Oregon DEQ Division 33 Review
Summary Sheet

Application Information

Applicant Name:	Jenck Farms LLC	**Application Number:**	G-18823
Basin & Sub-basin:	North Coast Basin	**Requested Water Amount:**	387 AF
Nearest Surface Water:	Trask River, Tillamook River	**Nearest Receiving Waterbody:**	Trask River, Tillamook River
Proposed Use:	Irrigation of 257.9 acres	**Requested Period of Use:**	March 1- October 31

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 instream for the [March 1 – October 31] time period and of similar water quality. The applicant should contact their OWRD caseworker to discuss flow mitigation options.

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.

2. **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.

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.]

The requested withdrawal would have negative impacts to water quality in two river systems that already have several TMDL listings and water quality impairments that impact ST&E species habitat and survival. Additionally, the impacts would be felt in the brackish area of the Tillamook estuary, which is sensitive and complex, provided much needed services to the larger ecosystem, including the habitat of ST&E species. While brackish water cannot be used for irrigation, it is still an incredibly important component to the estuary system. ST&E listed fish, like juvenile salmon, require this transitional habitat area to acclimate before moving downstream into saline ocean water, and for adults who are returning to freshwater to spawn.

In this particular area, which is tidally influenced, the applicant is proposing to withdraw fresh groundwater which would otherwise be released downstream, contributing to how the larger system's salinity is balanced during low and high tides, as well as is flushed during low tides periods. Tidally influenced, brackish areas are increasingly impacted by human activities, like agriculture, even though they provide essential transitional habitat for ST&E species.

In consideration of cumulative impacts, based on information shared at the site visit in September 2019, there are other wells withdrawing water from this system. Additionally, flow and water availability is already limited for surface users, as approximately 24 water right permit holders are regulated off the system each summer (per correspondence with WRD from 09/27/2019).

Interagency consultation: [Describe any substantial interagency consultation. Who was contacted and what was discussed?]

09/25/2019: An interagency meeting was convened to discuss the Jenck application. During this conversation, the history with the applicants' previous water rights request, 2005 denial, and recent violation order was described.

09/27/2019: Representatives from Schwabe Williamson & Wyatt (Schwabe) requested a meeting to discuss the application and the request before a site visit scheduled the following week.

09/30/2019: A site visit to the Jenck dairy project site was requested. In attendance included representatives from DEQ, ODFW, ODA, OWRD, Senator Betsy Johnson, members from the Jenck family, representatives from Schwabe and a consultant (Greg Kupillas)

10/24/2019: The applicant submitted an informal modeling summary describing the anticipated impacts from the proposed water use.

04/30/2020: An interagency meeting was convened to request an update from WRD about their water availability determination. A memo describing WRD's determination is forthcoming.

08/04/2020: OWEB was contacted about the validity of the proposed mitigation water in relation to a past publically-funded restoration project.

08/04/2020: DEQ and ODFW met to discuss project's proposed mitigation overlap with a completed restoration project funded through OWEB.

DEQ review prepared by: Roxann Nayar	**Date complete**: September 2, 2020

ODA Review Request

ODA review requested: ☐ **No** ☒ **Yes**	**Date review sent to ODA:** June 1, 2020
ODA reviewer: Paul Measles and Margaret Matter	**ODA review date:** June 12, 2020
ODA comments ☐ **No** ☐ **N/A** ☒ **Yes**	
[ODA: enter the results of your review here. Designate conditions related to Division 310 with an asterisk.] ODA: (a) P. Measles: We need to see the results of OWRD's analysis about water availability before proceeding with this permit. Based on information provided, it doesn't sound likely that 387 a-ft. of water is really available. (b) M. Matter: Surface water is available in the Task R. for storage (50% Exec.) during Nov through April. If the applicant was interested, the option could be explored to store water during months of availability	

