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Please see the attached file containing my comments on the Draft 2026 Sand and Gravel General Permit for the Formal Public Comment Period.

October 10, 2025

Washington State Department of Ecology

RE: Public Comment, Draft 2026 Sand and Gravel General Permit

Dear Mr. Daiber and Dept. of Ecology staff,

While the sand and gravel mining permit process affects the entire state, I believe that it is particularly important to note that according to Ecology's data, the highest concentration of permittee operations is in the western Cascades, near the eastern shores of Puget Sound (Figure 1). Due to the fact that prevailing winter winds are from the southwest off the Pacific Ocean, rainfall is globally high in this coastal temperate rainforest zone, as shown in a paper that I recently co-authored (Figure 2). High rainfall means for Ecology's Northwest Region an extreme opportunity for sand and gravel mining operations to intersect with, and negatively impact, the streams, wetlands, and rivers that necessarily have formed to accommodate the precipitation runoff. There were once thriving fisheries and now are 22 endangered coldwater salmon stocks in Puget Sound, which require water (1) *colder* than quarry lakes (rearing juvenile salmon 17.5°C 7-day average daily maximum temperature WAC 173-201A-200), (2) *lower than high-pH* concrete rubble runoff (pH 6.5-8.5 for rearing juveniles WAC *ibid*.), and (3) *without pollutants* such as soluble hexavalent chromium (6.6 ug/L standard WAC 173-201A-240) from rainwater-leached stockpiled concrete to recycle[i].

While concrete may be recycled, in fact it first constitutes demolition waste. *This demolition waste must be tested before it is trucked into any site permitted under the General Permit*. *Why? Because it is not possible to consider its potentially contaminating properties through any other currently established process*. The environmental review process conducted by Washington State Counties, before a sand and gravel mining operation is permitted, by default is *only* able to account for environmental conditions at the proposed site. As a thought experiment, consider a site surrounded by wetlands, or adjacent to a wellhead protection area or high-sensitivity aquifer, or connected through high-rainfall-event surface water flow to a river or stream, which barely survives County review. Then add contaminated rubble from another site to the equation with zero oversight. Then add high rainfall to the stockpiled rubble and continuous leaching into the soil, into the quarry pit, and during high-rainfall events into surface water, and over time, through the subsurface gravel lens into adjacent water bodies where salmon once thrived.

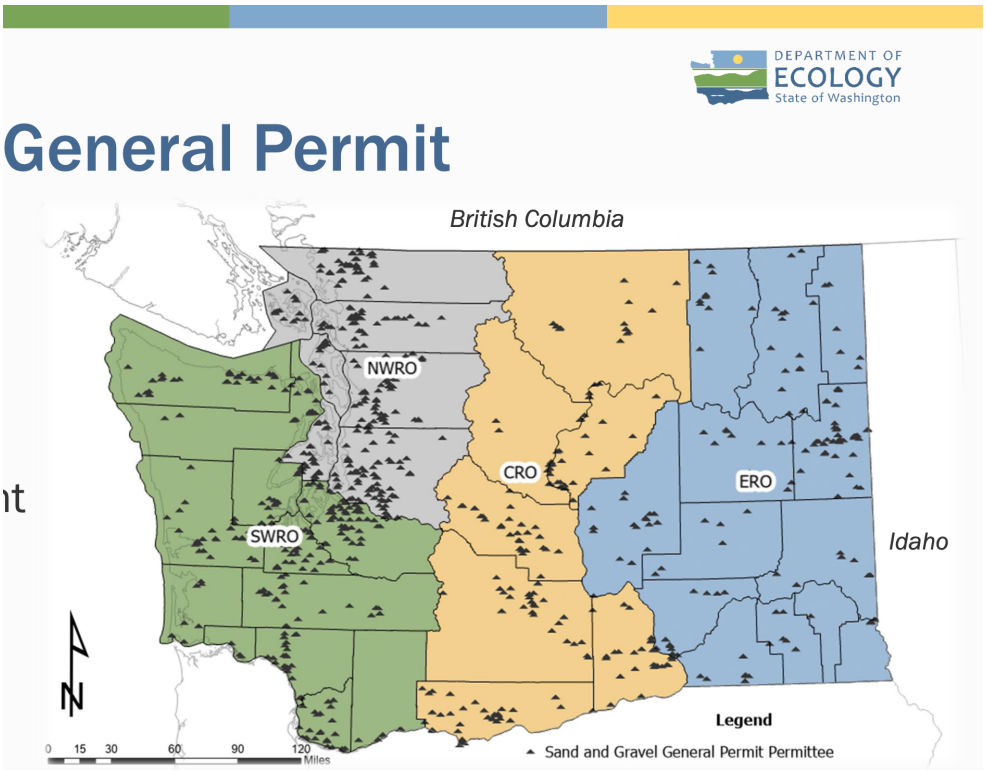

Figure 1. Ecology's map of sand and gravel general permit permittees 9/10/2025.[ii]

