final order.

Recommended Permit Conditions

1. **Water Quality:** All water use under this permit shall comply with state and federal water quality laws. The permittee shall not violate any state and federal water quality standards, shall not cause pollution of any waters of the state, and shall not place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means. The use may be restricted if the quality of source stream or downstream waters decrease to the point that those waters no longer meet

	existing state or federal water quality standards. Permittee is responsible for obtaining any necessary state and federal permits.
2.	**Flow Restrictor:** The permittee shall install a flow control valve on the diversion system to limit use to the permitted rate. The valve shall be in place, functional, and verified by the Certified Water Rights Examiner before a certificate is issued. The valve or a suitable replacement shall remain in place for the life of the water right.
3.	**Limit Rate:** Water withdrawal shall be limited to **0.005 CFS further limited to 500 GPD for human consumption use only**
4.	

Seasonal Limitations

Reason for limitation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TMDL: Critical period	☐	☐	☐	☐	☐	☒	☒	☒	☒	☐	☐	☐
WAB: 20% flow threshold exceeded	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other: Instream flow requirements not likely to be met	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☐	☐

Additional Reviewer comments ☐ No ☒ Yes

[Use this space to describe any of the following: reasoning to substantiate permit conditions; examples of additional information that may allow or disallow the use; and why any variations to the standard Division 33 review process were necessary. Designate conditions related to Division 310 with an asterisk.]

This review is only applicable for human consumption use for one household with limited maximum withdrawal rate of 0.005 CFS further limited to 500 GPD year-round. If the proposed use changes from human consumption, DEQ will provide an updated review at that time.

The Umpqua Basin has an approved TMDL for stream temperature (DEQ, 2006) in effect. Households should be encouraged to implement voluntary water conservation measures to the maximum extent practicable during the months of June, July, August, and September. The cumulative effects of additional withdrawals from the Little River could negatively affect downstream surface water quantity and water quality, especially during the summer when low stream flows can create critical stream temperatures and heat loading conditions that often exceed salmon and trout rearing and migration criterion. Reducing flow in waterbodies impaired for temperature, such as the North Umpqua River could result in higher stream temperatures, lower dissolved oxygen levels, and stressed conditions for aquatic life and may result in a net loss of essential habitat for ST&E fish species.

Individual impacts of human consumption use are generally not measurable when limited to 0.005 CFS up to 500 GPD. DEQ would determine the proposed use as inconsequential. However, the cumulative effect of additional withdrawals in the period June through October may injure an instream water right (IS71184A) and could negatively affect downstream surface water quantity and water quality of the Little River. Until such time as DEQ determines suitable mitigation for Human Consumption uses, or other means to adequately protect instream values, DEQ will not request mitigation to offset negative impacts.

DEQ recommends limiting the rate to **0.005 CFS further limited to 500 GPD for human consumption use only** for one household.

Interagency consultation: [Describe any substantial interagency consultation. Who was contacted and what was discussed?]	
DEQ review prepared by: Shane Cossel	**Date complete**: 11/25/2025

Antidegradation Policy:

The purpose of DEQ's Antidegradation Policy (OAR 340-041-0004(1)) is to guide decisions that affect water quality to prevent unnecessary further degradation from new or increased point and nonpoint sources of pollution, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. Oregon's Antidegradation Policy allows exemptions and conditions for new or increased water use.

1. **Temporary Use or Net Benefit**

Does the applicant propose a temporary use in response to an emergency, a restoration activity that the DEQ has determined provides a net ecological benefit, or a temporary (lasting less than six months) use to protect human health and welfare, for which the applicant has demonstrated that they will minimize adverse effects to threatened and endangered species? ☒ No ☐ Yes

If yes, recommend approval of the application and identify conditions necessary to protect water quality for the habitat of ST&E fish species. You may skip to Question 7.

2. **Outstanding Resource Water**

Does the applicant propose withdrawing directly from an **Outstanding Resource Water** with critical habitat for ST&E fish species? ☒ No ☐ Yes

If yes, then prior to permit issuance, the applicant must provide suitable flow mitigation. You may skip to question 7.

