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To: [ECY RE WOIA NOI \(WO\)](#)
Cc: [Tamboer, Noel C. \(ECY\)](#); [Tamboer, Noel C. \(ECY\)](#)
Subject: NPDES Public Comments
Date: Sunday, May 8, 2022 3:16:29 PM
Attachments: [NPDES Public Comments - HG Stephens.pdf](#)

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Att: Noel Tamboer

In response to the posted legal notice, below, please see my attached comments regarding:

Sierra Construction Company (for the Bridge Industrial project) seeking coverage under Construction Stormwater NPDES and State Waste Discharge General Permit

Thank you,
Heidi Stephens
HeidiGS@hotmail.com

LEGAL NOTICE Sierra Construction Company at 14800 N.E. Woodinville Way, Woodinville, WA 98072 is seeking coverage under the Washington State Department of Ecology's Construction Stormwater NPDES and State Waste Discharge General Permit. The proposed Bridge Industrial project is located east of South Tyler Street between approximately South 36th Street and South 56th Street in Tacoma, Pierce County, Washington. The project involves 119.4 acres of soil disturbance on the 159.2-acre site for construction of four warehouse use buildings and the associated construction work to include grading activities for contaminated soil abatement, site work grading, paved parking and truck maneuvering areas, stormwater facilities, water and sanitary sewer extensions, landscaping, roadway improvements and franchise utility improvements. During initial grading and soil abatement activities, construction stormwater will be routed/pumped through v-ditches and rock check dams to temporary erosion and temporary infiltration ponds along the west side of the site. Upon completion of soil abatement phase of the project, construction stormwater for the site improvements will be routed to a series of temporary erosion and sedimentation control ponds along the side of the site for sediment control prior to discharging to the existing adjacent wetland which discharges west to Flett Creek. Any persons desiring to present their views to the department of Ecology regarding this application may do so in writing within 30 days of the last date of publication of this notice. Comments shall be submitted to the department of Ecology. Any person interested in the department's action on this application may notify the department of their interest within thirty days of the last date of publication of this notice. Ecology reviews public comments and considers whether discharges from this project would cause a measurable change in receiving water quality, and, if so, whether the project is necessary and in the overriding public interest according to Tier II antidegradation requirements under WAC 173-201A-320. Comments can be submitted to the Department of Ecology, Attn: Water Quality Program, Construction Stormwater, P. O. Box 47696, Olympia, WA 98504-7696. W00000000 Publication Dates

**RE: Bridge Industrial Project and Sierra Construction Company
seeking coverage under Construction Stormwater NPDES
and State Waste Discharge General Permit**

Opposition to Permitting

- The proposed Sierra Construction permit for the Bridge Industrial project should not be issued under general permits such as covered by Construction Stormwater NPDES and State Waste Discharge General Permit, due to the size and nature of the project and potentially significant adverse impacts to the South Tacoma aquifer, wetland and watershed to downstream creeks.
- The applicant must be required to apply for Individual Permits: National Pollutant Discharge Elimination System (NPDES) -and- State Waste Discharge Permits (SWD).
- This is an important municipal water supply with unique environmental characteristics (critical aquifer recharge area designated environmentally geohydrologically sensitive, wetland critical area, watershed to Flett Creek and Chambers-Clover Creek, and a superfund site in various stages of remediation).
- No environmental determination has been issued yet. The complete SEPA process, including an Environmental Impact Statement, must be done before any consideration of moving forward.
- This project should be put on hold while the environmental review is still underway and until the South Tacoma Groundwater Protection District (STGPD) code update has been completed to include current best science.
- In addition, based on U.S. District Judge Marsha Pechman's recent ruling, Ecology has not applied appropriate updates to state water quality standards. As such, Ecology should not be responding to related permit submissions, and any loss to the South Tacoma aquifer will result in filed complaints.
- This area already has high pollution, high illness mortality rates, high minority and low-income community which the city continually sends some of its most polluting business to instead of improving. This is the definition of Environmental Racism and must be stopped.

May 7, 2022

To: Noel Tamboer, Department of Ecology
Water Quality Program, Construction Stormwater
P.O. Box 47696, Olympia, WA 98504-7696

Paving over the South Tacoma aquifer/watershed and redirecting stormwater is a very bad idea.

This massive warehouse complex proposal (larger than 50 football fields, estimated to bring 12,000 more vehicle trips per weekday) would be covering some of the last open green space above the South Tacoma aquifer, inhibiting natural water flow while bringing more pollution to the creeks downstream.

This will also jeopardize the water Tacoma relies on during drought plus cause loss of vegetation, creating more heat and urban dead-zones to a community already impacted by some of the worst air quality in the nation, highest illness and mortality rates in the county and lowest-income most diverse neighborhood in the city, as well as affecting the entire city and surrounding areas.

So, I am strongly opposed to any permitting of this project due to significant impacts on the South Tacoma aquifer, watershed to downstream creeks and surrounding areas, but also for these two compliance considerations.

First, no environmental determination has yet been issued by the City of Tacoma. This project should be put on hold while the environmental review is still underway and until the South Tacoma Groundwater Protection District (STGPD) code has been completed for updating to current best science. In addition, based on U.S. District Judge Marsha Pechman's recent ruling, Ecology has not applied appropriate updates to water quality standards. All related permit reviews should be paused.

Second, this proposed project cannot be issued under such general permits such as covered by Construction Stormwater NPDES and State Waste Discharge General Permit, due to the size and nature of the project and potentially significant adverse impacts to the South Tacoma aquifer, wetland and watershed to downstream creeks.

The applicant must be required to apply for the two types of Individual Permits: National Pollutant Discharge Elimination System (NPDES) -and- State Waste Discharge Permits (SWD) since this is an important back-up municipal water supply and due to its unique environmental characteristics including:

- Critical aquifer recharge area, designated environmentally geohydrologically sensitive
- Wetland and stream critical area
- Watershed to Flett Creek and Chambers-Clover Creek
- Superfund site in various stages of remediation

The Tacoma Planning Department seems to have moved-forward this project using a number of old reports from 2007-8 with staff statements regarding it as "nearly the same project", despite this proposal being approximately three times the size and other staff comments previously expressing concern. Plus, fifteen years after the first application, we also have a much better awareness of climate change to consider.

Among reports submitted to the city, the Biological Evaluation states that impervious surfaces can change hydrologic dynamics though decline of evapotranspiration and decrease in infiltration, yet somehow won't have a measurable impact on the watershed? It even goes on to say that the cumulative actions can have an overall negative impact on hydrology, such as infiltration dilution, and run-off increasing nutrients, bacteria, metals, pesticides, and other toxicants to streams, as well as the frequency and severity of flooding to accelerate channel erosion and streambed substrate disturbance... yet again, later, suggests no anticipated changes?

The report refers to no "measurable impact" and yet that is precisely what is required to have been measured regarding aquifer infiltration/recharge effects, but hasn't recently been done.

The Wetland Evaluation requires much more in-depth long-term monitoring, and did not include the aquifer in its critical area requirements.

Under Critical Area Protection: the entire area qualifies for critical area protection, not just the westside stream but the entire 158+ acres being part of the South Tacoma Groundwater Protection District which seems to be continually overlooked as the critical environmentally sensitive land that it is.

Regarding the Conceptual Mitigation Plan, there was (again) no mention of effects to the aquifer, and no mention of the acres and acres of grassland which is critical for natural infiltration not to mention small mammals, birds especially insects. It does not appear to be including appropriate county/state/federal codes which apply to the aquifer. As stated in my comments (below) regarding the Resubmitted SEPA Checklist, new plantings cannot compare to mature trees in this established habitat. It also was not made clear just how many mature trees would be lost which will certainly affect stormwater management.

In two locations, the Wetland Assessment doesn't use its own data when allowing only 25-foot buffers instead of 200 for the stream, yet is referring back to 2007 data which according to their own declaration is no longer useable; however, those prior reports are no longer viewable to the public for review. There is also a wetland which is Type II not III, and thus needs double the buffer zone.

The submitted Stormwater Site Plan refers to Tacoma's stormwater management plan, but requires compliance to state and federal requirements, as well as applicable pretreatment requirements since the project site is located in an aquifer sensitive area. The city staff comment only mentioned: "Additional information required about impacts to STGPD from paving (water quantity)"... yet the only hydrogeologic assessment regarding aquifer infiltration recharge is of a smaller proposed project from 2007, so not only needs to be made current but also brought up to scale.

Removing, compacting and covering the soil within the 150+/- acres will destroy a huge amount of vital vegetation, soil nutrients, moisture and carbon-capturing when we should be nurturing this area, not disrupting and paving it. Although the railroads started a legacy of soil pollution in the late 1800s, much of it has been remediated and capped at great cost; plus, plants are doing some of that work, naturally, if left undisturbed and which would be the best method for sustainable stormwater infiltration.

Disturbing that soil raises serious concerns, not only regarding surface water, but because of construction exposing / pounding-compacting / releasing dust into the air of many previously "contained" contaminants. To do that and then pave over soil will lead to increased carbon in the air (from disruption and later loss of natural carbon containment within soil) which conflicts with climate change declarations and add to the air pollution and systemic environmental discrimination to the people of South Tacoma.

Bridge Industrial's permit application to the city as well as in the public meeting presentation leaned heavily on the idea that the land has a few invasive species (as if that means it's a lost cause) and that there was prior soil contamination (which has already had much time and cost invested in improving). This seems to be promoted by a concerning misperception among some city and county health department leaders who mistakenly think "superfund" (due to soil contamination) means the groundwater and aquifer are no longer viable – no... this is a critically important water source needing to be protected and which is the opposite of paving-over.

Even though this land may be considered degraded, it still has tremendous ecological value, and performs beneficial functions especially when so many wetlands have already been lost. This is not referring only to the stream area, but the entire piece of property as an aggregate watershed function to improve water quality and quantity to groundwater recharge, minimizing flooding and providing proper habitat not only at that site but for aquatic life downstream, as well as within the critical area aquifer.

The South Tacoma Aquifer is an important water source for the city and will become more so in the years to come due to climate change and drought. Less snowfall on Mt. Rainer means less water to the Green River, with steep projections increasing reliance on this aquifer's supply.

Development, such as this, will clearly alter and impede natural infiltration. A drawdown of aquifer level would be catastrophic and noncompliant with critical aquifer recharge requirements. Reports from 2007/8 could not have included current understanding of global warming. So, far too much information seems to have been carried-over from old reports, and none have appropriately addressed the required hydrogeologic recharge assessments.

Ponds infiltrating at a single source may meet regulatory requirements for other locations, but not within a critical aquifer recharge area, especially not considering the vulnerable nature of this particular aquifer's protective layering (per USGS). Pervious payment is not a solution, either, since that would direct polluted water (petrochemicals and toxic tire residue) directly into the ground.

Due to the buildings' massive footprint (2.5 million square feet, not counting additional parking/drive paving), redirecting that high volume of water into a concentrated location seems surely to either an abundance of overflow into stormwater or flooding, both of which are inappropriate and avoidable since the expectation is to leave such areas to infiltrate naturally (and as much) as possible.

In addition to stormwater pathway, the site should be studied for wellhead/aquifer vulnerability evaluation. Impacts of recharge changes must be examined to assess the flow system alteration. It also appears the wetlands will be partially covered up with Building D if the project goes forward, yet the SEPA checklist says no wetlands will be filled in. See other concerning statements within the applicant's permit files, from the "Consolidated Comments", "Conceptual Mitigation Plan", "Geotechnical Report", "Wetland Evaluation" and "Biological Evaluation"... noted in the reference portion, below.

In the applicant's Geotech report, descriptions of "dewatering" and "deep pump wells" are not an acceptable action when regulations require maintaining infiltration for groundwater and aquifer supply. The vague references to shallow groundwater and later infiltration testing are also not suitable and must be addressed now (not "closer to final layout").

I doubt cohesiveness when the construction permit application uses the Berghausen plan for stormwater but TRC plan for soil management, both of which have issues (as seen from the comments by the EPA and DOE), when the permit stormwater pollution prevention plan says:

"During this [contaminated soil containment] phase, construction stormwater will be routed through v-ditches and rock check dams to temporary erosion and sedimentation control ponds along the west side of the site for sediment control prior to infiltration. See Appendix F for calculations and exhibits for Phase 1."

The soil abatement activities during initial grading, by "routing/pumping stormwater construction through v-ditches and rock check dams to temporary erosion and temporary infiltration ponds along the west side of the site" are unacceptable and will damage the existing stream.

Construction stormwater then "routed to a series of temporary erosion and sedimentation control ponds along the side of the site for sediment control during site improvements prior to discharging to the existing adjacent wetland discharged west to Flett Creek" is also highly risky due to many unknown circumstances, and vulnerability to carry contamination above a critical aquifer and to protected creeks.

It seems that the wetlands will be flooded with water full of sedimentation, continued during Phase 2 with all water directed to the west (where the stream/wetlands are). I see nothing in the application to confirm that the Sierra Construction company has any experience with this.

There appears to be a disturbing disconnect between agencies and even within the city's own departments and offices, pointing the finger of responsibility for aquifer oversight in a circle with essentially no proper critical aquifer area reviews being done such as the "hydrogeologic assessment" prepared by an "appropriately licensed geotechnical professional" which is required to "protect critical aquifer recharge and wellhead protection areas from degradation or depletion resulting from new or changed land use activities"... that and the other protection codes should be the primacy overriding policy over any other land-use zoning assigned by the city, but city staff do not seem knowledgeable of them.

To illustrate the importance of monitoring infiltration, last year the city accepted a nearly \$400K grant from WA Dept. of Ecology (DOE) with the overall project goal to restore streamflow, enhance ecological function, and provide community benefits in the Flett Creek Watershed by determining the feasibility of a group of cost-effective and sustainable stormwater infiltration and habitat restoration projects. This is critically important to have done, yet will be pointless if the entire area is paved over.