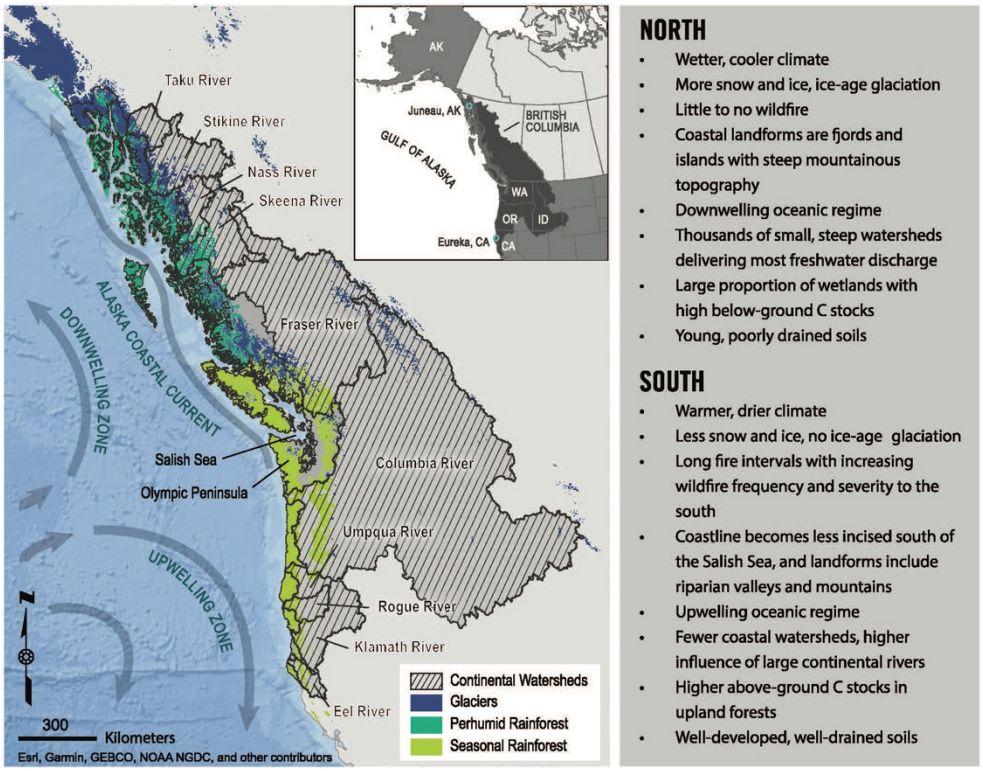

Figure 2. Map of the northeast Pacific coastal temperate rainforest drainage basin.[iii]

Regarding water pollution from hexavalent chromium, data presented by Ecology show that samples frequently exceeded a standard of 10 ug/L (violin plot width indicates frequency) for four categories: treated process water, stormwater, commingled process water with sand and gravel, and commingled process water with stormwater (Figure 3).