3. **Water Quality Limited**

Is this source **Water Quality Limited** or a tributary to a water quality limited water body? Note: limit downstream review to 6th field HUC for parameters that diminished flow can affect (temperature, dissolved oxygen, pH, etc.). ☐ No ☒ Yes

Integrated Report 303(d) List Summary Table

Assessment Unit Name	Assessment Unit Description	Parameter	Status*	Beneficial Uses
HUC12 Name: Lower Little River	Watershed Unit (1st through 4th order streams)	Sedimentation	Category 4A	Fish and Aquatic Life
		Temperature spawn	Category 4A	Fish and Aquatic Life
		Temperature year-round	Category 4A	Fish and Aquatic Life
Little River	Cavitt Creek to confluence with North Umpqua River	Temperature year-round	Category 4A	Fish and Aquatic Life
		Temperature spawn	Category 4A	Fish and Aquatic Life
		Sedimentation	Category 4A	Fish and Aquatic Life
North Umpqua River	Little River to confluence with Umpqua River	Turbidity	Category 5	Fish and Aquatic Life
		Temperature year-round	Category 5	Fish and Aquatic Life
		Temperature spawn	Category 5	Fish and Aquatic Life
		Flow Modification	Category 4C	Fish and Aquatic Life

*Integrated Report Category

Category 4 - Data indicate that at least one designated use is not supported, but a TMDL is not needed to address the pollutant

Category 4A - Clean-up plans (also called TMDLs) that will result in the waterbody meeting water quality standards and supporting its beneficial uses have been approved

Category 4B - Other pollution control requirements are expected to address pollutant of concern and will result in attainment of water quality standards

Category 4C - The impairment is caused by pollution, not a pollutant. For example, flow, or lack of flow, are not considered pollutants, but may be affecting the waterbody's beneficial uses

Category 5 - Data indicate a designated use is not supported or a water quality standard is not attained and a TMDL is needed. This category constitutes the Section 303(d) list that EPA will approve or disapprove under the Clean Water Act

Analysis: [If the answer to question 3 is yes, then describe how the use does or does not comply with existing state and federal water quality standards, and how the use may affect ST&E fish species habitat.]

Sedimentation

While sediment is an essential part of healthy functioning stream systems, excessive sediment loads can have severe negative impacts on a stream ecosystem. Many fish species are adapted to high suspended sediment levels that occur for short periods of time, but longer exposure to high levels of suspended sediment can interfere with feeding behavior, damage gills, reduce available food, and reduce growth rates. Deposition and sedimentation (when sediment falls out of the water column and deposits on the streambed) can smother eggs and fry in the substrate and fill in pools within the stream channel (reducing or eliminating cold water refugia important to cold water aquatic life during periods of high water temperature). Because bacteria, nutrients and other chemical substances are often attached to sediment particles, excessive sediment loading can also increase nutrient and toxics concentrations and contribute to decreased dissolved oxygen in both the water column and the spawning gravels. A reduction in streamflow will lead to locally increased deposition and sedimentation. It will also result in an increased rate of evaporation in warm weather, which in turn can increase nutrient and toxic concentrations in the stream. This would result in the diminution of water quality for the habitat of sensitive, threatened, or endangered fish species.

Temperature

Increases in temperature adversely impact sensitive, threatened, and endangered fish. Fish require different temperature based on species and life history stage. Oregon's temperature limits are based on the most sensitive species and the life history stage of those species at the location and season of concern. The North Umpqua River does not meet Oregon's year-round or spawning stream temperature standards. Generally, water temperatures increase as flow decreases. Therefore, reducing flow in waterbodies that are connected to downstream temperature-impaired waterbodies, such as the Little River, could result in higher stream temperatures and stressed conditions for aquatic life, particularly during the summer months when stream flow is lowest. If year-round standard triggered: The critical warm period when stream conditions are most likely to exceed the year-round temperature standards is July 1 – September 30.

Turbidity

Turbidity is a measure of the degree which water loses its transparency due to the presence of suspended solids. At elevated levels, turbidity and associated suspended solids reduce light transmission and have detrimental impacts on aquatic ecosystems. High turbidity can make it difficult for aquatic organisms to find food, affect gill functions and cause spawning habitat to become covered. Additionally, increases in suspended solids in the water column allow for increased absorption of solar radiation and heat. This creates warmer water temperatures and reduced concentrations of dissolved oxygen. Sources of turbidity include increased bankside erosion, which can occur from flood flows or streamside cattle impacts, erosion and agricultural land runoff from fields, increased precipitation, and excessive algal growth.