Also, any stormwater mitigation/safeguards of the aquifer should be operated, maintained and funded in perpetuity. Since stormwater systems do fail, the developer and city have no plan for a means of forever protection. Considering the loss of fresh water in the western states, this risk cannot be overlooked.

Reports directly addressing affects to the aquifer are required, and an independent review of current reports (by qualified experts with no conflict of interest) would be best to have done, along with a moratorium on all permitting within the South Tacoma Groundwater Protection District until that outdated code is correctly updated to current best science, and a review done of previous approvals which seem not have followed proper regulations for this environmentally geohydrologically sensitive area. This issue can no longer be side-stepped which the city seems to be repeatedly doing. No office or agency is claiming responsibility for appropriate oversight of this. Instead we're told by Tacoma-Pierce County Health Department (TPCHD) of their "limited" oversight of STGPD for business practices...

... We have limited regulatory authority in the South Tacoma Groundwater Protection District (STGPD). It applies to businesses within the district with hazardous substances or infiltration systems. We might be involved again once it's clear what the business and activities on the property will be.

...yet the Tacoma Municipal Code (TMC) and Dept. of Ecology says that TPCHD is the primary agency to monitor and enforce as overseer, and the TMC says:

TMC 13.06.070 D. (Excerpts)

The Tacoma-Pierce County Health Department ("TPCHD") will be responsible for implementing the South Tacoma Groundwater Protection District regulations established in TMC 13.06.070. The Tacoma-Pierce County Board of Health may adopt regulations consistent with this section.

The TPCHD shall hereafter maintain a document entitled "General Guidance and Performance Standards for the South Tacoma Groundwater Protection District" (hereinafter referred to as the "General Guidance and Performance Standards"). These standards shall prescribe the minimum acceptable best management practices and design solutions which are consistent with the requirements of this chapter. This document, to the extent that it assists in meeting the purposes and intent of this chapter and the Critical Areas Preservation Ordinance, is incorporated herein as though fully set forth. This document is available from the TPCHD. Periodically, the TPCHD shall review these standards to assure that improvements in technology are considered and that the standards are consistent with this chapter.

... along with the county code regarding Aquifer Recharge and Wellhead Protection Areas; however, this never appears in permit reviews from the city or county, and no one has been able to directed me to who should be verifying this.

So, I am concerned that no one is taking responsibility for the health of the aquifer regarding infiltration protection, and that Tacoma is not following its own city code, as well as correctly including all county, state and federal regulations regarding the critical aquifer recharge area (since it is designated environmentally sensitive area, qualifying it for the critical areas preservation code) which does not allow for any new construction. There needs to be a clear understanding of which agency is responsible for the aquifer's health, plus a review of prior permitting in such critical areas with corrective action taken.

In the Resubmitted SEPA Checklist, one of the questions is:

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

The correct answer should be: yes, all of it, not just one strip of streambed. Again, the overriding land-use code should be the South Tacoma Groundwater Protection District, since this has been designated a "geohydrologically environmentally sensitive" area, and the and Critical Areas Preservation code should apply, prohibiting new construction.

b. District Designated (Environmentally Sensitive Area). Pursuant to Ecology's Chapter 197-11-908 WAC and TMC Section 13.12.908 of this title as may be amended from time to time, the area described above is hereby designated as an environmentally (geohydrologically) sensitive area.

Instead, at a recent city committee meeting, the Tacoma Planning Department bragged that they approve permits three-times faster than anywhere else in the state, which shouldn't be applauded it should be raising red flags... and impacts to the aquifer have not been included in the city's permit critical area reviews.

Of all the rubber-stamped exception-allowed approvals by Tacoma over the years, this project will have some of the most devastating impacts on the aquifer and important water resources. The applicant's responses on the SEPA checklist are inadequate and incomplete. I believe a full Environmental Impact Statement is necessary to address these impacts, which the applicant failed to address in their SEPA checklist, and Ecology should not issue any comments on this project until the full SEPA process is complete.

In addition to an Environmental Impact Study as part of the full SEPA process, there needs to be attention paid to the public health which this much paving/redirecting of water will most certainly negatively impact. This area already has some high pollution, high illness mortality rates in a high minority low-income community, which the city continually sends some of the most polluting businesses to. This is the definition of Environmental Racism and must be stopped.

Environmental Racism comprises institutional rules, regulations, policies, and government corporate decisions which deliberately target certain communities or locally undesirable land-uses and poor enforcement of zoning and environmental laws, resulting in those communities being disproportionately exposed to toxins.

South Tacoma residents already suffer from some of the highest air pollution in the nation, highest illness and mortality rates in the county and is one of the lowest-income and diverse areas of this city (per the Tacoma Pierce County Health Department Health Equity statistics, as well as the Washington Environmental Health Disparities maps).

To again subject this culturally, racially and socially diverse community to significant environmental impacts, (raising air pollution, noise pollution, light pollution, more dangerously congested traffic and loss of green open space) is a form of environmental injustice, putting the health and safety of an already marginalized community and urban wildlife of this area at even higher risk.

Contributing to this project, in any form, would be knowingly, willing continuing environmental racism and the destructions of natural water systems. Ecology needs to support Tacoma in denying this permit.

Ecology's own guidance in the 2019 Stormwater Management Manual for Western Washington (2019 SWMMWW) becomes a requirement when it is referenced by a regulatory document, such as an NPDES Permit for stormwater design in an aquifer recharge area.

The Glossary includes "aquifer sensitive areas, sole source aquifers, ground water management areas, or critical aquifer recharge areas" in the definition for the term "ground water protection area"...

[I-3.4.5 MR5: On-Site Stormwater Management](#) includes a "Competing Needs Criteria" to allow LID BMPs to be superseded or restricted if they are in conflict with *"A local code or rule adopted as part of a Wellhead Protection Program established under the Federal Safe Drinking Water Act; or adopted to protect a Critical Aquifer Recharge Area established under the State Growth Management Act"*.

[BMP T8.40: Media Filter Drain](#) describes that pesticides should be prohibited if the BMP is in a critical aquifer recharge area for drinking water supplies.

[V-5.6 Site Suitability Criteria \(SSC\)](#) includes criteria to determine if the site is appropriate for infiltration. "SSC-2 Ground Water Protection Areas" mentions aquifer recharge areas.

SSC-2 Ground Water Protection Areas

A site is not suitable for an infiltration BMP if the infiltration BMP will cause a violation of Ecology's Ground Water Quality Standards (Chapter 173-200 WAC). See [SSC-3 High Vehicle Traffic Areas](#) through [SSC-6 Soil Physical and Chemical Suitability for Treatment](#), and [SSC-8 Cold Climate and Impact of Roadway Deicers](#) for measures to protect ground water quality. Local jurisdiction staff and local ordinances should be consulted for applicable pretreatment requirements if the project site is located in an aquifer sensitive area, sole source aquifer, wellhead protection area, or critical aquifer recharge area.

None of these items seem adequately addressed, especially since the regulation's overriding expectation is for natural infiltration to be maintained as much as possible. This mega-warehouse is not an essential or even needed facility (according to the builder, there aren't any confirmed clients and there are already vacant warehouses in the area) and isn't bringing any benefits to the community, only negative impacts which do not support potentially damaging the aquifer, wetland and creeks this watershed feeds.

Also, without knowing what will occupy the warehouse, how can it be known what the amount of later pollutants will be? The description of "some gravel under the parking lot pavement" as a means of proper filtration (the only attempt to clean contaminants) is not acceptable, nor the lack of infiltration rate data to sustain the South Tacoma aquifer's levels.

The discharges from this project could obviously cause a measurable change in receiving water quality, and this project is not necessary or in the overriding public interest according to Tier II antidegradation requirements under WAC 173-201A-320. In fact, proceeding with this project could cause irreparable harm to the environment and public health.

As such, and especially in light of the recent ruling regarding lacking water quality standards, Ecology should not be responding to related permit submissions, and any loss to the South Tacoma aquifer will result in complaints filed against Ecology.

Ecology already found Tacoma's treatment plant had previously failed the NPDES permit requirements and the city nearly lost it's permit just in the last two years. Without correcting that, Tacoma instead intends to add thousands of new residences issuing and estimated 300 gallons of water per day per household into that same existing treatment plant which flows directly into Commencement Bay (already federally declared a dead zone).

I mention the above because this mega-warehouse issue will only bring about another potentially disastrous situation which Ecology would best not have assisted to create and, in fact, be contributing to an already known issue of noncompliance.

There will be no way to mitigate the negative impacts this project will bring on already overburdened communities of color, adversely affecting health and safety which is definition of environmental racism.

Please consider these concerns and deny the General Permit application.

Please also consider that Ecology should not be working on any permitting until state code is updated to become compliant with protecting aquatic life per the federal ruling.

Please do not issue any permit responses (even the more accurate individual permits) until the SEPA process is complete, until the city's protection code has been brought up to current standard and state water quality standards are compliant.

Please urge the City of Tacoma to require a full Environmental Impact Statement instead of their increasingly inadequate, incomplete and rushed approaches. This project is bringing to light that there is something inherently broken in Tacoma, and permitting needs to be paused.

From the few public notices sent by the city:

"The City will be using the optional DNS process under WAC 197-11-355 to issue its SEPA Determination, and anticipates issuing a Mitigated Determination of Nonsignificance (DNS) for this proposal. Mitigation will be required for traffic/pedestrian impacts, and may also be required for soil remediation and/or testing at the site. This may be the only opportunity to comment on environmental impacts..."

I question the city's choice of using the optional DNS as a method to avoid a full SEPA review and EIS, despite this information being provided by the Tacoma Planning Department:

State Environmental Protection Act (SEPA) Triggers

This act outlines which projects should require complete environmental review, and this project likely triggers at least five reasons:

- work occurring within critical areas and/or on lands with water
- construction of a parking lot for more than 40 vehicles (this site will have over 1200)
- construction of a building over 12,000 square feet (this site will have 2.5 MILLION)
- fill or excavation more than 500 cubic yards
- storm water, water or sewer utilities more than 12" in diameter

Thank you for including these concerns in your response to the permit, which will also support and enable the City of Tacoma to decline this permit application.

I request a written response and to be copied on any correspondence the applicant and City of Tacoma.

Heidi Stephens

*Sent via email to ecyrewqiano@ECY.WA.GOV
(also cc'ing in ntam461@ECY.WA.GOV and/or noel.tamboer@ecy.wa.gov)*

Enclosed: Various sources, resources, references below.

Ecology, EPA now under the gun to adopt new water quality criteria for aquatic creatures

by Christopher Dunagan, December 31, 2021

<https://www.pugetsoundinstitute.org/2021/12/ecology-epa-now-under-the-gun-to-adopt-new-water-quality-criteria-for-aquatic-creatures/>

Long delays in updating state water-quality standards to protect orcas, fish and other aquatic species appear to have finally caught up with the Washington Department of Ecology and its federal counterpart, the Environmental Protection Agency.

In a court ruling this week, **U.S. District Judge** Marsha Pechman of Seattle found that **Ecology has “abdicated its duties” to update certain water-quality standards, as required by the federal Clean Water Act.** Meanwhile, she said, **EPA has failed to meet its legal oversight obligations to ensure that adequate water-quality standards are protective of aquatic creatures.**

The lawsuit, brought by Northwest Environmental Advocates, followed a petition filed by the group in 2013 seeking to get EPA to revise Washington’s water quality standards for aquatic species. **The petition followed years of delay by the state.** The standards, including numeric aquatic life criteria, place limits on toxic chemicals found in the state’s waterways. It took four years, but **EPA eventually denied the petition, refusing to make a determination about whether or not the state’s existing water quality standards were consistent with the Clean Water Act.**

In its denial and later court pleadings, EPA stressed its desire to support Ecology’s efforts to update aquatic life criteria. **Ecology** had discussed the update and even proposed it as part of the agency’s **2015-2020 strategic plan, but the work was never started.** EPA admitted that **Washington’s aquatic life criteria had not been updated for most chemicals since 1992, even though formal reviews and updates are required every three years, noted Judge Pechman in her ruling.**

The judge’s order, (<https://www.pugetsoundinstitute.org/wp-content/uploads/2021/12/Order.pdf>) issued Wednesday, requires EPA to determine **within 180 days if the state’s current water quality standards are consistent with the Clean Water Act** or if they need to be revised. If they are determined to be inadequate, the act itself requires EPA to promptly promulgate new regulations — unless the state adopts acceptable standards in the meantime.

Ecology officials acknowledge that the agency has been slow to adopt new aquatic life criteria. **In fact, the required three-year “triennial review” has not been conducted since 2010.** Ecology currently is going through a new triennial review, and the agency’s draft work plan lists the update to aquatic life criteria as a priority over the next four years.

“We have not conducted a triennial review since 2010 because we were in continual rulemaking efforts for the water quality standards,” states the introduction to the draft work plan (PDF 494 kb). (<https://fortress.wa.gov/ecy/ezshare/wq/standards/2021TriennialReviewDraftPlan.pdf>)

No doubt Ecology dedicated a lot of time and effort to other water-quality rules the past decade. Much public attention — including a legislative battle — was focused on human exposures to toxic chemicals, as Ecology worked through the long development of new human health criteria. The discussions largely revolved around fish-consumption rates for people who eat a lot of fish, along with what was considered an allowable cancer risk.

In a controversial move after Ecology completed its work, **EPA refused to accept some of the state’s human health criteria, imposing stronger restrictions than Ecology proposed.** The criteria were **later reversed by President Trump’s EPA.** Even today, the issue is not yet resolved, with a revised rule in the works from EPA in the midst of a lawsuit. (See Ecology’s timeline (<https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-standards/Updates-to-the-standards>) along with other background. (<https://ecology.wa.gov/Regulations-Permits/Laws-rules-rulemaking/Closed-rulemaking/WAC-173-201A-Overview>)) I have been following these issues since their inception in 2010, including a 2015 article in the

Kitsap Sun (<https://archive.kitsapsun.com/news/local/feds-watch-closely-as-state-updates-water-quality-standards-ep-978184867-354869921.html>) newspaper.