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

Water Body (Stream/Lake)	River Miles	Parameter	Season	Criteria	Beneficial Uses	Status
Trask River	0-18.6	Temperature	Summer	Rearing	Anadromous Fish Passage	TMDL approved
Trask River	4.1-10.2	Dissolved Oxygen	September 15- May 31	Spawning	Salmonid fish spawning	TMDL Needed
Trask River	0 - 10.2	Fecal Coliform	Year Round	Fecal coliform median of 14 per 100 ml; no more than 10% > 43 per 100 ml	Shellfish growing	TMDL approved
Tillamook River	0-18.5	Biological Criteria	Year Round	Biocriteria	Aquatic Life	TMDL needed
Tillamook River	0-13.6	Temperature	Summer	Rearing 17.8C	Anadromous Fish Passage, Salmonid Fish Rearing	TMDL approved
Tillamook River	0 - 18.5	Fecal Coliform	Year Round	log mean of 126 E. coli per 100 ml; no single sample > 406 per 100 ml	Water contact recreation	TMDL approved
Tillamook River	5.1 - 18.5	Dissolved Oxygen	Year Round (Non-spawning)	Cold water: Not less than 8.0 mg/l or 90% of saturation	Anadromous Fish rearing and migration, Aquatic Life	TMDL Needed
Hoquarten Slough	0 to 3.6	Dissolved Oxygen	Year Round (Non-spawning)	Estuarine: Not less than 6.5 mg/l	Estuarine water	TMDL Needed

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.]

The Trask and Tillamook rivers are currently not meeting water quality standards for temperature, and bacteria in the area identified in this application. The Tillamook River is also water quality limited for bio criteria and dissolved oxygen levels are not meeting standards above and below the point of diversion on both rivers. Additional water withdrawals have the potential to reduce water quality to a greater degree and will not contribute to the goals identified in the Tillamook Bay TMDL designed to meet water quality standards for the temperature and bacteria.

Dissolved oxygen, bacteria, and temperature are flow-related parameter that are exacerbated when streamflow is reduced diminishing the assimilative capacity of the waterway. Bio Criteria is another parameter that is affected by temperature. With this in mind, the Trask and Tillamook Rivers have approved TMDLs for temperature and bacteria, have listings for dissolved oxygen above and below the site, and the Tillamook

River is also listed for Bio Criteria; all parameters are affected by flow modification (water withdrawals) directly or indirectly (Bio Criteria).

Oregon's stream temperature standards are based on the life cycle needs of salmonids and other resident fish and aquatic life. Stream temperatures that exceed the standards can disrupt the life cycle of a sensitive, threatened, or endangered fish species and may even cause death. In addition, stream temperatures above the criteria can impact the Bio Criteria indicators. Water temperatures are influenced by solar radiation, stream shade, ambient air temperatures, channel morphology, groundwater inflows and outflows, precipitation, and flow duration, timing, frequency and volume. Surface water temperatures may also be warmed by anthropogenic activities such as discharging heated water, changing stream width or depth, reducing stream shading, and water withdrawals. In waterbodies where temperatures are already known to exceed standards, further withdrawals from the stream will reduced the stream's heat capacity and cause greater fluctuation in daytime and nighttime stream temperatures. This will result in the diminution of habitat of ST&E species.

Meanwhile, fish and other aquatic organisms require minimum concentrations of dissolved oxygen (DO) based on their species and life history stage to grow and remain healthy. Oregon's dissolved oxygen standards are based on the most sensitive species and life history stage within a waterbody and season of concern. DO levels are affected by a combination of physical, chemical and biotic factors, including: temperature, flow and turbulence, nutrient and organic compound loading, and algae and plant growth, respiration and decomposition.

If the DO concentration drop low enough, it can harm or kill fish. In waterbodies where DO concentrations are known to be insufficient for the habitat of ST&E species, any action or conditions that cause additional reduction in DO would result in the diminution of habitat.

Finally, the Trask and Tillamook Rivers are not meeting bacteria standards for recreational contact and could contribute to the exceedance of the shellfish growing criteria in Tillamook Bay. People coming in contact with these waterways while recreating or eating shellfish that have been exposed to polluted waters can experience unacceptable risk of exposure to pathogens. The bacteria the standards are concentration based and further withdrawals from the stream will reduced the stream's dilution capacity, creating the potential for bacteria concentrations to increase.

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.]

Mitigation, Water Quality

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.