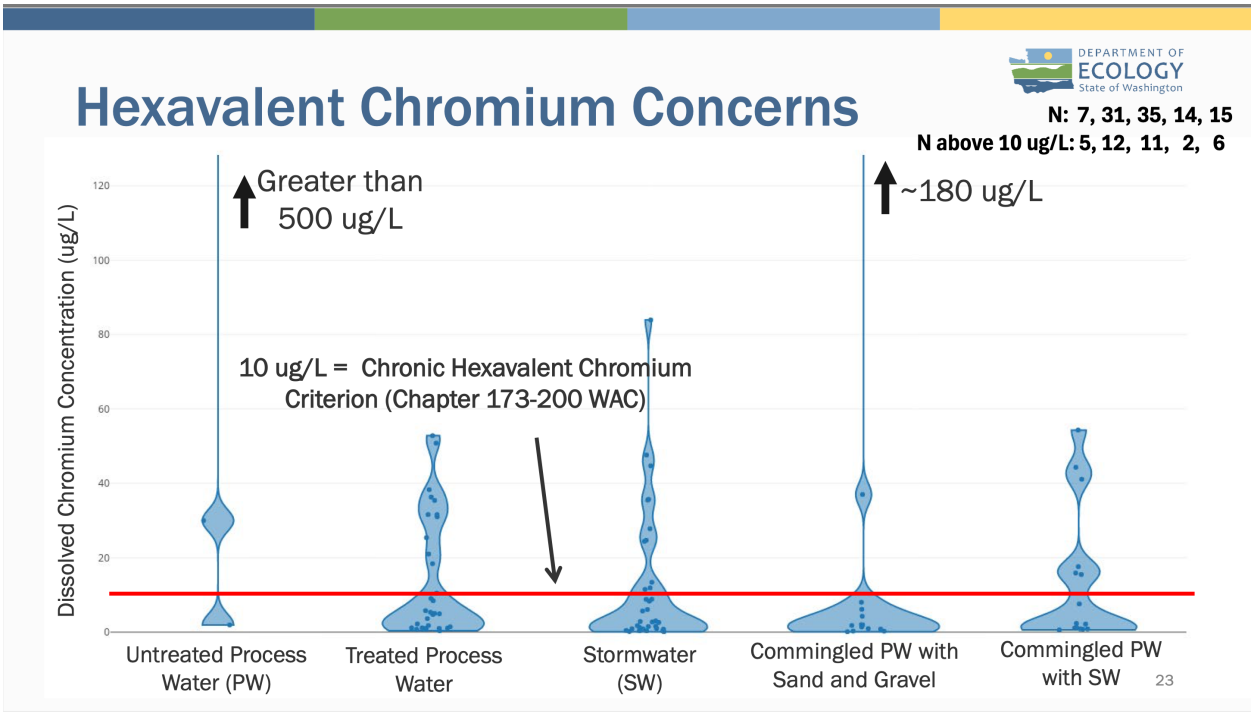

Figure 3. Ecology's hexavalent chromium study results 9/10/2025.[ii]

In summary:

(1) I strongly request that all demolition rubble brought onto the sites for "concrete recycling" be tested for heavy metals before approval for transport onto sites.

(2) I strongly support the proposed addition of hexavalent chromium monitoring, and also ask that more frequent monitoring be required. Further, randomly scheduled monitoring by independent sample collection and analysis labs should be conducted. I would propose that industry contribute to a fund managed by Ecology so that this monitoring may be conducted without influence by interested parties.

(3) I also believe that it is irresponsible to leave wheel wash decisions to individual counties, because State and Federal highway systems and surface roads connect all counties. Without a State-level required compulsory wheel wash before any vehicle (truck or other) leaves mining and concrete operations sites (redi-mix plants, aggregate plants), trucks and other vehicles from an operation permitted by one county can and will spread toxins across roadways in other counties. Furthermore, truck toxins flowing into rivers in one county will flow downstream to other counties.

(4) Additionally, it is possible that regional factors should be evaluated and incorporated into the permit: for example, different geology as related to background contamination; different rainfall frequency, seasonality, and magnitude; and different findings from the study[ii] once seasonal values have been analyzed.

As some of my detailed comments in my Addendum on Ecology's redline draft General Permit below indicate, I would strongly recommend that a working group or community of practice be established to include Ecology, DNR, and the Department of Health, to ensure the complete multi-disciplinary analysis and synthesis of best practices for areas having to do with toxicology, public health, hydrogeological hazards, and aquatic health.

Addendum ("Permit section and page number (for example: S1.B.2, page 8); Specific permit language; Explain concern; Propose solution or preferred language")

Please note that the concerns in my narrative comment, above, are not entirely detailed below and I would appreciate careful consideration of the above narrative as well as this list:

A.1, p 22: "if the discharges from two or more industrial activities are combined, the most stringent effluent limit will apply for each parameter." Concern: While I support this language, here and in the other locations in the document where it is found, in all locations (A.2 p 23, F p 30, etc.) I recommend strengthening the protection by adding language about cumulative effects evaluation. Specifically, in some cases, the combination of effluents may require that a more stringent limit than is in place for either one must be considered to be protective of aquatic resources. For example if two or more constituents of the effluent interact synergistically. Solution: Ecology experts to either determine which cases could require application of more stringent standards to account for cumulative effects, and state those in the permit, or could develop language allowing them to do so on a case by case basis depending on evaluation of proposed effluent combinations.