Some of the rule-making that Ecology says contributed to delays:

* Recreational use criteria (<https://ecology.wa.gov/Regulations-Permits/Laws-rules-rulemaking/Closed-rulemaking/WAC-173-201A-Aug17>)

* Total dissolved gas (<https://ecology.wa.gov/Regulations-Permits/Laws-rules-rulemaking/Closed-rulemaking/WAC173-201A-revisions>)

* Salmon spawning habitat, and (<https://ecology.wa.gov/Regulations-Permits/Laws-rules-rulemaking/Rulemaking/WAC173-201A-Salmon-spawning-habitat>)

* Chelan River use attainability analysis (<https://ecology.wa.gov/Regulations-Permits/Laws-rules-rulemaking/Rulemaking/WAC173-201A-Chelan-UAA>)

Since EPA is in charge of enforcing the provisions of the Clean Water Act, Judge Pechman focused her attention on EPA's failure to take charge of the situation, other than to encourage Ecology to get moving on the aquatic life criteria:

"The CWA (Clean Water Act) operates on a principle of cooperative federalism where states take the lead in setting WQS (water quality standards) with the goal of eliminating pollutant discharge into navigable waters to protect and enhance human and aquatic life," the judge wrote in her order (PDF 228 kb). (<https://www.pugetsoundinstitute.org/wp-content/uploads/2021/12/Order.pdf>) "States must create WQS specific to aquatic life and review them every three years to determine whether new or revised standards are necessary.

"But while states play a lead role in setting WQS, EPA serves as a backstop," she continued. "Not only does EPA have to review state-adopted WQS, but it must also 'promptly prepare and publish' new WQS for a state 'in any case where the administrator determines that a revised or new standard is necessary to meet the requirements of this chapter.'...

"So while EPA wanted to '**work in partnership to efficiently and effectively allocate resources to address pollution and accelerate state adoption of new and revised criteria,**' **nothing in the record showed that Washington was a willing partner.** And certainly nothing in the record supports EPA's belief that inaction would be an efficient or effective way of ensuring adequate WQS or complying with the goals and requirements of the CWA."

The judge calls out specific criteria that EPA has recommended for updates, based on scientific studies, including aquatic life criteria for **ammonia and copper**. She did not accept EPA's excuse that Ecology may have higher priorities or that EPA lacks the resources to undertake the rulemaking.

"This wait-and-see approach appears particularly ill-conceived in light of EPA's recognition that **copper pollution has an 'adverse impact on salmonids,'** whose health impacts 'critically important and endangered species throughout the Pacific Northwest,'" she stated.

Pechman noted that **the letter denying the petition for rule-making contains no explanation about how EPA was "marshaling its limited resources to protect Washington's waters or why simply waiting for Washington to act would be reasonable to meet the CWA's goals. This undermines EPA's position."**

The judge also rejected EPA's argument that the update to Washington's human health criteria — a related set of standards — would protect aquatic life. She cited EPA's own recommendations for **copper**, which are 1,200 micrograms per liter for humans but a maximum of 4.8 micrograms per liter for aquatic life. ***Under those recommendations, what is considered safe for humans is 250 times higher than what is considered safe for protecting salmon from acute toxicity. (Chronic levels are considered even lower for aquatic life.)***

Further, the judge points out, EPA should not assume that its national recommendations would be adequate for the unique species of Washington state — "such as **Puget Sound's Southern Resident Orcas who are some of the most contaminated marine mammals in the world** due to bioaccumulation through the food stock, particularly through Chinook salmon."

The judge ordered EPA to make a determination on the adequacy of the state's aquatic life criteria within 180 days, but she agreed to allow additional time if EPA can provide "specific, detailed explanations of why additional time is necessary and what tasks remain to be performed."

How that will mesh with Ecology's time schedule is yet to be seen. Most relevant staffers with Ecology as well as EPA were out this week for the holiday. I will invite them to contribute comments, concerns and additional context when they return.

Ecology's draft work plan covering the next four years does not lay out a specific timetable for adopting aquatic life criteria. The agency has taken comments on four possible approaches to adopting new water quality standards:

- * Option 1: Stagger three rule-making by group (metals, organics, non-priority)
- * Option 2: Stagger two rule-making by group (all metals, all organics)
- * Option 3: Rule-makings for different groups of chemicals based on highest priority
- * Option 4: Review and update all necessary criteria in one rule-making

In bringing its lawsuit, Northwest Environmental Advocates said Washington state has revised aquatic life criteria for some toxic chemicals since 1992, but many remain less protective than EPA's recommended levels. For 14 chemicals, Washington has no aquatic life criteria at all, whereas EPA has established maximum levels in freshwater to avoid acute or chronic toxicity, according to NWEA. In saltwater, Washington has no criteria for 11 chemicals for which EPA provides recommended standards, the group says.

Under the Endangered Species Act, the U.S. Fish and Wildlife Service and NOAA's National Marine Fisheries Service have reviewed the adequacy of aquatic life criteria for the states of California, Oregon and Idaho. (USFWS covers freshwater species, while NMFS covers saltwater species.) For a number of chemicals, the agencies have found that criteria adopted by the states and approved by EPA are likely to jeopardize the continued existence of a threatened or endangered species, the so-called "jeopardy" finding.

To show that Washington's standards are outdated, **NWEA listed more than two dozen chemicals for which the state uses numeric criteria that are either higher or close to the levels found to be in violation of the Endangered Species Act.**

"Levels of these and other toxic pollutants are among the reasons that EPA has long been concerned about the health of one of Washington's most important waterbodies, Puget Sound," states the legal complaint (PDF 490 kb). (<https://www.pugetsoundinstitute.org/wp-content/uploads/2021/12/Order.pdf>) "EPA features the toxic contamination of Southern Resident killer whales, Pacific herring and harbor seals in Puget Sound on its website as evidence of its ongoing concerns about toxic pollution of Washington's waters."

The University of Washington Puget Sound Institute provides analysis, research and communication to inform and connect the science of ecosystem protection.

- * Water quality (<https://www.pugetsoundinstitute.org/category/blog-topics/water-quality/>)
- * Water quality (<https://www.pugetsoundinstitute.org/tag/water-quality/>)
- * Environmental Protection Agency (<https://www.pugetsoundinstitute.org/tag/environmental-protection-agency/>)
- * Northwest Environmental Advocates (<https://www.pugetsoundinstitute.org/tag/northwest-environmental-advocates/>)
- * Department of Ecology (<https://www.pugetsoundinstitute.org/tag/department-of-ecology/>)
- * Aquatic life criteria (<https://www.pugetsoundinstitute.org/tag/aquatic-life-criteria/>)
- * Environmental lawsuit (<https://www.pugetsoundinstitute.org/tag/environmental-lawsuit/>)

2019 Stormwater Management Manual for Western Washington

<https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/2019SWMMWW.htm#Topics/VolumeV/InfiltrationBMPs/SiteSuitabilityCriteria.htm>

[V-5.6 Site Suitability Criteria \(SSC\)](#) includes criteria to determine if the site is appropriate for infiltration. “SSC-2 Ground Water Protection Areas” mentions aquifer recharge areas.

[I-3.4.5 MR5: On-Site Stormwater Management](#) includes a “Competing Needs Criteria” to allow LID BMPs to be superseded or restricted if they are in conflict with “A local code or rule adopted as part of a Wellhead Protection Program established under the Federal Safe Drinking Water Act; or adopted to protect a Critical Aquifer Recharge Area established under the State Growth Management Act”.

[BMP T8.40: Media Filter Drain](#) describes that pesticides should be prohibited if the BMP is in a critical aquifer recharge area for drinking water supplies.

V-5.6 Site Suitability Criteria (SSC)

SSC-3 High Vehicle Traffic Areas

An infiltration BMP may be considered for runoff from areas that require an oil control BMP per [III-1.2 Choosing Your Runoff Treatment BMPs](#). For such applications, provide the oil control BMP upstream of the infiltration BMP to ensure that ground water quality standards will not be violated and that the infiltration BMP is not adversely affected.

SSC-4 Soil Infiltration Rate/Drawdown Time

Infiltration Rates: measured (initial) and design (long-term)

For infiltration BMPs used for Runoff Treatment purposes, the measured (initial) soil infiltration rate should be 9 in/hr or less (For [BMP T5.15: Permeable Pavements](#), this rate can be 12 in/hr or less). Design (long-term) infiltration rates up to 3.0 inches/hour can also be considered, if the infiltration receptor is not a sole-source aquifer, and in the judgment of the site professional, the treatment soil has characteristics comparable to those specified in [SSC-6 Soil Physical and Chemical Suitability for Treatment](#) to adequately control the target pollutants. Project sites with infiltration rates lower than those identified in the infeasibility criteria may be used for infiltration of stormwater, if the local jurisdiction approves the design.

The design infiltration rate should also be used for maximum drawdown time and routing calculations.

Drawdown Time

For infiltration BMPs designed strictly for Flow Control purposes, there isn't a maximum drawdown time. For infiltration BMPs designed to provide Runoff Treatment, document that the Water Quality Design Volume (as described in [III-2.6 Sizing Your Runoff Treatment BMPs](#)) can infiltrate through the infiltration BMP surface within 48 hours. This can be calculated by multiplying the horizontal projection of the infiltration BMP mid-depth dimensions by the estimated design infiltration rate, and multiplying the result by 48 hours. This drawdown restriction is intended to meet the following objectives:

- Aerate vegetation and soil to keep the vegetation healthy.
- Enhance the biodegradation of pollutants and organics in the soil.

Note: This is a check procedure, not a method for determining infiltration BMP size. If the design fails the check procedure, redesign the infiltration BMP.

SSC-5 Depth to Bedrock, Water Table, or Impermeable Layer

The base of [BMP T7.10: Infiltration Basins](#) or [BMP T7.20: Infiltration Trenches](#) shall be ≥ 5 feet above the seasonal high-water mark, bedrock (or hardpan) or other low permeability layer. A separation down to 3 feet may be considered if the ground water mounding analysis, volumetric receptor capacity, and the design of the overflow and/or bypass structures are judged by the site professional to be adequate to prevent overtopping and meet the other site suitability criteria specified in this section.

SSC-6 Soil Physical and Chemical Suitability for Treatment

This SSC applies to infiltration BMPs that intend to use the native soil to provide Runoff Treatment. If the native soils do not meet the criteria below, Runoff Treatment must be provided prior to infiltration either by a layer within the infiltration BMP (such as is the case for [BMP T7.30: Bioretention](#)), a Runoff Treatment BMP upstream of the infiltration BMP, or by a layer of engineered soil that meets the criteria below. Refer to [V-5.3 General Design Criteria for Infiltration BMPs](#) for guidance to determine the appropriate level of Runoff Treatment, based on land use and project type, that is necessary to precede the infiltration BMP.

Consider the soil texture and design infiltration rates along with the physical and chemical characteristics specified below to determine if the soil is adequate for removing the target pollutants. The following soil properties must be carefully considered in making such a determination:

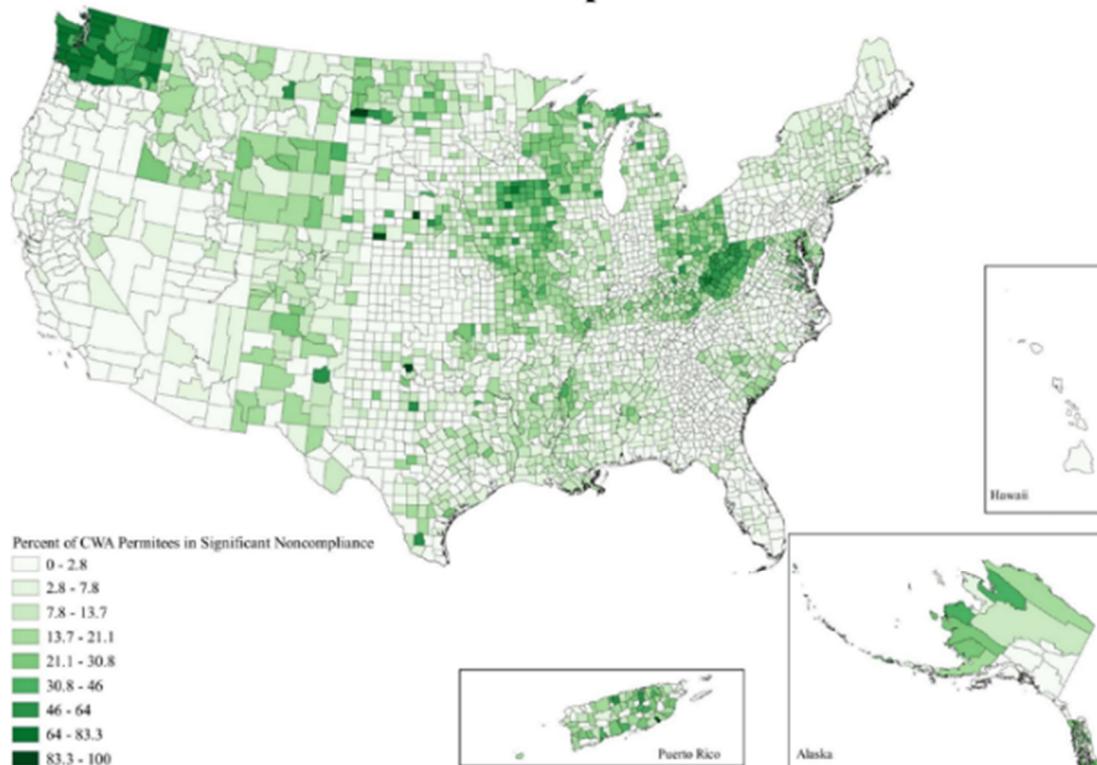
- Cation exchange capacity (CEC) of the treatment soil must be ≥ 5 milliequivalents CEC/100 g dry soil ([USEPA, 1986](#)). Consider empirical testing of soil sorption capacity, if practicable. Ensure that soil CEC is sufficient for expected pollutant loadings, particularly heavy metals. CEC values of > 5 meq/100g are expected in loamy sands ([Buckman and Brady, 1969](#)). Lower CEC content may be considered if it is based on a soil loading capacity determination for the target pollutants that is accepted by the local jurisdiction.
- Depth of soil used for infiltration Runoff Treatment must be a minimum of 18 inches. Depth of soil used for infiltration Runoff Treatment below [BMP T5.15: Permeable Pavements](#) that is a pollution-generating hard surface may be reduced to one foot if the permeable pavement does not accept run-on from other surfaces.
- Organic Content of the treatment soil (ASTM D 2974): Organic matter can increase the sorptive capacity of the soil for some pollutants. A minimum of 1.0 percent organic content is necessary.
- Waste fill materials shall not be used as infiltration soil media nor shall such media be placed over uncontrolled or non-engineered fill soils.

