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Enclosed my comments regarding the SGGP draft

After reviewing the industry-submitted comments on Washington State's Draft 2026 Sand and Gravel General Permit by 11:33 PM on 10/10/2025, I would like to provide the following 8 synthesis comments:

1. The scientific evidence overwhelmingly contradicts pro-industry arguments against Washington State's Draft 2026 Sand and Gravel General Permit. Peer-reviewed studies, EPA data, regulatory precedents, and quantitative monitoring demonstrate that process water discharges from concrete and cement operations pose documented environmental risks requiring control measures. Industry claims of lacking scientific justification are refuted by multiple independent lines of evidence across toxicology, chemistry, ecology, and engineering disciplines. I support Ecology's overall effort to ensure that up-to-date scientifically based control measures are mandated, monitored, and enforced because the environmental impacts are not theoretical. Concrete washout water reaches pH levels of 11.6-13.0, which is 2.6-4.0 units above safe aquatic thresholds and represents 400-10,000 times more alkaline than safe levels [1][2]. Real-world fish kills in Queensland, Australia directly linked to concrete-water contact, laboratory LC50 data showing mortality at these pH levels, and documented gill damage to aquatic organisms provide compelling evidence. Federal regulations in 40 CFR Part 450 explicitly prohibit uncontrolled concrete washout discharges based on this documented harm, not speculation [3]. Multiple enforcement cases demonstrate the industry's persistent failure to meet even current requirements, with penalties ranging from $95,000 to nearly $1.4 million for repeated violations involving pH exceedances, unpermitted discharges, and inadequate pollution prevention [4][5].

2. Environmental chemistry confirms multiple pollutant pathways from sand, gravel, and concrete operations. Process water from sand, gravel, and concrete operations contains a complex mixture of pollutants with documented environmental impacts. Beyond pH, these discharges carry water-soluble hexavalent chromium (chromium VI) at concentrations of 0.2-3.2 mg/kg in cement leachate—a known human carcinogen that EPA classifies as IARC Group 1 [6][7]. The critical freshwater aquatic life criterion of 0.29 µg/L for chronic exposure is in micrograms, not milligrams—orders of magnitude below measured leaching concentrations [8]. Field observations confirm hexavalent chromium accumulation in detention ponds from concrete debris, validating that laboratory leaching studies reflect real-world conditions [9].

Surfactants used in industrial washing operations demonstrate acute toxicity to aquatic organisms at LC50 (50% mortality) values of 1-100 mg/L, classified as toxic to harmful under European standards [10][11]. The most sensitive test organisms including bacteria, crustaceans (shrimp, crabs), and mussels show effects. EPA's Sector E guidance explicitly prohibits soap and solvent discharge to stormwater systems, requiring washwater to drain to sanitary sewers or treatment systems [12]. The consistency across multiple test species eliminates uncertainty about biological relevance. Surfactants also enhance toxicity of co-contaminants by up to 10-fold through synergistic effects, compounding environmental risks [13].

Washington State's literature review of concrete rubble from 80 facilities identified systematic exceedances of water quality criteria [14]. Antimony, arsenic, chromium, copper, nickel, and selenium regularly exceeded surface water standards, while lead, mercury, and zinc occasionally exceeded criteria. Sulfate concentrations measured 2.7 to 23 times above groundwater criteria. Total suspended solids and turbidity limits were exceeded in every reviewed study, with TSS

concentrations from construction sites typically exceeding 1,000 mg/L without controls [15]. These pollutants accumulate in sediments, bioaccumulate through food webs, and cause long-term habitat degradation beyond immediate discharge impacts. New data presented in a public meeting by Ecology on September 10, 2025 show that samples frequently exceeded a standard of 10 ug/L for four categories in treated process water, stormwater, commingled process water with sand and gravel, and commingled process water with stormwater (Daiber, E. Available URL: https://fortress.wa.gov/ecy/ezshare/wq/permits/SGGP-2026-2025Sept-PublicMtgAndHearing-ForWeb.pdf)