The Trask and Tillamook Rivers have approved TMDLs for temperature and bacteria. The rivers are also water quality limited for dissolved oxygen, and have limited water availability per OWRD. The two rivers' percent of

natural flow exceeds 20% May-October, and any additional reduction in flow would result in the diminution in habitat for ST&E species.

Per the Tillamook TMDL (2001), riparian vegetation, stream morphology, hydrology, climate and geographic location influence stream temperature. While climate and geographic location are outside of human control, the condition of the riparian area, channel morphology and hydrology can be affected by land use activities. Some of these activities have a readily observable impact on temperature, like reservoir releases, but others, like the absence, removal or disturbance of riparian vegetation and water withdrawals contribute to elevated summertime stream temperatures within the Tillamook Bay Watershed.

During the site visit to the Jenck property, the visible sloughs, ditches and side channels were exposed and had little to no riparian shade cover. The absence of riparian vegetation in addition the limited water availability and other challenges facing water quality in this area are all likely contributing factors to the impairments of the Trask River, Tillamook River and neighbouring sloughs.

The Trask and Tillamook Rivers have approved TMDLs for temperature and water quality limited for dissolved oxygen, and have limited water availability per OWRD. The two rivers' percent of natural flow exceeds 20% May-October, and any additional reduction in flow would result in the diminution in habitat for ST&E species.

If the DO concentration drop low enough, it can harm or kill fish. In waterbodies where DO concentrations are known to be insufficient for the habitat of ST&E species, any action or conditions that cause additional reduction in DO would result in the diminution of habitat.

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.]

Mitigation, Water Quality

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 Summary Table

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

[Water Availability Basin]: **Tillamook River > Tillamook Bay > 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
71232	50	JAN	543	37.8	505	0	143	362	7
71232	50	FEB	505	37.5	467	0	143	324	7
71232	50	MAR	467	34.4	433	0	143	290	7
71232	50	APR	239	34.5	204	0	143	61.5	14
71232	50	MAY	143	34.5	109	0	80	28.5	24
71232	50	JUN	84.2	35.1	49.1	0	54	-4.92	42
71232	50	JUL	35.6	36.6	-0.96	0	38.4	-39.4	103
71232	50	AUG	17.7	36	-18.3	0	20	-38.3	203
71232	50	SEP	15.9	34.5	-18.6	0	20	-38.6	217
71232	50	OCT	38.9	34.3	4.6	0	90	-85.4	88

71232	50	NOV	294	36	258	0	143	115	12
71232	50	DEC	588	38	550	0	143	407	6
71232	50	ANN	179000	25900	155000	0	69900	95500	14

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

[Water Availability Basin]: **Trask River > Tillamook Bay> 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
71235	50	JAN	1670	146	1520	0	500	1020	9
71235	50	FEB	1540	137	1400	0	500	903	9
71235	50	MAR	1290	40.3	1250	0	500	750	3
71235	50	APR	860	40.4	820	0	500	320	5
71235	50	MAY	467	40.7	426	0	467	-40.7	9
71235	50	JUN	290	41.9	248	0	157	91.1	14
71235	50	JUL	169	44.6	124	0	157	-32.6	26
71235	50	AUG	107	43.6	63.4	0	103	-39.6	41
71235	50	SEP	102	40.7	61.3	0	97	-35.7	40
71235	50	OCT	177	40.4	137	0	220	-83.4	23
71235	50	NOV	1050	106	944	0	500	444	10
71235	50	DEC	1600	141	1460	0	500	959	9
71235	50	ANN	560000	51900	508000	0	253000	269000	9

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 by limiting the amount diverted, period of use, or by imposing permit condition(s)?

☐ No ☒ Yes

- If 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.]

Mitigation, Water Quality

- If no, can **flow mitigation** ensure compliance with state and federal water quality standards and prevent loss of ST&E habitat? ☐ No ☒ Yes

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]

Mitigation, Water Quality, Agricultural Water Quality Management Area Rules, Riparian

PRE-PROPOSED FINAL ORDER ACTIONS

DEQ requests 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.)

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.

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.