Engineered soils may be used to meet these design criteria. Field performance evaluation(s), using protocols cited in this manual, would be needed to determine feasibility and acceptability by the local jurisdiction.

SSC-7 Seepage Analysis and Control

Determine whether there would be any adverse effects caused by seepage zones on nearby building foundations, basements, roads, parking lots or sloping sites.

Percent of county Clean Water Act (CWA) permittees listed as Clean Water Act Significant Noncompliers.



Mueller, J.T., Gasteyer, S. The widespread and unjust drinking water and clean water crisis in the United States. *Nat Commun* 12, 3544 (2021).

Stormwater excerpts from public comments submitted to City of Tacoma, regarding environmental determination for the Bridge Industrial permit application LU21-0125:

Earth Justice:

It would also have foreseeable impacts on water. Introducing thousands of new vehicles into an area containing protected wetlands, a stream, and a critical aquifer is likely to introduce toxic chemicals from tires into these areas through stormwater runoff. In addition, replacing the site's existing permeable, water-absorbing surfaces with impervious concrete will substantially alter stormwater management, impeding recharge of the City's aquifer and increasing the load on the area's stormwater system.

The potentially devastating impacts of building the proposed facility include significant consequences for the waters running through the site—including critical protected wetlands, a stream where ESA-protected species may be present, and a vital aquifer—and for local stormwater management. Because Bridge Industrial's application materials do not adequately examine or address these impacts, a full EIS is necessary.

Introducing many thousands of new vehicles per day into the area (see Section III on traffic impacts) will not only significantly worsen air quality and increase greenhouse gas emissions at a time when Tacoma should be working to reduce both, but it will also introduce toxic fish-killing chemicals from tires into Tacoma's waters.

Tire manufacturers use a chemical called 6PPD to protect rubber elastomers in tires from ground-level ozone (to which vehicle emissions contribute). 6PPD-quinone is a transformation product of 6PPD that is 100 times more toxic than its parent, 6PPD.⁵⁴ When it rains, stormwater flows over roads and carries road chemicals into nearby waterways. For decades, scientists have known that something in urban streams was killing coho salmon in the Pacific Northwest, and long suspected that the source was something washing off nearby roads. But only recently did scientists identify 6PPD-quinone as the cause of this well documented fish death in watersheds in urban areas.⁵⁵ While scientists have identified 6PPD-quinone as a direct cause of mortality in coho salmon, the extent of the tire chemical's adverse impact on other fish and aquatic wildlife is still being studied.⁵⁶

The threat of introducing toxic tire chemicals into waterways is especially high for the Bridge Industrial project because it is sited on critical wetlands, a stream crosses the project site, and an important aquifer sits below the area. According to the SEPA Checklist, steelhead trout and chinook salmon—both species listed for protection under the Endangered Species Act⁵⁷—have the potential to be present in the project vicinity. SEPA Checklist § 5(b).

Bridge Industrial's application does not discuss the potential impacts from 6PPD or even mention the threat from tire chemicals generally. In light of Bridge Industrial's failure to even addressing this threat, the City cannot conclude that Bridge Industrial's proposed mitigation would reduce the project's impacts to insignificance. The City should require a full EIS to examine this potential impact and study possible mitigation.

The project will also dramatically change what happens to stormwater on the project site's 147.5 acres, with a myriad of environmental impacts. Replacing the existing uncovered site with 75% impervious concrete surfaces means that stormwater at the site that previously was mostly absorbed by soil, native plants, wetlands, and a stream would be diverted to run off somewhere else.

One significant consequence of this change is that there will be an inevitable increase in stormwater flowing into the municipal stormwater system.

There is scientific consensus that climate change has caused, and will continue to cause, intensification of heavy precipitation, including rainfall.⁵⁸ With more rainwater accumulating more quickly, existing stormwater systems may not be able to handle the level of water introduced during increasingly extreme weather events.

Although the proposed stormwater mitigation plan involves creating a “modular wetland system, or approved equivalent”⁵⁹—which appears to refer to small clumps of native plants—to absorb some of the water and above-ground detention basins⁶⁰ to collect other water, there is no indication that Bridge Industrial’s proposed stormwater mitigation is adequate to address the increased storm intensity expected in the future due to climate change. Indeed, because the Stormwater Site Plan contains only a cursory narrative, it is hard to tell what forecast the plan was based on.

The City should be moving towards low-impact development for stormwater management. The City’s own website identifies protecting native vegetation and minimizing impervious surfaces as key principles of low-impact development.⁶¹ But Bridge Industrial’s proposed project undermines both of these goals, doubly exacerbating the area’s ability to manage stormwater. The project site is located in a 100-year floodplain. Replacing open land that helps absorb stormwater with impervious surfaces will lead predictably to stormwater system backups and floods, with the project site’s neighbors bearing the potentially devastating burden of these events.

Another significant consequence of this change is that it will likely impede the recharge of the South Tacoma Aquifer on which the project site sits. As the City is no doubt aware, groundwater from the South Tacoma Aquifer typically supplies about 5% of Tacoma’s water in the summer, but could supply up to 40% of Tacoma’s drinking water.⁶²

Bridge Industrial is proposing to build over an aquifer recharge area, where groundwater is currently able to seep into the South Tacoma Aquifer because of the lack of a confining layer. See Exhibit G (City of Tacoma, Aquifer Recharge Map, http://cms.cityoftacoma.org/Planning/Shoreline/Maps/10_Aquifer.pdf); City of Tacoma, Aquifer Recharge Areas (Pierce County), <https://geohub.cityoftacoma.org/datasets/tacoma::aquiferrecharge-areas-pierce-county/about>.

Although, according to Bridge Industrial, “a portion” of stormwater from the site will be discharged to the ground via a modular wetland system,⁶³ impairment of aquifer recharge is a significant environmental impact that should be fully studied through a full EIS. Protecting the aquifer is essential. While it is important now, its importance will grow as climate change causes increasingly long periods of extreme heat and drought.

55 Erik Stokstad, *Common tire chemical implicated in mysterious deaths of at-risk salmon*, Science, Dec. 3, 2020, <https://www.science.org/content/article/common-tire-chemical-implicated-mysterious-deaths-risk-salmon>.

56 E.g., National Park Service, *Scientists Discover Silent Threats to Pacific Coast Salmon Populations*, Jan. 2021, <https://www.nps.gov/articles/000/scientists-discover-silent-threats-topacific-coast-salmon-populations.htm>.

57 E.g., NOAA Fisheries, Coho Salmon (Protected), <https://www.fisheries.noaa.gov/species/coho-salmon-protected>; NOAA Fisheries, Steelhead Trout, <https://www.fisheries.noaa.gov/species/steelhead-trout>.

58 Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022: Impacts, Adaptation and Vulnerability—Summary for Policymakers*, https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf.

59 Stormwater Site Plan § 4.3; see also SEPA Checklist § 3(b)(1).

60 Stormwater Site Plan BNSF Tacoma (Dec. 10, 2021) § 4.3; Soundview Consultants, Conceptual Mitigation Plan, BNSF Tacoma, Revised Dec. 2021, at § 1.1.2(2) (“stormwater infiltration will be utilized to the extent feasible to minimize the size of the above-ground stormwater pond.”); SEPA Checklist § 3(c)(1) (The majority of the runoff will be routed to

infiltration facilities with a portion of the runoff routed to a detention pond prior to release to the natural discharge point.”).

61 City of Tacoma, Green Stormwater Infrastructure (GSI),

https://www.cityoftacoma.org/government/city_departments/environmentalservices/surface_water/green_stormwater_infrastructure_gsi_.

62 Tacoma-Pierce County Health Department, *South Tacoma Groundwater Protection District*,

<https://www.tpchd.org/healthy-places/waste-management/business-pollution-prevention/southtacoma-groundwater-protection-district>.

Communities for a Healthy Bay:

The Project site sits on top of the South Tacoma aquifer, which at times supplies up to 40 percent of Tacoma’s drinking water.¹ Groundwater flow below the site is recharged from as far southeast as Highway 161 and flow is generally to the west and north, eventually discharging to Puget Sound between the Narrows Bridge on the north to University Place on the south in the Tacoma Narrows region.

Recharge amounts vary from 5-30 inches per year, largely controlled by the amount of urbanization.² The SEPA checklist states that the site will become 75 percent impervious surface at project completion – we have strong concerns about the longevity and viability of this aquifer should this site become majority impervious surface. Given the annual average precipitation of nearly 40 inches, complete urbanization will reduce infiltration from about 23 inches (for those areas presently without trees) to about 5 inches per year. For the surfaces that are presently tree covered, the reduction will be from 18 inches to 5 inches, and for mixed (tree and non-tree covered) surfaces, complete urbanization will reduce infiltration from about 12 to 5 inches of recharge per year.² With these facts in mind, we request the following questions be addressed through the lens of an EIS: How will the almost complete urbanization of this space impact the South Tacoma aquifer? How will the annual recharge rate change? How will this change impact Tacoma’s access to clean drinking water? Given that we are already experiencing, and will continue to experience climate-change induced drought, what measures will be in place to protect the water budget of the aquifer?

The Stormwater Site Plan provided by the applicant describes routing of stormwater through an onsite conveyance system to four infiltration facilities and two detention ponds. It is not clear that the water will be adequately treated by these infiltration ponds to prevent the contamination of the underlying aquifers. In addition, some portions of the stormwater will be released at a discharge point into surface water after treatment, into the headwaters of part of Flett Creek. A general stormwater National Pollution Discharge Elimination System permit will be required under state law.

The Federal Emergency Management Agency (FEMA) map provided in the application materials shows a one percent chance of flooding along the entire western edge of the site. The modeling that informed this assumption was performed during a two-inch/day maximum rainfall event. Since there have been more significant precipitation events, even in 2022, it is not clear that the FEMA map delineates the extent of possible flooding, especially considering we know that climate change is causing more frequent and intense precipitation events in our area. Given these concerns, we request the following questions be addressed through the lens of an EIS: Will a general stormwater permit adequately characterize the stormwater from this site? How will a determination be made that infiltrated water entering groundwater is uncontaminated? How could flooding affect the site, the infiltration facilities, as well as the surface water entering Flett Creek?

1. Tacoma Pierce County Health Department. (n.d.). *South Tacoma Groundwater Protection District*. Accessed on April 4, 2022 from <https://www.tpchd.org/healthy-places/waste-management/business-pollution-prevention/south-tacoma-groundwater-protection-district>

2. United States Geological Survey. (2010). USGS Scientific Investigations Report 2010-5055: Hydrogeologic Framework, Groundwater Movement, and Water Budget in the Chambers Creek-Clover Creek Watershed and Vicinity, Pierce County, Washington, Savoca, et al, 2010, 45 pp.

Michelle Mood and Stephen Van Holt:

Tacoma Water of Tacoma Public Utilities cannot meet our increased water resource needs that TPU climate modeling projects without the Planning and Development Services Department's active help in managing permits that could affect aquifer recharge. The Planning and Development Services office must enable permanent green space and stormwater infiltration (not treatment and release).

Impacts not yet considered for LU21-0125 include the multifaceted effects on the already poor health equity found in residents of the surrounding zip codes (including physical health as well as mental health and the increase in local population size); the distribution center's increased air, noise and light pollution; the effect on the wildlife, which has expanded in the last fifteen years but has not been surveyed; the impact of rain diversion on the underlying aquifer, the Flett Creek, the Chambers Creek, and the customary fishing areas of Nisqually and other tribes; the impact of rain diversion on salmon spawns; the long term effect of lost greenspace.

Insufficiently considered impacts of LU21-0125 include the impact on local and regional traffic; the questionable ability of geoengineering (either from 2008 or 2021) to handle climate-change-affected Tacoma weather patterns; the quality of water in the underlying aquifer; the effect of Superfund contaminated soil disturbance; the treatment of the stormwater and its infiltration system.

Together, it is clear that there is a solid chance for significant and severe impact on the environment, triggering an EIS...

Moreover, the Tacoma Municipal Code, Title 13, requires that primary consideration of the land use of property in the South Tacoma Groundwater Protection District should be for that protection. The area is "designated as an environmentally (geohydrologically) sensitive area." <https://cms.cityoftacoma.org/cityclerk/files/municipalcode/Title13-LandUseRegulatoryCode.pdf> Thus the City has a vested interest in an independent evaluation of the effect of paving over 75% of the area involved in Permit LU21-0125. Additionally, the proposed construction seems to violate the obligation of the "Water Resources Streamflow Restoration Program Agreement Between the State of Washington Department of Ecology and Tacoma Environmental Services Department," since all stormwater modeling must maintain sustainable regional green infrastructure facilities to "retime seasonal high-flows through storage and aquifer recharge." <https://cms.cityoftacoma.org/cityclerk/Files/CityCouncil/Agreements/IntAgr-%20Washington%20Dept.%20of%20Ecology-2021-TacoES-00004.pdf>

In fact, since this construction will pave over empty land with four wetlands and a stream that together help recharge the South Tacoma aquifer, an EIS is necessary to calculate the effect on that over the next 20 and 100 years. On the Tacoma-Pierce County Health Department's website, they inform the public that "We help protect the City of Tacoma's drinking water.