Flow Modification

Fish and aquatic life need variable stream flows to trigger life stages and migration events. Some triggers are dependent on a change in flow, some triggers are dependent on a change in temperature. Dams and diversions alter the volume, timing, and temperature of flows. This prevents fish and aquatic life from accessing habitat or changing life stages at the appropriate time. Dams can also increase water clarity which

promotes algal growth. Dams and diversions can prevent fish passage, which fragments river systems, isolates previously continuous populations, and prevents the migrations of sensitive, threatened, or endangered fish species.

Recommended Conditions: [Consider if water quality can be protected by limiting the rate and quantity of water used, period of use, or by including other permit conditions.]

Water Quality, Flow Restrictor, Limit Rate, Riparian

4. Total Maximum Daily Load Summary

Are there TMDLs established for parameters identified as being affected by flow modification? ☐ No ☒ Yes

Analysis: [List TMDL, identify the load allocation, and if flow modification is a contributing factor. Describe how the use does or does not comply with existing state and federal water quality standards and how the use may affect ST&E fish species habitat.]

Umpqua

The Umpqua Basin has an approved TMDL for stream temperature (DEQ, 2006). DEQ is currently under court order to replace the Umpqua River Basin TMDL. The current temperature TMDL is in effect until the new one is approved.

Release of stored water that heats downstream receiving waters (tributary to fish-bearing streams) and exceeds the human use allowance (HUA); in the Umpqua Basin, the Nonpoint Source HUA allocation is no more than 0.1 deg Celsius heating at the point of maximum impact. (Umpqua Basin TMDLs; DEQ 2006)

The current Umpqua River Basin TMDL applies to perennial and fish bearing streams within the Umpqua River basin. It defines salmonid fish spawning and rearing, anadromous fish passage, resident fish and aquatic life, and fishing are the most sensitive beneficial uses. The TMDL addresses anthropogenic heat from (1) warm water discharges to surface waters, (2) increased solar radiation loading, and (3) flow modifications that affect natural thermal regimes. Water quality data and modeling has shown that withdrawals decrease the capacity of streams to assimilate pollutant loads. The natural thermal potential temperature exceeds the numeric criterion (18˚C) so there is no assimilative capacity for the Umpqua River Therefore, additional withdrawals have the potential to warm stream temperatures. Peak temperatures in the Umpqua River occur in June, July, August, and September.

In the North Umpqua River, the natural thermal potential temperature exceeds the numeric criterion (16^{o}C), so there is no assimilative capacity in the North Umpqua River below Steamboat Creek.

Recommended Conditions: [Consider if water quality can be protected by limiting the rate and quantity of water used, period of use, or by including other permit conditions.]

Water Quality, Flow Restrictor, Limit Rate, Riparian

5. Cumulative Withdrawals Effects

Is it likely that the proposed activity, together with existing withdrawals in the OWRD's Water Availability Basin (WAB), will lower water quality and impair aquatic life? ☐ No ☒ Yes

Water Availability and Cumulative Impacts Summary Table

Percent of natural flow = (consumptive use/natural stream flow)*100. See Appendix for additional instructions.

LITTLE R > N UMPQUA R - AT MOUTH

Watershed ID	Exceedance Level	Month	Natural Stream Flow	Consumptive Use	Expected Stream Flow	Reserved Stream Flows	Instream Requirement	Net Water Available	Percent of Flow
71184	50	JAN	636	0.986	635	0	255	380	0.155031
71184	50	FEB	660	1.02	659	0	255	404	0.154545
71184	50	MAR	643	0.357	643	0	255	388	0.055521
71184	50	APR	597	0.609	596	0	255	341	0.10201
71184	50	MAY	354	1.05	353	0	150	203	0.29661
71184	50	JUN	125	1.51	123	0	100	23.5	1.208
71184	50	JUL	51.8	2.07	49.7	0	51.8	-2.07	3.996139
71184	50	AUG	30.2	1.71	28.5	0	30.2	-1.71	5.662252
71184	50	SEP	27.3	1.19	26.1	0	27.3	-1.19	4.358974
71184	50	OCT	42.6	0.393	42.2	0	70	-27.8	0.922535
71184	50	NOV	281	0.595	280	0	255	25.4	0.211744
71184	50	DEC	676	1.03	675	0	255	420	0.152367
71184	50	ANN	248000	757	247000	0	118000	131000	0.305242

Monthly flow in Cubic Feet per Second (CFS). Annual flow in Acre Feet (AF)). Highlight months that exceed 20% of percent of flow.