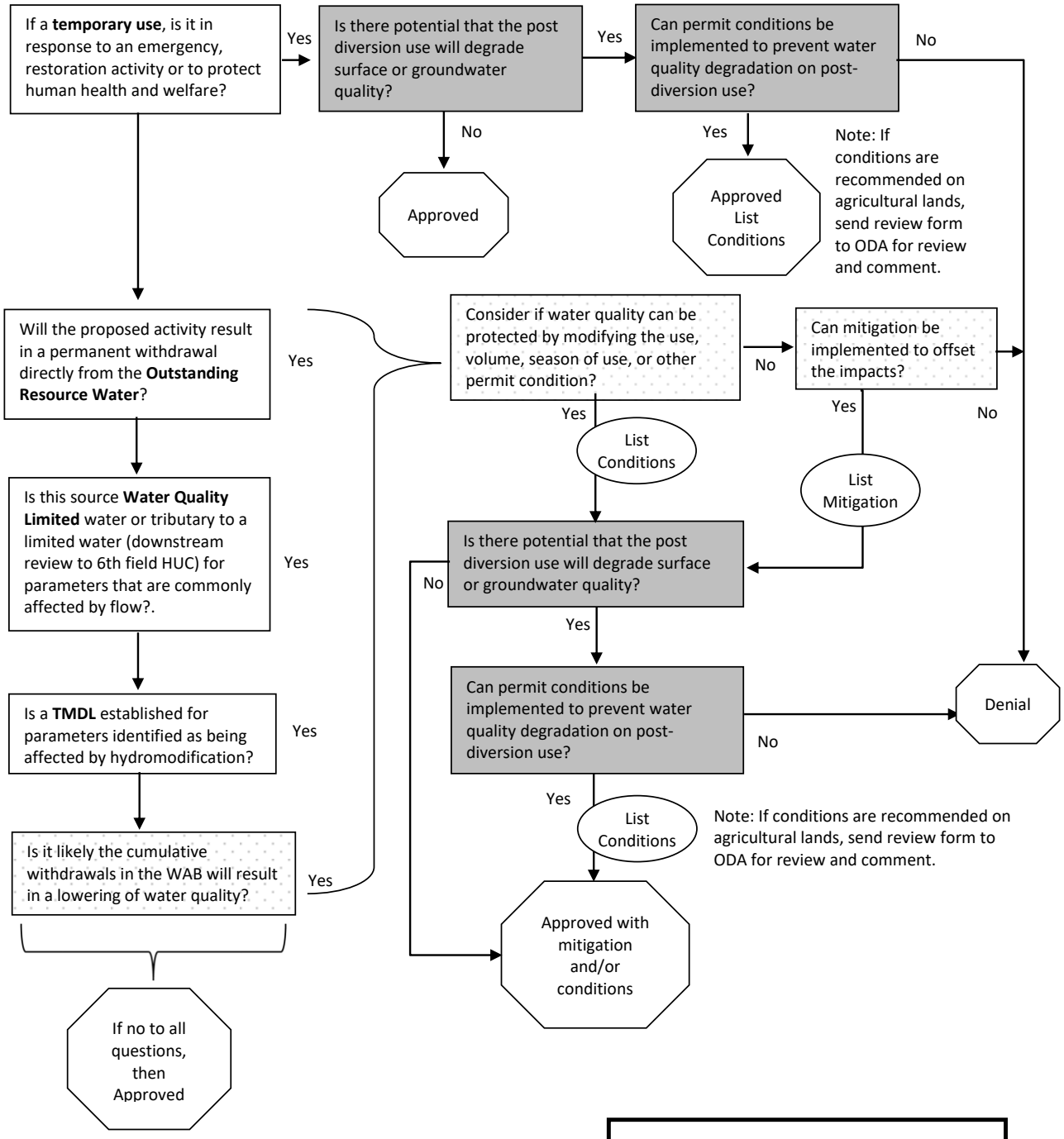
- **Instream Flow:** Consider the percent of natural flow left instream in each month (see right-most column in Table 1). Based on best professional judgment, evaluate if the cumulative withdrawal is likely to cause

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.

[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).