South Tacoma Groundwater Protection District (STGPD) sits above the South Tacoma aquifer. Groundwater typically supplies about 5% of Tacoma's water in the summer and supplements the supply from the Green River at other times of the year. Groundwater from this aquifer could supply up to 40% of Tacoma's drinking water." <https://www.tpchd.org/healthy-places/waste-management/business-pollution-prevention/south-tacoma-groundwater-protection-district?fbclid=IwAR0-BkjaHR1LOxDMiDxk4bfzAhPqslsXo6NAOIhZFMdxHySuiUOwNmgMdc>

Since TPCHD makes it clear Tacoma relies on this water, we need to have an EIS to make sure what the effect would be from a 2.5 million sq ft distribution center that creates 125 acres of impermeable surface, or about 75% of the area. If that's not a "significant impact," what is?

Furthermore, the Washington State Department of Natural Resources put out a new Climate Resilience Report two years ago, including special attention to (no surprise!) groundwater (<https://www.dnr.wa.gov/climate-change>). TPU's own Water Shortage Response Plan (2018) reveals that "Tacoma Water's South Tacoma wells are another important source of water and are typically used for peak water demands during the summer." <https://www.mytpu.org/wp-content/uploads/watershortageresponseplan0219.pdf> (See also Section IV, below) Given the vital status of groundwater in our climate emergency, TPU and TPCHD should be calling for an EIS; in lieu of that, we do!

It paves over open space, takes down mature trees, and its stormwater treatment is not green (see section II). Nor has the true impact of its stormwater been assessed. An EIS is needed for that.

After all, the Bridge Industrial LU21-0125 application repeatedly refers to it and even includes 75 pages from it in the Soundview Wetlands Assessment. And, in fact, if a 1.9 million square foot warehouse complex had been approved in 2007 without an EIS, why wouldn't the city say with confidence that a 2.5 million sq. ft. warehouse would sail through? Indeed, Bridge Industrial publications and advertisement assure potential occupants that construction will start August, 2022.

The next section, while broad in scope, does extend the discussion of the re-use of 2007 materials for the 2021 permit application. (For email screenshots, see Appendix 2, attached) For example, the Stormwater Report says conditions are unchanged from 2007, and uses the 2007 material directly, and the Soundview Wetlands Report "Existing Conditions" ends with this: "A previous Wetland and Stream Delineation Report was conducted by Grette Associates in July 2007... Given the age of the delineation, a new delineation was required... The proposed project was previously fully approved through the City of Tacoma SEPA Determination of Nonsignificance and Permit Decision (WET2007-10000099831, MLU2007-40000099830, and SEP2007-40000099829) on December 19, 2008 (Appendix H)." Appendix H is the 75 pages of the prior permitting information. The information of the permit approval at the end of a "Existing Conditions" section is unexplained. Is it implying that this permit will also have a "DNS" merely by association?

You'll notice that the SEPA Checklist is unclear what happens to the displaced rainwater – is it infiltrated, or is it treated and released into the stormwater system?

... the impact on both the aquifer and the downstream salmon is not sufficiently examined; construction itself could damage both the aquifer and the health of Flett Creek and Chambers Creek; only two buildings have stormwater infiltration planned.

In the Storm Drainage Report, only two of the four buildings have storm infiltration (see TRC Soil Mitigation Plan Appendix A, Figure 3). Building A lacks one, and is below the steepest part of the hill; Building D lacks one and is right next to the repositioned stream. All buildings must have infiltration of cleaned stormwater.

The Storm Drainage Report relies on the 2007 permit. The 2022 report that "the stormwater site plan (SWSP) was prepared for this site and approved under SEPA file No. SEP2007-40000099829. The SWSP established the existing hydrology of the site including the base flood elevation, wetland hydrology and a proposed stormwater management approach. This reports served to maintain the conclusions outlines in the approved report [in SEP2007-40000099829] while updating the calculations and stormwater management approach to current City of Tacoma standards". In Chapter 3 Offsite Analysis, 3.1 Qualitative Analysis, the Storm Drainage Report

says that the current 2021 work was to be found in the 2007 SEPA File: "An off-site analysis was performed and approved under approved SEPA File No. SEP2007-40000099829. See the attached section of the [SEP2007-40000099829] report in Appendix E from that previously approved SEPA submission. The existing conditions have been determined to be unchanged from the previous submission."

Hence, limited additional work was performed for a project fourteen years later, 32% larger, covering nonidentical parcels of land, and involving drastically different construction. The runoff has to have some significant differences. In addition, new climatic change may indeed change any conclusions about the impact of this huge construction. Complete and careful Storm Drainage calculation that does not rely on 2007 work must be done before Director can calculate Public Benefit.

"According to the Wetlands Assessment, 'The stream corridor flows north to south through the western portion of the subject property and was identified as a historic headwaters for Flett Creek. All three wetlands are located adjacent to the identified stream corridor' (p.6). My conclusion: So it must still be a headwater of Flett Creek and on down to the sound. If the wetlands are adjacent they are hydrologically connected and so are part of the headwater area and their ecological functions would include improving water quality, supporting species that rely on wetland stream complexes, providing energy (in the form of plant material that other species use for their food supply) to downstream biota." (emphasis added)
(<https://www.tacomatreeplan.org/>).

What better way to safeguard the tree canopy cover than to seize this opportunity to preserve existing tree coverage, not increase industrial buildings, pave over more land, and create more carbon consumption? As the city of Tacoma website notes, "Adding... trees to neighborhoods is proven to help keep places cool during the hottest days, manage stormwater runoff, slow neighborhood traffic, provide mental health benefits, and so much more" (<https://www.tacomatreeplan.org/>). Yet, the current "20%" existing coverage is mostly far from the Oakland-Madrona area of Tacoma (try your own Google Earth screenshots), and building more industrial facilities in the area will only worsen this environmental injustice.

Indeed, it is clear that this planned development ignores the stated interests of Tacoma's residents. As you no doubt know, Tacoma's Watershed Management Plan got community feedback from the 2019 Tacoma Tree Plan engagement, the 2020 Tacoma Community Survey and Biennial Budget engagement, and the 2021 Tacoma Climate Action Plan Engagement regarding the importance of preserving greenspace for all of Tacoma's residents. This huge new development will therefore ignore our citizens expressed desires to protect green spaces and safe places to enjoy nature. And by paving over so much of the remaining grassy space in our already heavily impacted neighborhood, it will increase temperatures, decrease soil permeability, and violate Tacoma's climate action plan (see <https://www.tacomaurbanwatersheds.com/watershed-management-plan>), a plan that is essential for the sustainable growth of Tacoma and the well-being of all Tacoma residents.

Dr. Fennessy continued: "Again from the Soundview Assessment, 'Stream Z originates from a stormwater outlet northwest of the site' (p.16) This makes it sound bad, but all it means is that storm water runoff is being directed into a culvert (pipe) and directed into the channel. It's not clear whether they are discharging to an existing stream or they created a channel that then goes into an existing stream. It then says: 'No salmonid presence is modeled or documented within the stream.' There may not be salmon that far up but the water flows down to them so any changes could affect the fish. The Soundview Assessment continues: 'Stream Z is potentially regulated by the USACE through Category 2 above, as it is a tributary that is hydrologically connected to the Puget Sound, a traditional navigable water. Wetlands A-D are also potentially regulated by the USACE through Category 4 above as they could be considered wetlands adjacent to jurisdictional waters. Wetlands A-D and Stream Z would be regulated through WSDOE under the Revised Code of Washington (RCW) 90.48.' This means the corps of engineers are likely to be involved

since they are the main federal agency that makes decisions on whether wetlands are allowed to be destroyed and then mitigated. By the rules of the Army Corps, wetlands are supposed to be evaluated on the basis of the beneficial functions (ecosystem services) they provide. There are methods to do this, and the mitigation (replacement wetland) site is supposed to be on track to replace the functions lost. Thus the wetland function absolutely must be calculated for this to be known.”

Rather than discarding the notion of construction on this awkwardly narrow site additionally encumbered by a critical area to protect, the Conceptual Mitigation Plan barrels ahead, but still manages not to justify this construction at all.

At the very least, without a calculation of the costs involved in avoiding the critical area entirely, the public and the city are unable to see what the overall cost and benefits will be, both to the builder and to the public, and thus it is impossible to understand why the builder must encroach upon the Critical Area. Prior to any decision about this permit, this missing information must be provided. And the Director should take very seriously the enforcement of the Comprehensive Plan policies in detail. The Director must make sure that the construction does not violate Policy EN-3.22 Protect and preserve the quantity and quality of Tacoma’s groundwater supply. or Policy EN-3.23 Encourage infiltration of stormwater to promote aquifer recharge and assure continuous and adequate groundwater supply. In fact relevant policies demand clear answers from this builder – how is the application in tune with Policy EN-4.9: Ensure that plans and investments are consistent with, and advance, efforts to improve watershed hydrology by achieving more natural flow patterns in rivers, streams, floodplains, wetlands and groundwater aquifers. Minimize impacts from development.”

I also want to draw your attention to two additional points in the One Tacoma Comprehensive Plan. One point is about “low impact development” which “strives to mimic pre-disturbance hydrologic processes by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater practices that are integrated into a project design. Low impact development best management practices emphasize pre-disturbance hydrologic process of infiltration, filtration, storage, evaporation and transpiration. Common low impact development best management practices include: bioretention, rain gardens, permeable pavements, minimal excavation foundations, dispersion, soil quality, vegetated roofs and rainwater harvesting.” Since the proposed project must be in line with our ONE TACOMA COMPREHENSIVE PLAN, please make sure it follows best practices. The best way to ensure that is, of course, to require a EIS to make sure all of this is evaluated.

One of the requirements of the protection of Critical Areas is that “Wetland buffer averaging may be permitted... when... 1. There are no feasible alternatives.” The Conceptual Mitigation Plan again is entirely contradictory. It does NOT say there are no feasible alternatives! It only explains it designed the project carefully, and that “Alternative designs and locations were considered for the project, including narrowing building widths and redesigning parking and stormwater infrastructure to be located outside of the critical area buffers to the greatest extent feasible” (1.1.3). “Considered?” Why were they not adopted? The actual requirement that there are no feasible alternatives is not itself considered and answered in this plan. Instead, the plan once again points to the industrial requirements (disproven above) as the reason: “wetland buffer averaging is necessary and unavoidable due to the large building footprints required for industrial development, provide ample parking for employee cars and semi-trucks and trailers, and provide safe and efficient access throughout the site.” In actuality, none of this is proven, as I discussed above. Additionally, they fail to meet another requirement, that “the averaged buffer will not result in degradation of the wetland’s functions and values as demonstrated by a report from a qualified wetland expert.” That is not provided.

In sum, the wetlands and stream disturbance is not justified in the slightest, neither by the requirements of the project nor by the non-answer to the requirement that there are no feasible alternatives. In fact, alternatives were said to be considered and their rejection as “not feasible”

was not at all discussed. One is left with the distinct conclusion that there are alternatives – just not ones Bridge Industrial wants to consider.

The entire impact on the wetlands and stream is entirely not justified and this permit should be rejected as completely insufficient to the requirements for a critical areas development.

Is the on site detention of water sufficient? The SEPA Checklist for LU21-0125 does not mention any information about the amount of water displaced or the data on average rainfall increase and single-storm rainfall increase. The 32% smaller construction claimed in 2007 that its construction would displace 274,190 square feet of flood area, and yet, given climate change and the new directive to look 20 and 100 years ahead, this number is meaningless today. An EIS must be done to determine the environmental impact of LU21-0125. What will the impact be on 100 years of climate change for Tacoma's water security and climate resilience? The data must be gathered and the future modelled in order for the impact of this significant change to be assessed. The SEPA Checklist does not even clarify whether stormwater will be discharged or infiltrated, but the impact on groundwater, on wildlife, on climate resilience and other systems will be vastly different based on which is chosen. The SEPA Checklist and the TRC Amendment to Operations and Maintenance Plan ("TRC OMP") do not agree. A modular wetland system is mentioned in the SEPA Checklist in addition to infiltration and discharge (p.7, 9). The site is the traditional headwaters for Flett Creek, which is a popular fishing site, and drains into Chambers Creek, which enters Puget Sound (see my attached Appendix 1, Figure 8).

What water monitoring is being done for the below-ground aquifer? The application materials refer to the prior owner decommissioning groundwater monitoring wells (TRC OMP, 3.1 [p.14]). Monitoring must be done to know public benefit and cost.

Why, if the compacted contaminated soil is 12 feet below the surface, does the permit claim that no groundwater will be affected during construction, when the very permit application materials confirm that groundwater is approximately 7 to 25 feet below the surface? ("TRC Amendment to OMP" 3.0[p.24] and figures 4-6). Groundwater effect must be calculated.

The permit application relies on construction workers' on-the-spot observance of soil to find unexpected pockets of additional chemical pollution of the site (TRC OMP, 2.0 [p.9]). Will the workers be incentivized by bonuses to report such pockets? Will their English language be sufficient to communicate? Will they have the ability to stop construction for additional testing? It seems a slender thread to rely on subordinate, on-the-ground workers to report if they see some discoloration in the soil. Instead, city officials must be on site to monitor and implement the TRC OMP practices.

The permit materials are absolutely inadequate with regard to control and containment of the site contaminants -- arsenic, lead, copper, zinc, carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and polychlorinated biphenyls (PCBs). Groundwater contamination is rejected outright a priori even though rain during construction is said to create contaminated sediment that will be tested for arsenic and lead regularly ((TRC OMP3.3 [p.15]). The infiltrated water must be tested. How many chemicals will be added to the groundwater via rainstorms during construction? Other chemicals must be monitored and tested for.