A.1.d, p 22: Sentence beginning: "All permittees must….." (applies also to B.1.f). I support the language requiring this daily visual monitoring for visible oil sheen, however, I strongly recommend that visual monitoring by an independent entity on randomly selected dates also be required. I suggest strengthening the language by requiring technical experts to be involved in selection of the points, and requiring that a daily date-stamped photo record be maintained; this is easy now that everyone has a mobile phone in their pocket. I also think that this type of visual monitoring would be easily trainable, for citizen science, since most people can see such a sheen and many would be inspired to help; developing a program around this requirement could be a way to improve the monitoring by widening its scope to

publicly accessible waterways around operations that people could visit. For example, I have seen photo stations deployed where people may take a cell phone photo and send it to the phone number or email on the sign. Crowd-sourcing monitoring is inexpensive in the long run, provides community engagement, and provides a much larger database.

A.2.a.i. It is not clear whether "measured monthly" complies with code for pH sampling, in which the metric is a 4-day average according to the footnotes. Doesn't that mean it needs to be "measured daily over 4 consecutive days of operations"?

B.1.e.ii p 24 "pH must be between 6.5 and 8.5, measured quarterly, for Permittees conducting NAICS Codes 113110, 113310, 212312, 212313, 212319, 212399, 212311, 212324, 212325, and/or 324121, and/or Ecology Code ECY001." Quarterly limits are absolutely insufficient for out-migrating juvenile salmonids, which are sensitive to pH. Monitoring should be required year-round at a high frequency and this can be accomplished by the deployment of newer sensors set to monitor hourly or daily; high-frequency datasets should be delivered to Ecology with annual reporting. With ongoing recovery efforts, salmon and trout life history diversities should be expected to increase, meaning migrations could occur for more portions of the year than they may currently, and environmental conditions can change typical migration dates in some years. Monitoring should be done at minimum twice daily (during operations) in sites near salmon-bearing streams and rivers. If not conducted independently, then approved calibrated deployable sensors could be cost-effective and provide reliable data.

C. p 26. Quarries are currently being permitted adjacent to housing developments, so the list of misuse of the site should be expanded to include shooting/target practice, a typical unauthorized use of quarries in Washington for at least 50 years. Fencing or security requirements are not enough to stop this without a proactive approach to employee training and securing access outside of operational hours.

D.1.b. p 26 and D.2.b p. 27. "design storm (10-year, 24-hour event). This standard has not been updated and a climate change analysis such as the IPCC's chapter on the Pacific Northwest indicating unpredictable changes in the magnitude, frequency, and timing of storms should be considered to determine whether a more stringent standard is needed to protect aquatic resources of the state. Furthermore, it is likely that this standard could be usefully tailored for Ecology subregions instead of a single statewide standard given the widely disparate patterns of snow, rain on snow, rain, atmospheric river, etcetera. For example, heavy precipitation can occur for several consecutive days in Ecology's Northwest Region and is typically associated with rivers rising, highways and farmland flooding. Design storms are based on historical rainfall data which cannot accurately predict the future. A more conservative buffer around the design storm must be built into

the permit to protect public aquatic resources, particularly in high-rainfall portions of the state.

E. p 28. Deleted language. Sentence beginning: "The Permittee must notify Ecology prior to use…" I see no benefit to aquatic resources from deleting this language and recommend retaining it.

E. p 29. "Exemptions to a Chemical Use Plan include, but are not limited to carbon dioxide sparging, dry ice, filtration, cement admixtures, and/or closed-loop systems as well as other capital BMPs." This would be more defensible if scientifically based reasons for these exemptions were detailed here. Similarly, specific standards that Ecology contacts use to determine exemptions should be referenced for publicly available consultation.

E.4. p 30. "Recordkeeping and availability – Permittee must document the Chemical Use Plan (ECY 070-792) in the Site Management Plan (Special Condition S5.E) on-site and make it available to Ecology within 7 days of the request." As written, this requirement is incomplete and insufficient. Permittee must document the *actual* on-site chemical use, not only document the plan itself. There must be daily records of all chemical use on site with concentrations, quantities, application method, and GPS coordinates of use and ideally a photo record of container labels.