6. Flow Modification Compliance with State and Federal Water Quality Standards

Based on responses to questions 3, 4, and 5, is the use in compliance with state and federal water quality standards or can compliance with state and federal water quality standards be assured, and ST&E habitat loss prevented through flow mitigation and/or by imposing permit condition(s)?

☐ No ☒ Yes

Recommended Conditions: [If water quality can be protected by modifying or limiting the amount diverted, period of use, or other permit conditions, then select appropriate condition from the conditions list.]

Flow Restrictor, Limit Rate, Riparian

7. Compliance with other State and Federal Water Quality Standards

ORS 468B.025 prohibits pollution of waters of the state. Are there additional water quality impairments that would result from this proposed used by degrading surface water or groundwater quality?

☐ No ☒ Yes

If water quality can be protected by applying permit conditions, then select all appropriate conditions from the standardized menu of conditions.

Recommended conditions: [List conditions]

Water Quality

PRE-PROPOSED FINAL ORDER ACTIONS

DEQ recommends that the applicant provide suitable replacement water as mitigation for anticipated impacts to water quality and more specifically the habitat of sensitive, threatened, and endangered fish species. Additional mitigation may be required from other Interagency Review Team members (for example: OWRD may require mitigation for periods when water is not available). Surface water flow mitigation is unlikely to provide the same benefit that groundwater can provide to gaining stream reaches. However, if groundwater mitigation is unavailable within the same aquifer, surface water mitigation may provide suitable mitigation.

Flow Mitigation Obligation:
Prior to issuance of a Proposed Final Order, the applicant shall submit a mitigation proposal that is of no less volume and rate than the permitted use. The proposal shall include water that is sourced upstream of the point of diversion or appropriation, or the uppermost point on the stream at which the potential for surface water interference occurs. If a surface water right is used for mitigation, it shall be instream for the *month - month time period* and of similar water quality. The applicant should contact their OWRD caseworker to discuss flow mitigation options.

Riparian: If the riparian area is disturbed in the process of developing, modifying or repairing a point of diversion under this water use permit, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with the Oregon Department of Fish and Wildlife's Habitat Mitigation Policy described in Oregon Administrative Rule OAR Chapter 635-415. Prior to development, modification or repairs at the point of diversion, the permittee shall submit, to the Oregon Water Resources Department, either a Riparian Mitigation Plan approved in writing by Oregon Department of Fish and Wildlife (ODFW) or a written declaration from ODFW that riparian mitigation is not necessary. The permittee shall maintain the riparian area for the life of the permit and subsequent certificate per the approved Riparian Mitigation Plan. The permittee is hereby directed to contact the local Oregon Department of Fish and Wildlife Fish Biologist prior to development of the point of diversion.

Water Storage Construction: The applicant shall locate the reservoir outside of the stream's natural channel. *identify waterbody and set back to prevent stream capture and justification for distance selected.*

(Note to reviewer: The 1200C permit requires a 50-foot setback, which is cited from the National General Construction Permit OAR-660-023-0090(5). Requiring the storage reservoir to be outside of the mapped 100 year floodway may also be a protective buffer.)

Construction Activities: 1200-C NPDES Stormwater Construction permit coverage is required from DEQ or Agent for construction activities (clearing, grading, excavation, grubbing, stumping, demolition, staging, stockpiling and other land disturbing activities) that will disturb one or more acres, or that will disturb less than one acre of land but is part of a common plan of development or sale that will ultimately disturb one or more acres of land and have the potential to discharge to surface waters or to a conveyance system that leads to surface waters of the state.

In-Water or Riparian Construction: For in-water or riparian construction, permittee may be required to obtain additional permits from the Oregon Department of State Lands, the U.S. Army Corps of Engineers, and the DEQ Section 401 certification program prior to construction. The applicant must contact these agencies to confirm requirements.