Timothy Smith:

The warehouse land is in the South Tacoma Ground Water Protection District (STDWPD) which is designated as an environmentally (geohydrologically) sensitive area. This is one of the oldest zoning overlays in the City Code and is the primary reference for permit approval – well before zoning restrictions of a Heavy Industrial area. Yet, the plan as submitted does not provide recent best science of the impacts of the loss of infiltration to the aquifer. Tangential analysis of

wetlands, surface water elements (ponds and stream) and stormwater containment and infiltration are but one part of the entire aquifer area.

The City of Tacoma (COT) received a \$378,000 grant from WA State Dept of Ecology to study the Flett Creek Watershed for WATER RESOURCES STREAMFLOW RESTORATION PROGRAM and this proposed development sits right on top of a major portion of the study area. The Flett Creek Watershed is the 2nd largest watershed area in the COT. The grant requires the COT to investigate a multi-site project to enhance streamflow in the Flett Creek Watershed. Major components include rerouting stormwater flows, enhancing infiltration of stormwater in the South Tacoma Channel, and restoring ecological function of the Flett Wetland and stream channel. The feasibility study shall identify and explore technical, permitting, and administrative elements to guide preliminary project design and identify maintenance needs.

Flett Creek is a tributary to Chambers Creek. The upstream portion of Flett Creek (Site 1), within the South Tacoma Channel (STC), is channelized or piped as part of the RECIPIENT's stormwater sewer system and flows south toward Metro Parks' South End Recreation & Adventure (SERA) athletic fields (Site 2). Site 3 is a large wetland at the boundary between Tacoma and Lakewood that has the potential to host salmon populations and other native aquatic species of concern, including Chambers Creek Coho salmon, Chambers Creek Winter Chum salmon, South Sound Tributaries Winter Steelhead, and West South Sound Coastal Cutthroat Trout (Salmon Recovery Lead Entity 2018).

We must complete this study before we permit any further development in the STGWPD. This as well as many other recent permit approvals do not account for the aquifer and thus are flawed and failed decisions subject to legal action. We will rely on this groundwater more as the climate crisis unfolds and dries up the sources for the Green River. For most of the summer of 2021 we have relied on this aquifer for Tacoma's water needs. We need the South Tacoma Economic Green Zone proposal to go through and create better protections for our water by updating city policies.

Various other expenditures are underway to protect and enhance the groundwater and these too must be completed before adding a new major impact. Tacoma Water is reviewing and updating the South Tacoma Wellfield Protection Zone as well as upgrading pumps, well linings and point of source filtration systems

WHEN SEPA IS REQUIRED

Many projects are exempt from SEPA requirements under either state law (WAC 197-11-800) or through local regulations (TMC 13.12.800).

The Most Common* SEPA Triggers

Work occurring within critical areas and/or on lands wholly or partly covered by water

Construction of residential structures – more than 20 dwelling units

Construction or demolition of a building – greater than 12,000 square feet

Construction of a parking lot – more than 40 vehicles

Fill or excavation – more than 500 cubic yards

Installation or removal of impervious tanks on industrial property – capacity of more than 60,000 gallons

Stormwater, water, & sewer utilities – more than 12 inches in diameter

Installation of wireless facilities – on a residence or school or within an area zoned residential

Construction of a wireless tower – 60 feet or taller or within a residential zone

Certain land use decisions – Rezone

*For a comprehensive list, see WAC 197-11-800.

SEPA Checklist Review ~

Applicant resubmitted version still has discrepancies... these are my comments/questions:

Background:

10. List any government approvals or permits that will be needed for your proposal, if known.

Missing/incomplete items:

- Environmental Determination was from 2007/8 with no EIS?
- Critical Area Permit by City of Tacoma - where's the aquifer/recharge report?
- Critical Area TMC doesn't allow for new building construction?
- Where is the hydrogeologic report regarding critical aquifer recharge data?
- Where is the HPA report?
- Where is the public Health Impact Report?

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)?

Largely unknown over such a large area due to railroad infill of various soils over many years.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Since this was former swamp and still wants to naturally be a wetland, it would seem the area is not stable for long term building as water continually tries to reform into this land depression.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Bringing in soils from elsewhere creates more unstable conditions and more possible questions for an area with an already vulnerable aquifer (very few natural protection layers but needing recharge through soil, not run-off).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Just because major urban areas allow for up to 75% impervious doesn't mean it's best... again, where is the required hydrogeologic report with recharge infiltration data?

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

I believe it was identified that one wetland was mis-categorized and required a larger buffer.. and the area should be assessed in the spring, not early winter.

Community member's comment:

They seem to prove by argumentation (not testing) that there are no salmonids (is that the word) -- and there seems to be no evidence that they ever did any water testing for oxygen levels or animal life. They do not indicate they did any survey for the ESA-listed species, they just said there was no habitat for them. Not necessarily. It seems very theoretical (and no clear survey of the land, just the wetlands). Finally, they fudge the classification of the stream -- and perhaps we can press them on this, they say their classification is "likely" and they support it by the city agreeing in 2007 in the last project: "the

channel is likely a Type Ns2 stream (waters not connected to a Type S, F, or Np water). This Type Ns2 determination was previously approved by the City of Tacoma through a SEPA Determination of Nonsignificance (SEP2007-40000099829) and Permit Decision (WET2007-10000099831 and MLU2007-40000099830) on December 19, 2008"

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Their answer vaguely refers to "minor, temporary" impacts... but what "minor, temporary" impacts? Building/paving so close to the stream will have significant impact to the current flora and fauna.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

The entire area should be restored wetlands, allowing no additional fill.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

A tremendous amount of water will be displaced from natural/needed infiltration and should not be allowed.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

The applicant is unclear regarding what is meant by "floodplain compensation"...

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

How will "no waste materials" not be discharged into surface waters if spraying of soil to control dust will be occurring? Will all landscaping comply with critical areas prohibition of pesticides and required signage to such?

b. Ground Water

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

There is at least one well in the area, which may be used for the city's back-up water supply. Discharging stormwater into one location (which is near a potential contamination hazard) is not conforming with Ecology's 2019 SWMMWW expectation to keep an aquifer recharged in its natural state.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

The spraying for dust may capture pollutants which could then seep into the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The unnatural detention pond is near potential contamination site, and Ecology's 2019 SWMMWW requires for as much natural infiltration as possible, not "a portion"...

2) Could waste materials enter ground or surface waters? If so, generally describe.

Seems very possibly so, plus will be further damaging due to limiting aquifer recharge. Diverting of stormwater is again, not conforming with the most natural infiltration expectations.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

Yes, it will obviously significantly impede infiltration.

8. Land and shoreline use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The applicant's provided answer should include properties more than what's just immediately adjacent, but the larger scope which will also certainly be impacted.

b. Has the project site been used as working farmlands or working forest lands?

The area should have been and now should be restored to natural wetland and forest... not as a "working/managed" forest but one working naturally and providing heat/air/water/soil preservation through natural management.

c. Describe any structures on the site.

d. Will any structures be demolished? If so, what?

This is scarce, undeveloped land, currently allowing for best aquifer recharge infiltration: all the more reason to leave it undeveloped.

e. What is the current zoning classification of the site & f. What s the current comprehensive plan designation of the site?

The overriding land-use code should be the South Tacoma Groundwater Protection District, and Critical Areas Preservation, since this has been designated a "geohydrologically environmentally sensitive" area... not the city's decision of M2 Heavy Industrial.

From a concerned resident: "City of Tacoma having an Urban Waters Protection Plan (only in Phase 2 of identifying crucial priority waters) and a Stormwater Management Plan (LU21-0125 would pave over all the land below a steep hill). Additionally, the City of Tacoma has a Passive Open Space Plan, as well as an Urban Forestry Management Plan (to increase tree canopy to 30%), and this LU21-0125 would take

away almost all the nonpaved land in the Oakland section of the city, preventing those two plans from meeting those goals in our impoverished section. Can you explain why these additional appropriate environmental impact studies are not necessary before the permit is approved? In fact, Tacoma's Watershed Management Plan got community feedback from the 2019 Tacoma Tree Plan engagement, the 2020 Tacoma Community Survey and Biennial Budget engagement, and the 2021 Tacoma Climate Action Plan Engagement, and this new and huge development will go against the stated interests of citizens, including responding to climate change and protecting green spaces and safe places to walk, roll or bike. Paving over so much of our remaining grassy space will increase temperatures. It all seems going in the wrong direction!"

From a 3/2/22 email from Shirley Schultz:

"For the landscaping/open space question, the applicant will be required to preserve, protect, and enhance the entirety of the critical area. That includes wetlands/stream and the steep slopes to the west of the stream."

... but the entire area a critical area.

g) If applicable, what is the current shoreline master program designation of the site.

The onsite stream and downflow creeks will be affected. As sea levels rise, that water may push inland up to a mile, and also push groundwater into soil above... another reason not to develop there.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

YES, all of it! Again, the overriding land-use code should be the South Tacoma Groundwater Protection District, and Critical Areas Preservation, since this has all been designated a "geohydrologically environmentally sensitive" area.

i. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

Again, the overriding land-use code should be the South Tacoma Groundwater Protection District, and Critical Areas Preservation, since this has been designated a "geohydrologically environmentally sensitive" area... and no new construction is supposed to be allowed.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

Again, a natural forest shouldn't have any less status than a managed forest.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?

Their answer appears to have been lifted directly from the Prologis 2007-8 estimates and is, again, completely speculative.

Plus, the traffic assessment assumes the site will not be used as a fulfillment or distribution center, so the actual impacts on traffic (and thus, on air quality and climate) are possibly more than double what Bridge Industries is predicting.

Other References:

The WA Dept of Ecology:

"Since the 1780s, Washington has lost 31 percent of its wetland areas, from 1.35 million acres to 938,000 acres. Wetlands are critical to the overall health of watersheds. We are responsible for protecting, restoring, and managing the state's remaining wetland resources because of their key role in watershed health.

<https://ecology.wa.gov/Water-Shorelines/Wetlands/Wetlands-overview#:~:text=Since%20the%201780s%2C%20Washington%20has,key%20role%20in%20watershed%20health>

This area was originally and is meant to be wetland:



Aerial photo from 1927 of what used to be (and still should be) the "South Tacoma Swamps"...just because the railroad shops filled-in and contaminated this land, doesn't mean it should continue being degraded... it should be restored to the natural standing water which it used to and is still trying to be.

**Water Resources Streamflow Restoration Program Agreement Between the State of Washington
Department of Ecology and Tacoma Environmental Services Department**

<https://cms.cityoftacoma.org/cityclerk/Files/CityCouncil/Agreements/IntAgr-%20Washington%20Dept.%20of%20Ecology-2021-TacoES-00004.pdf>

(Permit application proposal is in direct conflict with this grant...)

Feasibility study activities shall include groundwater monitoring, stormwater/surface water monitoring and modeling, and soil investigations to design and maintain sustainable regional green infrastructure facilities at Sites 1 and 2 to retune seasonal high-flows through storage and aquifer recharge.

South Tacoma Channel Stormwater Infiltration

Overall Goal: The overall Project goal is to restore streamflow, enhance ecological function, and provide community benefits in the Flett Creek Watershed by determining the feasibility of a group of cost-effective and sustainable stormwater infiltration and habitat restoration projects

The RECIPIENT shall investigate a multi-site project to enhance streamflow in the Flett Creek Watershed. Major components include rerouting stormwater flows, enhancing infiltration of stormwater in the South Tacoma Channel, and restoring ecological function of the Flett Wetland and stream channel. The feasibility study shall identify and explore technical, permitting, and administrative elements to guide preliminary project design and identify maintenance needs.

Project Long Description:

The RECIPIENT shall conduct a feasibility study to evaluate three streamflow benefit projects in the historical Flett Creek floodplain. These projects shall incorporate multiple project types: water storage (improved stormwater infiltration and management); watershed function, riparian and fish habitat improvements; and environmental monitoring elements. The feasibility study is the first phase of the Project and shall evaluate the potential for aquifer recharge, stormwater management, streamflow restoration at the three sites, document water availability, identify permitting requirements and other potential constraints, and develop preliminary design and costs for full implementation.

... what would be the point of this grant/study, if the warehouse is built?

TPU - Water Source

<https://www.mytpu.org/about-tpu/services/water/water-source/>

The source of our water supply varies throughout the year, depending on the season, weather, snowpack level, inflows and water storage conditions.

Below is the typical amount of water available by the source:

- Green River supply – 73 million gallons per day
- Second Green River supply– 27 million gallons per day on average (interruptible share of regional water supply system; includes storage)
- Local wells – 40 million gallons per day
- North Fork wells (alternative Green River supply – not additive to other sources) – 60 million gallons per day

https://www.cityoftacoma.org/UserFiles/Servers/Server_6/File/cms/SWMM_WebBook/Responsive%20HT ML5/BookBook/Preface/Preface.htm

The Flett Creek Watershed is approximately 7,100 acres and is located predominately in the South Tacoma and South End Neighborhood Council Districts. Stormwater within this watershed flows through a series of ponds known as the Hosmer System prior to discharging into the Flett Creek Holding Ponds. The Hosmer System consists of the Hosmer Holding Basin, Ward's Lake, and the Gravel Pit. A pump station at the last of the four Flett Creek Holding Basins pumps stormwater to the Old Flett Dairy Wetland that drains into Flett Creek. Flett Creek flows into Chambers Creek, which discharges to the Narrows Passage.