F.1. p 30. Monitoring data for these visible discharges must be made available in a very timely way to the public as well, for public health such as swimming and fishing.

F3. P 30. This should be "and" not "and/or" to avoid illusory exemptions. If needed for clarity, "any" or "all" could be added before the word TMDL.

S4.1. p 33. Need to specify levels, i.e., it doesn't need to be "high". It can be low or medium as long as it's a CARA. I suggest adding "a low, medium, or high sensitivity" before Critical Aquifer Recharge Area.

A.1. p 33. This language, "reasonably achievable," leaves unacceptable wiggle room.

A.1. p 33. "a sufficient number of monitoring points to represent differences in stormwater quality." Please add language to specify the credentials and qualifications of the person authorized to make this determination, including, for example, that it be a statistically significant sampling design as determined by a hydrogeologist and statistician.

A.4. p 33. "Permittees discharging process waters to a surface water conducting NAICS Code327320, 327331, 327332, 327390, and/or 327999, and/or Ecology Code ECY002 must collect, analyze, and report to Ecology the dissolved hexavalent chromium concentration at a minimum frequency of once per month." This is very insufficient frequency of monitoring to protect aquatic life and habitats and human uses for fishing and swimming in

nearby waterways, from a soluble heavy metal. Without instituting a random collection scheduled managed independently could be planned for to reduce measured values. Hexavalent chromium is the most toxic form of chromium and causes cancer and birth defects (https://www.p65warnings.ca.gov/fact-sheets/chromium-hexavalent-compounds-chromium-6-chromium-vi).

B.1. p 33. "The Permittee is required to representatively sample discharges to ground as near to the source as technically, hydrogeologically, and geographically feasible." Words such as "with feasibility subject to verification by an independent expert" should be added. There seems to be a pattern throughout the permit of not requiring the training, education, and certification standards for the personnel involved in making the determinations required by the permit.

B.2. p 33. "The Permittee must monitor all discharges of process water, mine dewatering water, Type 2 stormwater, and Type 3 stormwater to groundwater of the state at the frequency provided for the activities conducted per Special Conditions S2.B and S3.G." In addition to regulating frequency, the permit should provide for sufficient fine resolution (high-density) baseline data must be conducted to enable trends analysis.

B.3. p 33. "If the permittee discovers." I would think this should be expanded beyond the permittee. For example, "if the permittee, agency staff, members of the public or others discovers, based on onsite or offsite information,…" For example, if publicly available monitoring data show no problem but an adjacent waterway is monitored by others and shows a problem that could trigger a review of the monitoring point location's suitability.

B.4. p33. "within." Add a code-appropriate buffer such as "within or within 1000 feet of a"

B.4. p34. "Small businesses subject to Special Condition S4.B.4." Is it legally required for small businesses to be exempted from requirements necessary to avoid further impacts to public water resources? Monitoring is cheaper than it has ever been if appropriate sensors are used with automatic output into .csv files to calculate and report easy functions such as Max, Min, Average, Median for results. Surely even small businesses run spreadsheet software capable of this type of data analysis and reporting.

B.4.a.i-iii p 34. Repeat annual sampling must be required regardless of achieving quarterly levels for 2 years. Achievement should not need to be incentivized. These permits often run for decades and operations could most certainly change for many reasons. There are countless examples of operations in Washington that are regularly fined, and without sampling, no one will have the information needed to determine whether violations occur. Operators are stewarding facilities with potentially devastating impacts on aquatic and

soils resources vital to Washingtonians. That stewardship comes with responsibility in perpetuity.

B.4.a.iv. p 34. “If the Permittee undergoes a substantial change or significant change, previously collected sampling data may not be used to demonstrate consistent attainment at the affected monitoring point(s).” The meaning of "change" needs to be more specifically defined. A wide range of criteria could be important, from operations to business climate to environment.

C.2.b. p 34 “surface waters.” Revise to say “surface and/or ground waters.”

D.4. p 34. Add “in perpetuity” for required sampling. There is no reason that the public should ever have to take on responsibility for lined impoundments created by for-profit businesses.

F.2. p 40. This F.2 requires text as in F.1 to "record and file" not only the requirement to do the task.