Herbicide Applications: When herbicide application is within three feet of water, the permittee is responsible for ensuring that herbicide application laws are met, and that they obtain from DEQ any necessary pesticide application permits, including the 2300-A Pesticide General Permit or the 2000-J NPDES General Permit. Polluted return flows are not allowed to enter waters of the state per ORS 468B.025(1).

STANDARIZED MENU OF CONDITIONS

Water Quality: All water use under this permit shall comply with state and federal water quality laws. The permittee shall not violate any state and federal water quality standards, shall not cause pollution of any waters of the state, and shall not place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means. The use may be restricted if the quality of source stream or downstream waters decrease to the point that those waters no longer meet existing state or federal water quality standards. Permittee is responsible for obtaining any necessary state and federal permits.

Agricultural Water Quality Management Area Rules: The permittee shall comply with basin-specific Agricultural Water Quality Management Area Rules described in Oregon Administrative Rule Chapter 603-095. The permittee shall protect riparian areas, including through irrigation practices and the management of any livestock, allowing site capable vegetation to establish and grow along streams, while providing the following functions: shade (on perennial and some intermittent streams), bank stability, and infiltration or filtration of overland runoff.

Flow Restrictor: The permittee shall install a flow control valve on the diversion system to limit use to the permitted rate. The valve shall be in place, functional, and verified by the Certified Water Rights Examiner before a certificate is issued. The valve or a suitable replacement shall remain in place for the life of the water right**.**

Limit Rate: Water withdrawal shall be limited to *Enter CFS or AF for the defined period, or a month by month rate or volume*.

Limit Period of Use: Water use shall be limited to the period: *start date through end date*.

(Note to reviewer: Do not split the irrigation season. Require mitigation if water is not available during the requested time period.)

Limit Diversion: The permittee shall not divert water under this water use permit unless streamflow in the *waterbody name* is at or above *CFS* cubic foot per second, as determined at Gaging Station ID .

Off-Channel Stored Water Releases: The permittee shall not release polluted water from this off-channel reservoir into waters of the state except when the release is directed by the State Engineer to prevent dam failure.

On-Channel Reservoir: The permittee shall design and operate the water storage facility such that all waters within and below the reservoir meet water quality criteria. The permittee shall develop a reservoir operations plan that details how water quality criteria and standards will be met. A Certified Water Rights Examiner shall verify that the reservoir operations are consistent with the plan before a certificate is issued. The reservoir operator shall maintain a copy of the plan and make it available for review upon request.

Restrict Reservoir Release: To prevent pollution downstream, the permittee shall not release water from the reservoir when the flow at Gaging Station ID (*gage name*) is below the Mean Daily Discharge of *CFS* (discharge which was equaled or exceeded for 90% percent of the time) except when the release is directed by the State Engineer to prevent dam failure.

Live Flow: Once the allocated volume has been stored, permittee shall pass all live flow downstream at a rate equal to inflow, using methods that protect instream water quality.

Lining: The permittee shall line the reservoir with *include material or allowable infiltration rate* to minimize seepage and protect groundwater quality per Oregon Administrative Rule 340-040. The liner is to be in place,

inspected, and approved by the Certified Water Rights examiner prior to storage of water.[*] If the liner fails, the water user shall replace it within one calendar year.

Site-Specific Condition: The permittee shall

[*] OAR 690-410-0010(2)(a), OAR 690-310-0120, OAR 690-310-0140

Appendix: General Overview, Instructions for Water Availability Analysis, and Process Flow Chart

General Overview

The purpose of OAR Chapter 690, Division 33 is to aid the Oregon Water Resources Department (OWRD) in determining whether a proposed use will impair or be detrimental to the public interest with regard to listed sensitive, threatened, or endangered (ST&E) fish species. Oregon's stream temperature, dissolved oxygen (DO), pH and several other water quality standards are based on the life cycle needs of salmonids and other resident fish and aquatic life. Exceeding the standards can disrupt the life cycle of a ST&E fish species and may cause death. In addition, OWRD must consider water quality impacts as part of a public interest review, OAR 690-310-0120. Water quality impacts and conditions unrelated to ST&E species should be noted as "Division 310" in the recommendations to OWRD. The DEQ's Water Right Application Review Procedures document contains a full description of the review process.