CITY OF TACOMA WATERSHEDS
(2020)



Flett Creek Watershed

https://cms.cityoftacoma.org/enviro/Payment%20In-Lieu%20of%20Program/June2016RegionalFacilitiesPlanAttachmentA_Flett.pdf

The Flett Creek Watershed is approximately 7,126 acres and is the second largest watershed in the City (see Figure 1-1). The Flett Creek Watershed is located in the Chambers-Clover Water Resource Inventory Area (WRIA#12). Stormwater runoff from the entire watershed ultimately flows into the Flett Creek Holding Basins and discharges from a single point to the Flett Dairy Wetlands and Flett Creek. The area is predominately residential with commercial and light industrial uses in localized areas. The watershed is 43 percent impervious as shown in Figure 1-2. Flett Creek Watershed is bordered by the Thea Foss Watershed on the east, Leach Creek Watershed on the west and Pierce County to the south. The watershed includes the Hosmer System, the Flett Creek Holding Ponds, Snake Lake, Wapato Lake, portions of Interstate 5, the **South Tacoma Groundwater Protection District and the former South Tacoma Channel** Superfund Site.

1.3 **South Tacoma Groundwater Protection District** In 1985, the City of Tacoma adopted the South Tacoma Plan which formally designates the South Tacoma Groundwater Protection District (STGPD) as an “environmentally sensitive” area (see Figure 1-4). The plan specifically listed several action steps designed to protect the South Tacoma Aquifer which is used as a drinking water supply for the City of Tacoma. One of the steps mandated that a local groundwater protection program be developed for the STGPD. The ordinance is set out in Tacoma Municipal Code Chapters 13.09.010 through 13.09.200. The purpose of the STGPD is to stop potential pollution problems before they create environmental contamination. This program is administered by the Tacoma-Pierce County Health Department (TPCHD) in coordination with Environmental Services, Tacoma Water and the Tacoma Fire Department. TPCHD is responsible for reviewing, authorizing, and issuing permits for business and industrial operations that are regulated under the program. TPCHD staff also performs site inspections. The City of Tacoma Environmental Services is responsible for the review and approval of all stormwater and wastewater plans.

The City of Tacoma Public Works Department and Tacoma-Pierce County Health Department developed a guidance document that provides the circumstances and requirements for approval of infiltration facilities for managing pollution-generating stormwater runoff in the STGPD. The document, “Implementation of Stormwater Infiltration for Pollution-Generating Surfaces in the South Tacoma Groundwater Protection District” is available online at www.cityoftacoma.org/stormwatermanual.

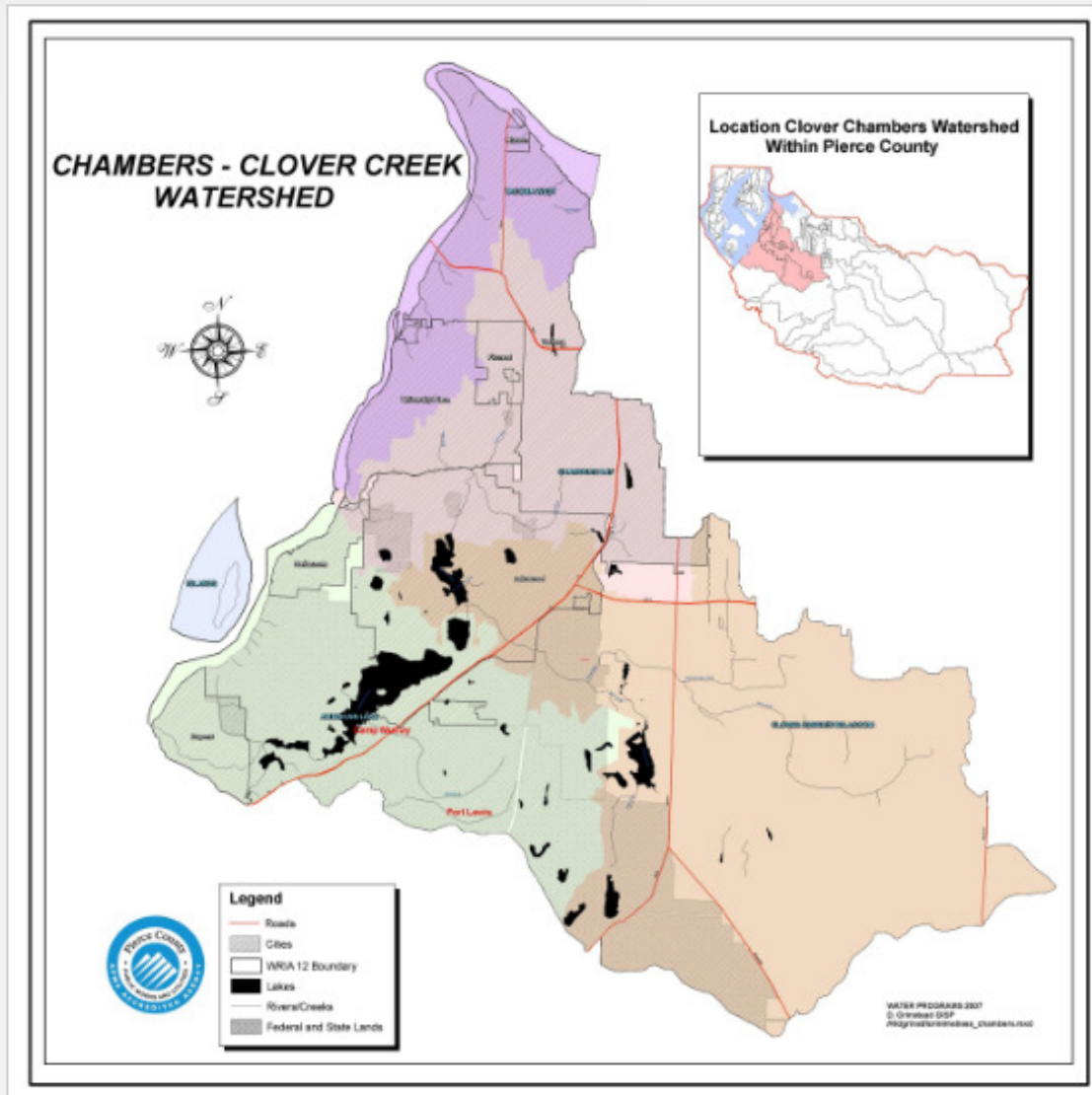
https://www.cityoftacoma.org/UserFiles/Servers/Server_6/File/cms/Surfacewater/SWMM_2021%20Final/2021TacomaSWMM.20210819%20-%20FINAL.pdf

The watershed extends from the town of Ruston on Commencement Bay south to DuPont, and east to Frederickson, covering about 149 square miles. Major lakes include American, Spanaway, Steilacoom, Gravelly, and Tule. Major streams are Chambers, Clover, Spanaway, Morey, Murray, Flett, Leach, Puget and Peach.

Seven municipalities, three military installations, and one drainage district, as well as Pierce County, have jurisdiction concerning water quality. The cities are: Tacoma, Lakewood, Fircrest, University Place, Steilacoom, DuPont, and Ruston. In 2018, the watershed's population was approximately 409,843 or 2,751 people per square mile.

<https://www.piercecountywa.gov/1860/Chambers---Clover-Watershed-Council>

About the Watershed



The watershed extends from the town of Ruston on Commencement Bay south to DuPont, and east to Frederickson, covering about 149 square miles. Major lakes include American, Spanaway, Steilacoom, Gravelly, and Tule. Major streams are Chambers, Clover, Spanaway, Morey, Murray, Flett, Leach, Puget and Peach.

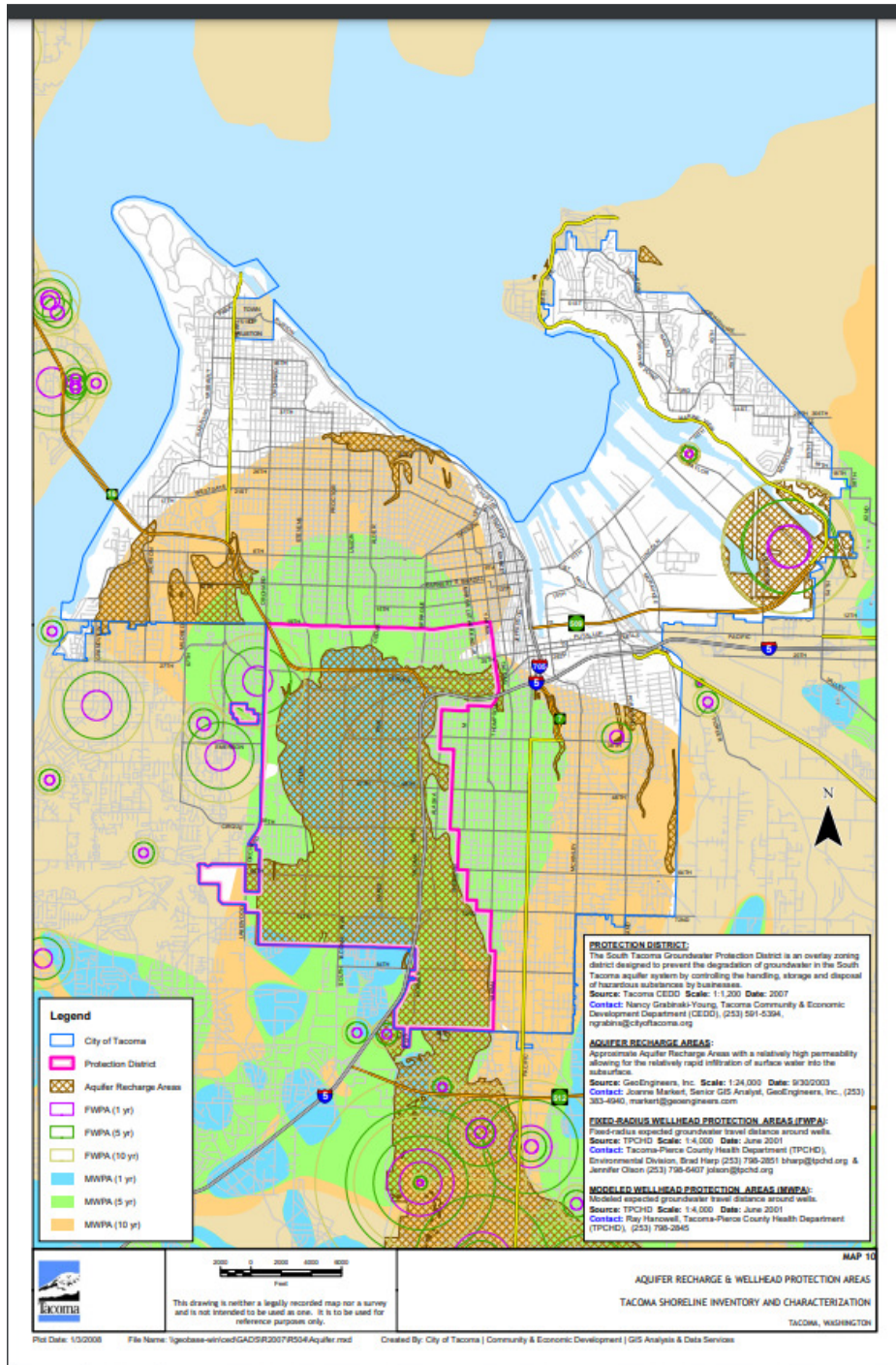
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General Guidance and Performance Standards for the South Tacoma Groundwater Protection District

<https://www.tpchd.org/home/showpublisheddocument/878/637771488539970000>

Recharge map

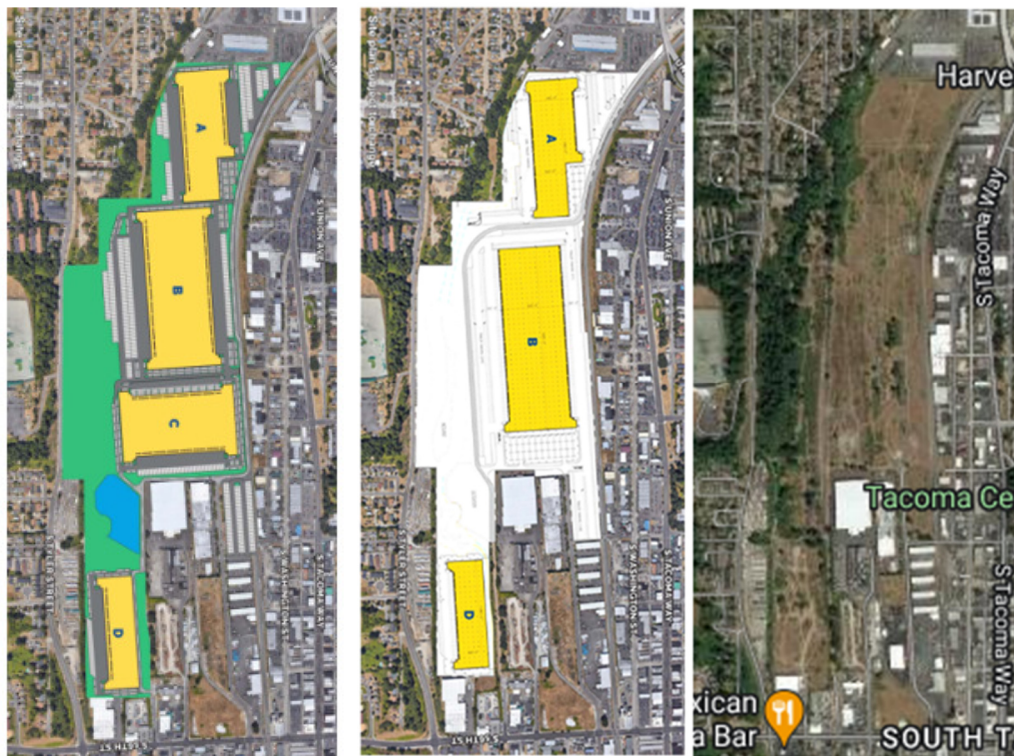
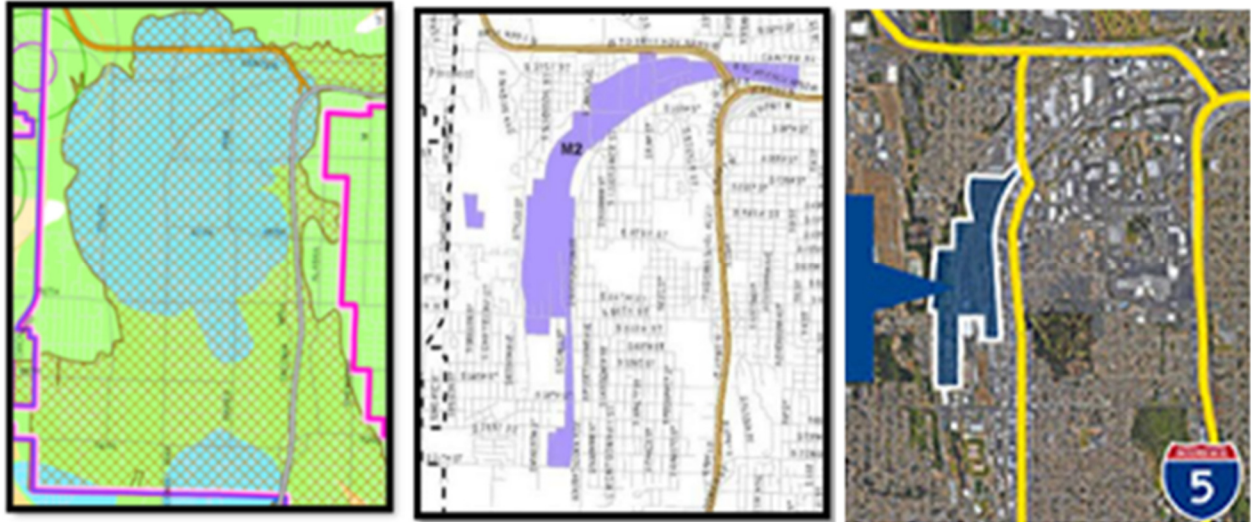
https://cms.cityoftacoma.org/Planning/Shoreline/Maps/10_Aquifer.pdf