3. Enforcement data reveal systemic compliance failures

Major enforcement actions against sand and gravel operations demonstrate industry-wide compliance challenges rather than isolated incidents. Boston Sand and Gravel paid $1.34 million for discharging truck wash water with extremely high pH into the Millers River without permits [16]. Newport Sand and Gravel and Carroll Concrete settled for $500,000 in 2011 covering violations at five facilities across New Hampshire and Vermont, including failed SWPPPs, missed sampling requirements, and pH standard violations [4]. Fisher Sand & Gravel paid $95,000 in 2020 for Montana permit violations. The pattern is clear: multi-facility operators show violations across multiple sites, indicating systemic compliance challenges rather than site-specific problems.

The violations follow a predictable sequence. Facilities begin operations without adequate permit coverage or with insufficient infrastructure. Process water and concrete washout create pH exceedances, often sustained for hours to days. Stormwater runoff carries high-pH water and sediment to receiving waters. Required monitoring either doesn't occur or reveals exceedances that may or may not trigger enforcement. The violations persist because many facilities lack designated stormwater compliance managers, fail to maintain inspection records, and/or underinvest in control infrastructure relative to regulatory requirements. Many regulatory agencies are understaffed relative to the burden. Unfortunately, the current draft General Permit language leaves the door open for such violations to occur, through several proposed exemptions, such as the inclusion of attainment thresholds after which sampling is no longer required:

- B.4. (i,ii,iii) p. 34. “The Permittee may discontinue TDS monitoring at the monitoring point(s) that have achieved consistent attainment. i. Consistent attainment is achieved when eight (8) consecutive quarterly samples collected at the monitoring point(s) report a total dissolved solids concentration equal to or less than 500 mg/L.”
- B.4. p. 34. “Small businesses subject to Special Condition S4.B.4.”
- S4.H. p. 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.”
- F.2.b.i.(a-c) p .53. “Permittees that receive ECY002 activity permit coverage for their site for the first time on or after April 1, 2016, must not place new concrete recycling stockpile(s)stockpiles in the following locations:
  a) Within 100 feet or less (horizontal distance) from the ordinary high water mark of surface water bodies (including streams, lakes, rivers, saltwater bodies, wetlands, etc.).

b) Within 100 feet or less (horizontal distance) from drinking water and irrigation well(s) or within a Wellhead Protection Area unless… [followed by a list of exceptional criteria].

- Etcetera. [many other exemptions may be found in the proposed permit]

Many documented enforcement case involve pH violations, and Washington State monitoring shows pH routinely exceeds the 6.5-8.5 standard unit range, particularly during the first year of operations or when handling freshly crushed material [14]. Levels of pH above 8.5 are exceedingly dangerous to salmon and trout and hinder their recovery efforts by compromising habitat. Fresh non-carbonated concrete washout measures pH 13-14 S.U., freshly crushed recycled concrete aggregate leachate measures pH 11.5-12.7 S.U., and even carbonated material produces pH 9.9-11.8 S.U.—all substantially above permit limits. The persistence of pH violations across jurisdictions and decades indicates that voluntary compliance, enforcement measures, and fines are insufficient deterrents.

4. Lined impoundments and process controls represent proven technology

Washington State's Sand and Gravel General Permit explicitly requires lined impoundments for all concrete truck washout wastewater, stating directly: "Treat this wastewater in a lined impoundment" [17]. Arizona's General Permit 3.01 establishes detailed design standards, although for a different ecoregion [18]. EPA's Sector E guidance mandates that washwater drain to proper collection systems, not stormwater drainage systems, and recommends recycling or treatment in retention ponds [12]. These requirements reflect nationwide regulatory consensus on best available technology. For sand and gravel operations in Washington, lined impoundment BMPs could translate to preventing thousands of pounds of potentially contaminated sediment annually from reaching surface waters. Technical specifications are well-established through USDA Natural Resources Conservation Service standards, ASTM geomembrane specifications, and state regulatory guidance. Installation procedures are also standardized. The technology has decades of successful application in water containment across many climatic and site conditions and sizes.