The two main categories of Division 33 reviews are based on the geographic distribution of ST&E fish species:

- **For Proposed Uses in the Columbia River Basin,** reviews must determine whether a proposed use complies with existing state and federal water quality standards. Upper Columbia applications specifically require applicants to provide evidence that the proposed use complies with existing state and federal water quality standards. Geographic scope: Columbia River Basin (includes all waters that ultimately drain into the Columbia River).

- **For Proposed Uses Statewide,** review is conducted under the "Statewide review" procedure. Statewide reviews must determine whether a proposed use may affect ST&E fish species habitat. The statewide review procedure is intended to identify permit conditions that can prevent the "loss" or "net loss" of essential habitat of ST&E fish species. When permit conditions cannot be identified that meet this standard, then the DEQ recommends denial of the permit. Geographic scope: all areas outside the Columbia River Basin where OWRD determines ST&E fish species are present.

Instructions for Populating the Water Availability Summary Table using data from OWRD's WAB (Section 5)

- Open OWRD's Water Availability Reporting System.
- Search for the water availability basin of interest. Select 50% exceedance. The 50% exceedance stream flow is the stream flow that occurs at least half of the time.
- The water availability analysis will display a nested list of watersheds that contain the POD. Select the highest nesting order WAB that contains the POD.
- Download to an Excel spreadsheet. Percent of flow is calculated using this equation:

$$Percent\ of\ Flow = \frac{\text{Consumptive Use}}{\text{Natural Stream Flow}} * 100$$

You may choose to add the proposed rate (or storage amount) to the consumptive use.

Instructions for Water Availability Analysis

To complete Section 6, review and consider the cumulative impact of consumptive withdrawals using the OWRD WAB. All water withdrawals and the following factors should be considered when conducting a water availability analysis.

- **Instream Flow:** Consider the percent of natural flow removed from the stream in each month (see right-most column in Water Availability and Cumulative Impacts Summary Table). Based on best professional judgment, evaluate if the cumulative withdrawal is likely to cause impairment to aquatic life or water quality. 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 flow[1]. Consider the seasonality of any listings and season of withdrawal to determine impact for each month of the year.
- **Antidegradation:** Rule 340-041-0004 applies*:* withdrawals cannot cumulatively increase a waterbody's temperature by more than 0.5 degrees Fahrenheit or cause a 0.1 mg/l decrease in dissolved oxygen from the upstream end of a stream reach to the downstream end of the reach so long as it has no adverse effects on threatened and endangered species. See OAR 340-041-0004(3)-(5) for a description in rule of activities that do not result in lowering of water quality.
- **Flow modification**: Consider if cumulative withdrawals are contributing to flow modification and a likely limiting factor in the waterbody at certain times of the year. Temperature and dissolved oxygen are flow-related parameters. When streamflow is reduced, assimilative capacity is reduced. As a waterbody heats up, dissolved oxygen concentrations decline. Reduced stream flows (including groundwater inputs to streamflow), exacerbate temperature and/or dissolved oxygen impairments.
- **Temperature**: Increases in temperature or a reduction in dissolved oxygen adversely impacts ST&E fish. Fish require different temperature and concentrations of dissolved oxygen based on species and life history stage. Oregon's temperature and dissolved oxygen limits are based on the most sensitive species and the life history stage of those species at the location and season of concern. Additional heat or reduction in dissolved oxygen concentrations will further impact these species habitat. Reduced flows can also increase the concentrations of phosphorous, bacteria, pesticides and metals.

Instructions for Calculating "Limit Diversion" Rate

This condition is selected to limit withdrawals once the cumulative withdrawals in the watershed have exceeded the protective threshold of 20 percent and/or the ISWR is not fully protective of aquatic life. A different value can be selected, but the reviewer should state why a particular percent was selected.

"Natural stream flow" is obtained from OWRD's Water Availability Reporting System. The condition is applied on a monthly timeframe based on OWRD's data.

"Natural stream flow" – (percent of flow * "natural stream flow") = Expected Stream Flow

The applicant would have to stop using when instream flows drop below the Expected Stream Flow.