F.3. p 41. I am concerned that by eliminating the SWPPP language, Ecology may also eliminate the requirement to outline employee training and certification requirements. This piece must be restored to ensure trained and certified technical competence for all tasks covered by this permit.

F.3. p 41. “(October 1 – April 30) and at least one inspection during the dry season (May 1 – September 30).” The wet season is variable in different Ecology regions and it is changing with time. The wet season must meet a criterion for the rains to actually have started. At this point November 1 start would be safer but this may be something that should be tailored for individual Ecology regions based on data analysis.

F.3.a. p 41. Please list the technical qualifications for the personnel to perform this inspection beyond just "Permittee." (See similar comments on above sections.)

F.5.b. p 42. Like F.5.a requires a Registered Professional Engineer, should not F.5.b require similar level of credentials?

S4.H. pp 42-43. “The Permittee may request an exemption from visual monitoring for any outfall where there is no safe access point from which to monitor the outfall. The Permittee must specify the latitude and longitude of the location and the reason for exemption in an email or letter to Ecology. Permittee must keep any visual monitoring exemption approvals in the SMP.” It appears that this exemption is a carryover from technological limitations from the last century. Today, to conduct visual monitoring, one simply flies a drone outfitted with a camera to the area and drops it to an appropriate distance to take a photo. In fact, it may be that frequent aerial photos from a drone at a fixed height and fixed x,y

coordinates determined for each site (called the "photo point" monitoring method) would be an appropriate addition to the permit and would eliminate the requirement to allow exemptions. For drone-mounted photography, I would recommend requiring 1) a photo from directly overhead the monitoring area of interest at a pre-determined height and focal length suitable for the area of impact, with some allowable range of uncertainty such as +/- 1 foot, and 2) 4 oblique photographs, also from fixed x,y,z locations, located at the 4 cardinal directions at some distance from the area of interest. With this monitoring method, machine learning can be used to analyze time series photos and alert for anomalies.

S.6. P 43. Since the Oso Slide, DNR has been mandated and funded to map landslides across the state. This section must be updated to require the incorporation of DNR and, if available, County mapped landslide history and landslide hazards. This will require some consultation with experts across the Ecology-DNR areas of expertise to ensure that appropriate buffer widths are incorporated in the permit. For example, it may be that any mapped landslide scarp within ¼-mile of the outermost boundaries of a parcel proposed for mining must be geotechnically evaluated for risk from proposed mining and mining-related operations using the best available science for the collection of high-density boreholes to evaluate spatial heterogeneity of groundwater flow paths that would likely weaken landslide-prone slopes.

S.7.A.3. p 47. It is unclear here who is setting the standards for the spatial density of monitoring. As mentioned a few places above, personnel technical qualifications must be prescribed to ensure data quality for evaluation to protect public property and aquatic resources.

S.8. p47. Given the SWPPP is here required, why was it deleted from the previous section? If it is required, can it be used to directly address the issue of monitoring personnel qualifications?

E.10. p 50. "Store lead acid batteries under cover." I support this, however, it is insufficient. Add: "and without direct connectivity to any water source or conveyance in the event of heavy rainfall or other flooding."

E.11. p 51. "prevent it from leaking on the ground." ADD: "or into any water body or water conveyance."

E.12. p 51. "Manage paving equipment to prevent stormwater contamination." This seems strikingly lacking in detailed methods relative to the others. Please augment with BMPs.

E.13. p 51. “whenever track out onto an off-site roadway is evident.” Please change “evident” to “possible.” Alternatively, provide the monitoring standards required for determining when it is evident.

E.13.a.iii. p 51. “Locate a closed loop wheel wash or tire baths (or equivalent BMP) on site, if the stabilized construction entrance is not effective in preventing sediment from being tracked onto off-site roads. Wheel wash and tire bath wastewater is process water and is subject to the effluent limitations and monitoring requirements in Special Conditions.” Comment 1: Equivalence must be defined in the permit, up front, to avoid wasted time for reviewers during the permit’s period of enforcement. Comment 2: Wheel wash must be required by the State for any vehicle leaving the parcel on which the mine and/or related (concrete, aggregate) operations are located. It is simply not possible to otherwise ensure that the interconnected roadway system of our state does not lead to tracking contaminants such as chromium VI any distance across county or even state lines.