5. Multiple regulatory precedents establish legal framework

Federal authority derives from the Clean Water Act's NPDES program requiring permits for point source discharges [19]. The Construction and Development Effluent Guidelines at 40 CFR Part 450 specifically prohibit uncontrolled wastewater from washout of concrete [20]. This federal prohibition applies to all construction sites subject to NPDES requirements. EPA's 2022 Construction General Permit explicitly prohibits concrete washout discharges to surface waters and requires leak-proof containers at least 50 feet from storm drains, ditches, or waterbodies [3]. The regulatory framework has existed for over a decade with consistent interpretation and enforcement and court precedents affirm regulatory authority.

Implementation at the U.S. State and Canadian Province levels of government on the West Coast of North America demonstrate regulatory consensus. California requires Portland cement concrete isolation from flowing water for minimum 30 days based on Fish and Game Code [21]. British Columbia mandates 48-72 hour curing periods and declares concrete leachate "highly toxic to fish and other aquatic life." Even Texas TCEQ prohibits concrete truck washout water discharge to surface waters. The consistency across jurisdictions—federal, state, and international—reflects shared scientific understanding of risks to human health and the environment and appropriate controls.

6. Scientific consensus spans multiple disciplines

Aquatic toxicology establishes that many freshwater organisms thrive near a neutral pH, with stress and higher mortality rates occurring at either higher or lower measured pH. Studies on juvenile razor clams show 48-hour LC50 at pH 9.86, with 100% mortality within 24 hours at pH 10.5 [22]. Rainbow trout studies document physiological damage at pH extremes [23]. The pH elevation from concrete washout persists for hours to days depending on flow conditions, providing sufficient exposure duration to cause acute toxicity. The interaction between elevated pH and ammonia toxicity (e.g., ammonia discharges from livestock operations and fertilizer) compounds risks, as ammonia converts to its toxic form above pH 9.0. These findings are consistent across test species, laboratories, and decades of research. Environmental chemistry research confirms the mechanisms. The peer-reviewed literature on cement composition, hydration chemistry, and leaching kinetics provides mechanistic understanding that eliminates uncertainty about whether these impacts will occur—they are inevitable without controls.

Engineering studies demonstrate control effectiveness. The engineering solutions supported by the proposed General Permit language—lined impoundments, pH adjustment systems, settling basins, controlled-discharge recycling—represent standard civil engineering practice with predictable performance characteristics. Regulatory science synthesizes these disciplines into permit requirements that protect designated uses. Governmental water quality criteria for chromium derive from species sensitivity distributions analyzing toxicity data across numerous organisms (https://apps.ecology.wa.gov/publications/documents/0610091.pdf). The pH range for freshwater aquatic life reflects decades of aquatic biology research. These are not arbitrary numbers but represent scientifically defensible thresholds that protect ecosystem functions. Washington's permit requirements apply these established criteria to a known pollution source using proven control technology.

7. Industry arguments fail scientific scrutiny

Claims that permit requirements lack scientific justification are contradicted by peer-reviewed studies on pH impacts, EPA guidance documents, state and international regulatory standards, documented fish kills, quantitative LC50 toxicity data, and heavy metal contamination studies. The scientific evidence is overwhelming and consistent across aquatic toxicology, environmental chemistry, ecology, and engineering. No credible scientific basis exists for arguing these controls are unnecessary.

The assertion that compliance costs are prohibitive is undermined by successful implementations across Washington, Arizona, Oregon, Colorado, and other states where hundreds of facilities have operated under similar requirements. The technology is mature and costs are predictable. When industry claims high costs, historical patterns suggest these estimates exceed actual costs, particularly for permit approaches that allow regionally based site-specific solutions. More importantly, the costs of environmental damage and public health impacts—cancer, lung disease, lost fisheries, degraded drinking water sources—justify reasonable compliance investments to be assumed by the industry as demonstrated in numerous benefit-cost analyses.