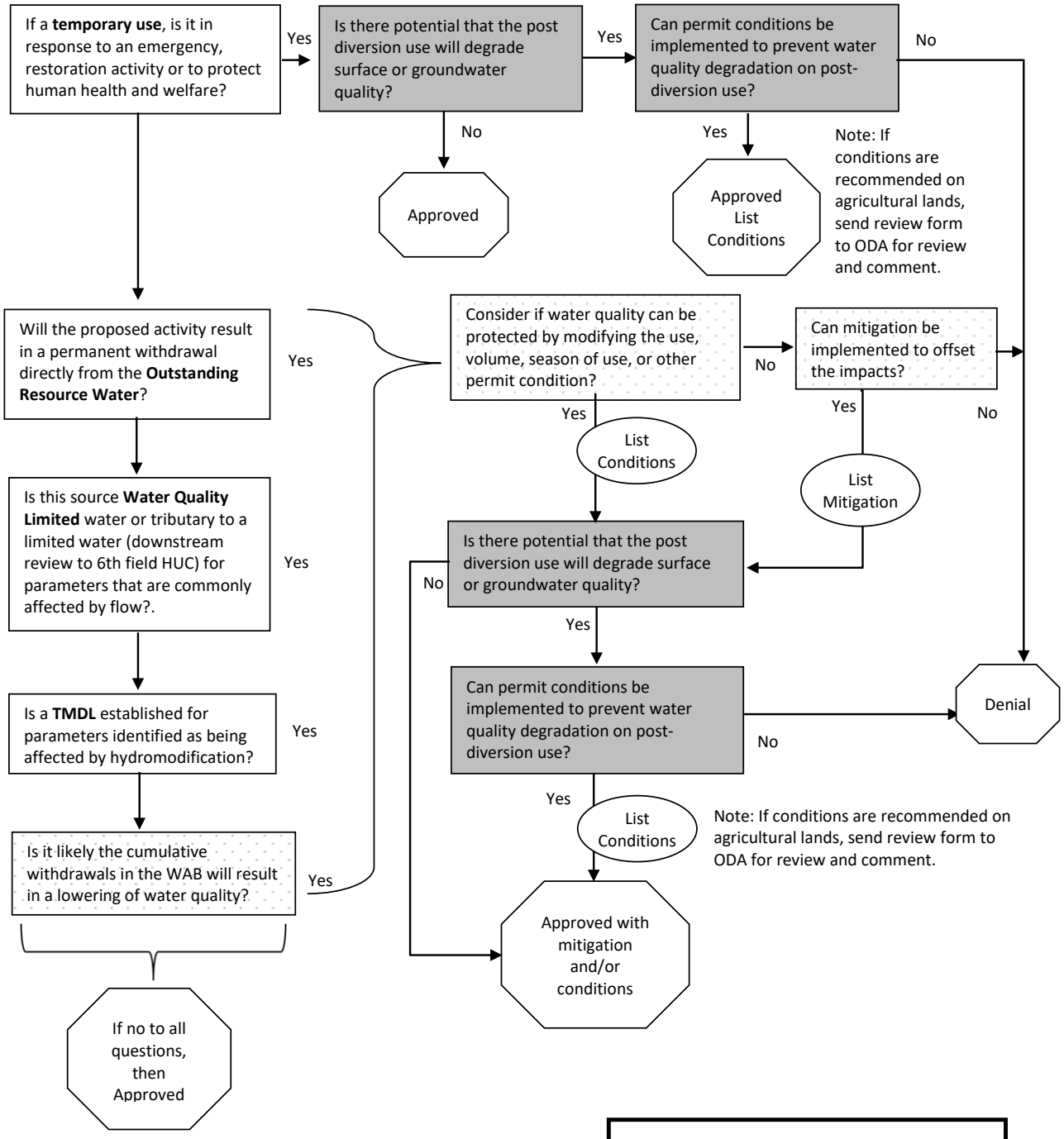
Example:

Natural stream flow for a particular month = 1200 CFS

1200 CFS – (.2 * 1200 CFS) = 960 CFS

[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

DEQ Water Right Review Flow Chart



Each yes will need to be explained by how the use does not comply with existing state and federal water quality standards and how the use may affect sensitive, threatened or endangered fish species habitat.

Note: Review based on DEQ's anti-degradation rule (340-041-0004).