E.13.c.ii. p 51. “Disposal may be to an on-site impoundment that does not discharge to or ultimately discharges to an offsite surface water of the state.” Add text requiring that this apply “including during emergency events such as flooding, landslides, and wildfire.”

The applicability of this phrase should be expansive to ensure that responsibility for risk is born by the Permittee not the public; please apply it wherever needed throughout the permit to ensure Permittee liability for discharges: “including during emergency events such as flooding, landslides, and wildfire.”

E.13.c.iv. p 52. As written, the approval process described here sounds ungoverned. Details of the criteria and requirements for subsequent decisions by Ecology during the 30 days may be needed here.

E.14. p 52. The term “as necessary,” doesn’t specify monitoring, thresholds, criteria of any kind. Without these there is no possibility of effectively enforcing standards to protect human health and safety, aquatic habitat risks, wildfire risks, etc.

F. p 52. Concrete recycling BMPs are an absolutely necessary component of this permit and increasingly so as the cancer-causing effects of chromium VI produced by concrete recycling are becoming better understood by science.a

F.1. p 52. Recommended additional requirements: (1) Require laboratory analysis of representative random samples of any inbound recycled concrete materials for chromium content, and set maximum standards for the state. (2) Require laboratory analysis of representative random samples of inbound recycled concrete materials for arsenic and manganese content, and set maximum standards by Ecology region based on assessment relative to the background levels in the local environment to tie this to the environmental

assessment by counties prior to permitting. Please see narrative comment letter above for rationale.

F.2.b. p 53. “unless.” This exception does not seem necessary or warranted. The Wellhead Protection Area designation should supercede any proposed sand or gravel mining operations including stockpiles, which are potentially the greatest producer of soluble contaminants of any part of the operations covered by the General Permit. Suggest deleting F.2.b.i and F.2.c and the word “unless” from F.2.b. Suggest that F.2.b be written as follows: Within 100 feet or less (horizontal distance) from drinking water and irrigation well(s) or within 100 feet or less (horizontal distance) from a Wellhead Protection Area.

F.3. p 53. “Or other capital BMPs” is unclear. Please clarify in text so that the actual requirements are given in the permit not subject to later interpretation.

S0.A.3. p 54. “Other materials which may become pollutants or cause pollution upon reaching waters of the State”. Please add text “including chromium or other heavy metals.” Please add text: “or federal or international waters” and specify that this is to accommodate operations affecting Puget Sound basin, Strait of Juan de Fuca, outer coast of Washington, and Columbia River (particularly the estuary).

S10.C. p 57. Change “those results” to “all results.” State something to the effect that “if anomalies are not included in calculations they must be stated separately with a scientifically defensible explanation for their exclusion.”

S11.B. p 61. AKART should be defined in the document.

S11.C. p 61. Why was this text deleted? “The Permittee must comply with the requirements for obtaining permits from health departments that have jurisdiction over the disposal activities at the permitted site and comply with those permits.

This permit does not authorize discharge of leachate or process water from solid waste handling activities except as provided under WAC 173-350-410(inert waste).”

G19. P 75. “Upset.” The definition of "upset" must be updated. It is no longer scientifically defensible for the definition to include reasonably predictable seismic, landslide, and tsunami hazards such as mapped landslide risk by DNR and tsunami predictions by NOAA and seismic records of subduction zone earthquakes. Such liability must be assumed by the private businesses not the public.

App B-Definition “AKART.” “that can be reasonably required.” Please specify who is responsible for deciding what is reasonable.”

[i] Daiber, Eric J. 2022. Recycled Concrete Aggregate Leachate: A Literature Review. Publication 22-03-003. Washington State Department of Ecology, Olympia.

[ii] Daiber, Eric J. 2025. Draft 2026 Sand and Gravel General Permit. Presentation on Concrete Study & Draft Permit. 9/10/2025. https://fortress.wa.gov/ecy/ezshare/wq/permits/SGGP-2026-2025Sept-PublicMtgAndHearing-ForWeb.pdf

[iii] Bidlack, A.L., Bisbing, S.M., Buma, B.J., Diefenderfer, H.L., Fellman, J.B., Floyd, W.C., Giesbrecht, I., Lally, A., Lertzman, K.P., Perakis, S.S. and Butman, D.E., 2021. Climate-mediated changes to linked terrestrial and marine ecosystems across the Northeast Pacific coastal temperate rainforest margin. *BioScience*, *71*(6), pp.581-595.