Arguments that current voluntary measures are sufficient are refuted by enforcement data. Major sand and gravel enforcement cases involved facilities that failed to adequately implement voluntary BMPs, maintain required monitoring, or prevent unpermitted discharges [4][5][16]. The violation patterns persist across decades and jurisdictions, and Washington's literature review found that pH, TSS, total dissolved solids, and multiple metals regularly exceeded water quality criteria [14]. Systematic monitoring violations and inadequate SWPPPs appear in enforcement cases from Massachusetts to Montana, indicating industry-wide challenges rather than isolated problems. Documented issues in Washington State are described in other public comments.

In summary, for concrete and cement operation impacts, we have chemistry studies showing alkaline compounds leach from concrete, toxicology studies quantifying organism mortality at those pH levels, field observations documenting water quality exceedances at facilities, enforcement actions demonstrating permit violations, and engineering studies showing control effectiveness. Each line of evidence independently supports the draft permit requirements, and together they provide overwhelming justification. Industry claims to the contrary lack peer-reviewed support, contradict regulatory experience across multiple jurisdictions, and ignore decades of accumulated scientific knowledge.

8. Recommendations for permit implementation

Washington State Department of Ecology should proceed with the Draft 2026 Sand and Gravel General Permit requirements based on robust scientific justification. Hydrogeologic studies must be required to ensure that groundwater levels, streamflows, and water quality are routinely evaluated for potential risks. Proof of water rights and associated permits for all consumptive uses of water must be provided to Ecology for all existing and proposed gravel mines. Furthermore, to gain a water right and permit for a gravel mine, all uses of water must be calculated, to include: surface water, evaporative, and groundwater infiltration and horizontal transport down the hydraulic gradient.

The permit should continue to explicitly require lined impoundments for process water. However, monitoring requirements should be increased to include more frequent and longer duration of discharge monitoring for TSS, pH, turbidity, and metals including chromium, with daily visual inspections and post-storm inspections within 72 hours of significant rainfall. Daily oil sheen monitoring should occur when equipment operates and runoff occurs. Exceedances must trigger immediate reporting and corrective action. Regular compliance reports should document monitoring results, maintenance activities, and BMP effectiveness. Technical

assistance programs should help small operators understand requirements and identify cost-effective solutions. Recognizing that small facilities face disproportionate per-unit costs, Ecology could develop standardized design templates or facilitate equipment or technical-personnel sharing cooperatives.

Conclusion

The regulatory requirements of the draft General Permit are neither novel nor experimental. Federal law has prohibited uncontrolled concrete washout discharge since 2009. Washington State has required lined impoundments since the 2021 permit. Arizona, Oregon, Colorado, and numerous other states implement similar requirements. EPA guidance explicitly recommends these controls. The technologies are proven with decades of successful application. Court precedents establish legal authority while requiring that limits be achievable with available technology—a standard clearly met here.

Industry arguments against the permit lack scientific merit. Claims of insufficient evidence are contradicted by overwhelming peer-reviewed literature, technical reports ("gray literature"), regulatory guidance, and practical enforcement activities. Assertions that voluntary measures suffice are refuted by the persistent history of violations across the industry nationally. The scientific consensus is clear: these discharges require control, the controls are technically feasible and economically reasonable, and the environmental and direct human health benefits justify the regulatory requirements.

Washington State Department of Ecology possesses not merely adequate justification but overwhelming scientific support for proceeding with the Draft 2026 Sand and Gravel General Permit. The evidence base spans toxicology, chemistry, ecology, engineering, economics, and regulatory science with consistent conclusions across disciplines. Peer-reviewed studies provide mechanistic understanding, quantitative dose-response relationships, and documented ecosystem impacts. Regulatory precedents establish legal frameworks and successful implementations. Enforcement data reveal the need for mandatory rather than voluntary measures. The permit requirements represent best available technology, reflect regulatory consensus across jurisdictions, and protect highly valued uses. Industry opposition should be recognized as economic advocacy lacking scientific foundation.

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