South Tacoma Groundwater Protection District

The South Tacoma Groundwater Protection District (STGPD) was created to help protect the **South Tacoma Aquifer which is used as a drinking water supply for the City of Tacoma.** The STGPD is protected by a program administrated by the Tacoma Pierce County Health Department (TPCHD) and the City of Tacoma. See <https://www.tpchd.org/healthy-places/waste-management/business-pollution-prevention/south-tacoma-groundwater-protection-district> for additional information including specific permitting information.

Side-by-side to show how much M2 (Heavy Industrial Zoning) is directly above the aquifer and the size of the proposed warehouses' impervious footprint:



From Tacoma-Pierce County Health Department

<https://www.tpchd.org/healthy-places/waste-management/business-pollution-prevention/south-tacoma-groundwater-protection-district>

South Tacoma Groundwater Protection District (STGPD) sits above the South Tacoma aquifer. Groundwater typically supplies about 5% of Tacoma's water in the summer and supplements the supply from the Green River at other times of the year. Groundwater from this aquifer could supply up to 40% of Tacoma's drinking water.

Projects that infiltrate pollution generating stormwater in the South Tacoma Groundwater Protection District must provide treatment as specified in the South Tacoma Groundwater Protection District Infiltration Policy Document available at <https://www.tpchd.org/healthy-places/waste-management/business-pollution-prevention/south-tacoma-groundwater-protection-district>.

TPCHD

https://www.tpchd.org/?splash=https%3a%2f%2fwww.cityoftacoma.org%2fgovernment%2fcity_department%2fCityAttorney%2fCityClerk%2fTMC&isexternal=true

Tacoma Municipal Code, Title 13 - (protection district overlay should be the primacy land-use consideration, as well as other state and federal codes regarding critical aquifer areas)

<https://cms.cityoftacoma.org/cityclerk/files/municipalcode/Title13-LandUseRegulatoryCode.pdf>

D. South Tacoma Groundwater Protection District (STGPD)

2. Background, purpose, and intent. The South Tacoma groundwater aquifer system serves as a significant source of drinking water for the City of Tacoma. It may supply as much as 40 percent of the City's total water demand during periods of peak summer usage. For future growth, supplemental supply, and emergency response, this resource will continue to be extremely important to the City of Tacoma.
4. General provisions

b. District Designated (Environmentally Sensitive Area). Pursuant to Ecology's Chapter 197-11-908 WAC and TMC Section 13.12.908 of this title as may be amended from time to time, the area described above is hereby designated as an environmentally (geohydrologically) sensitive area.

Tacoma Public Utilities (TPU)

Integrated resource plan by city of Tacoma 2018 by Tacoma Waters Tacoma Public Utilities <https://www.mytpu.org/wp-content/uploads/tacomawaterirp0219.pdf>

Table 4.1 WYSDM outputs for planning scenarios shows groundwater use in 2037 and 2050, with predictions of Percent of Groundwater Utilized: 50-60% by 2037, 60-70% by 2050

USGS Chamber-Clover groundwater study that includes descriptions of the hydrogeologic units (extents, thicknesses, and cross sections). Feel free to reach out again if you need further explanation or guidance.

Hydrogeologic Framework, Groundwater Movement, and Water Budget in the Chambers-Clover Creek Watershed and Vicinity

<https://pubs.er.usgs.gov/publication/sir20105055>

EPA ~ Protecting Groundwater

<https://www.epa.gov/sites/default/files/2015-08/documents/mgwc-gwd1.pdf#:~:text=Aquifer%20protection%20areas%20are%20used%20to%20protectpotential%20community,provide%20moreprotection%20than%20a%20community%20feels%20it%20needs.>

U.N. Climate Report: It's Now or Never to Limit Global Warming

<https://news.un.org/en/story/2022/04/1115452>

Unless action is taken soon, some major cities will be under water, Mr. Guterres said in a video message, which also forecast “unprecedented heatwaves, terrifying storms, widespread water shortages and the extinction of a million species of plants and animals”...

USGS Groundwater Data for Washington

<https://waterdata.usgs.gov/wa/nwis/gw>

Ground-water Data in Washington

As of June 2004, the ground-water database for Washington contained descriptive site information for about 86,000 ground-water sites in Washington. The database contains [water-level measurements](#) for about 72,400 ground-water sites and water-level measurements for one real-time site in Washington. The [water-quality database](#) for Washington contains data and information on chemical, physical, and biological properties of ground water from about 9,336 ground-water sites in Washington.

Traffic estimates: (from Shirley Schultz, CoT Principal Planner's 4/7/22 email)

... "where we think truck and non-truck trips will go..." and give the exact number of new trips at the AM and (PM) peak hours on an average weekday when the site is fully occupied. Feel free to shorten the following explanation or take parts out as you see fit to answer the question on secondary access points. All trucks will be encouraged to use the new North Access Road... Trucks will be discouraged from using other access points by the inclusion of on-site mitigation measures that could include, but are not limited to speed humps, weight limits, and internal signage."

"Thinking" and "encouraging/discouraging" is not adequate to address the tremendous negative impacts on traffic congestion, air pollution and street safety... plus, all of the mitigation items mentioned above will also adversely affect current occupants of the area.

Western Washington Stormwater Manual

<https://apps.ecology.wa.gov/publications/documents/1910021.pdf>

Municipal Stormwater general permit

<https://fortress.wa.gov/ecy/publications/documents/0810061.pdf>

Hydrogeologic Framework of the Puget Sound Aquifer System

<https://pubs.usgs.gov/pp/1424d/report.pdf>

Page D30

Ground-water recharge is perhaps the most important control on ground-water availability. An understanding of the range in recharge and the controls on recharge is important for describing the groundwater flow.

(...plus info on water budget and mean annual recharge...)

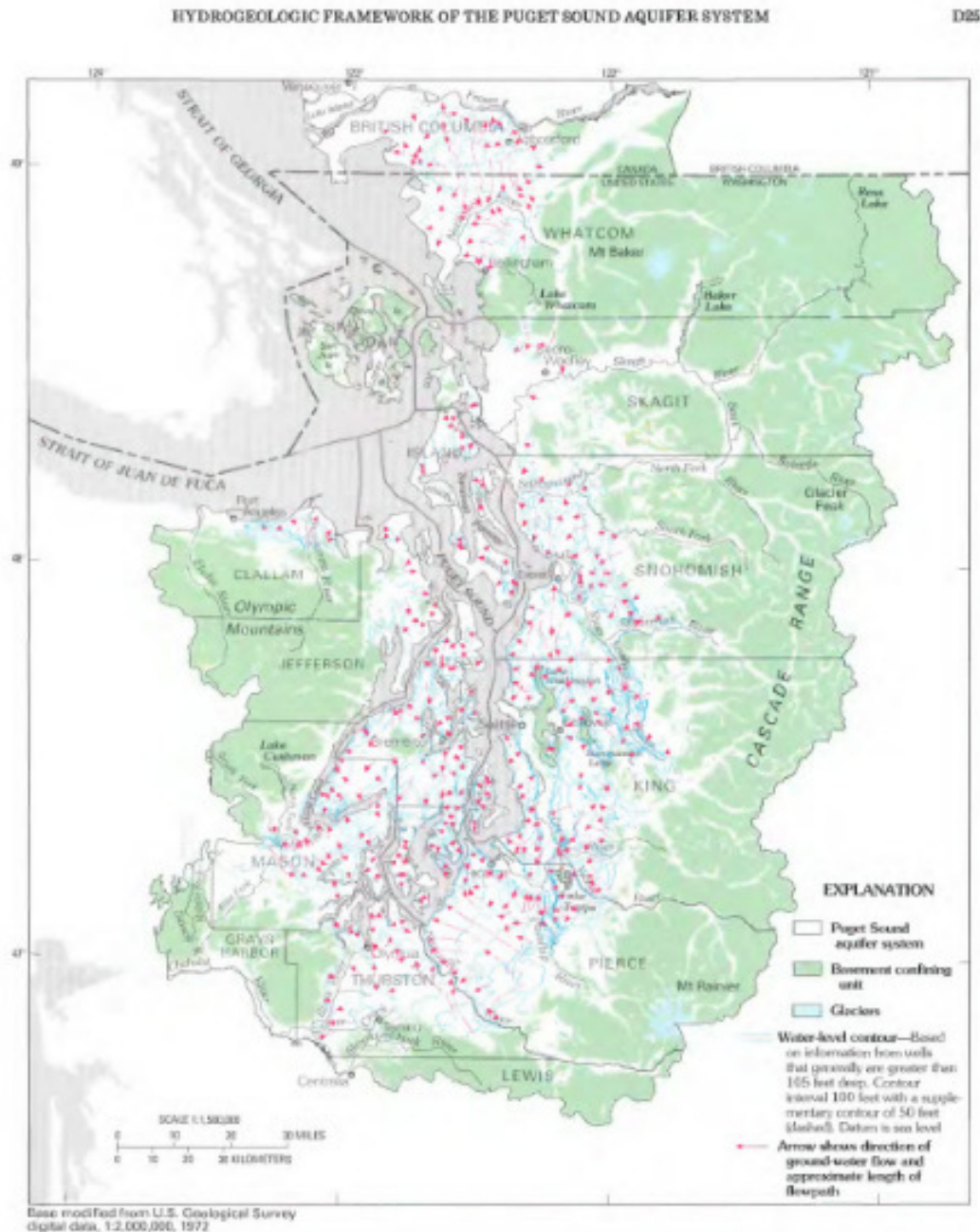
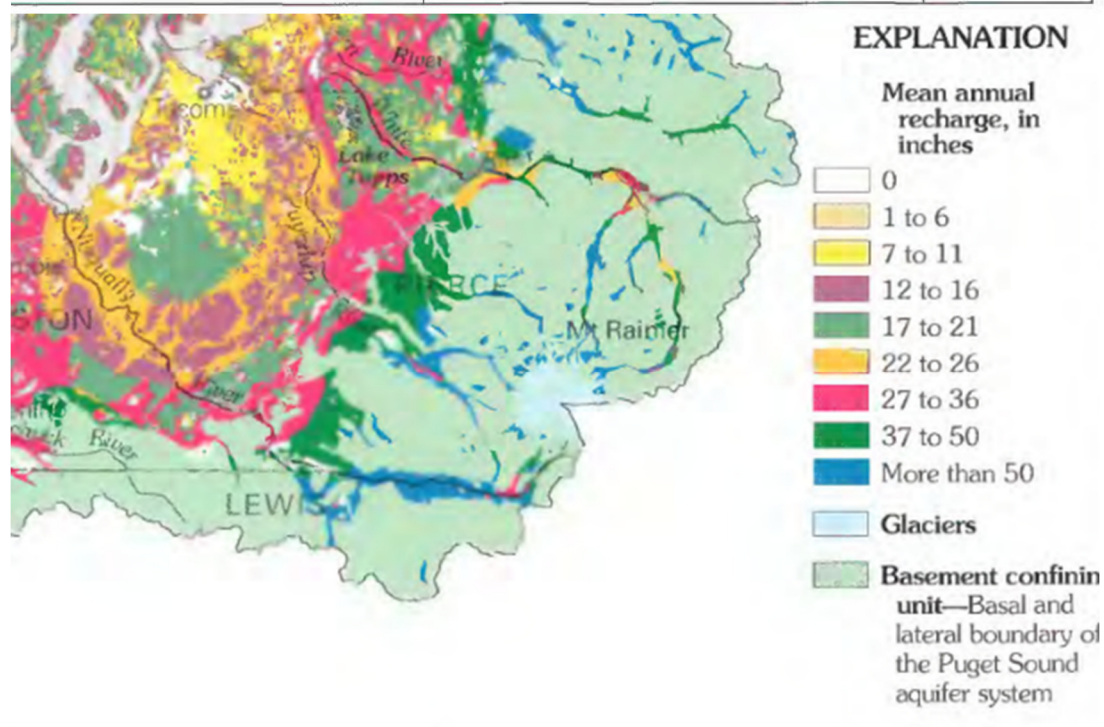
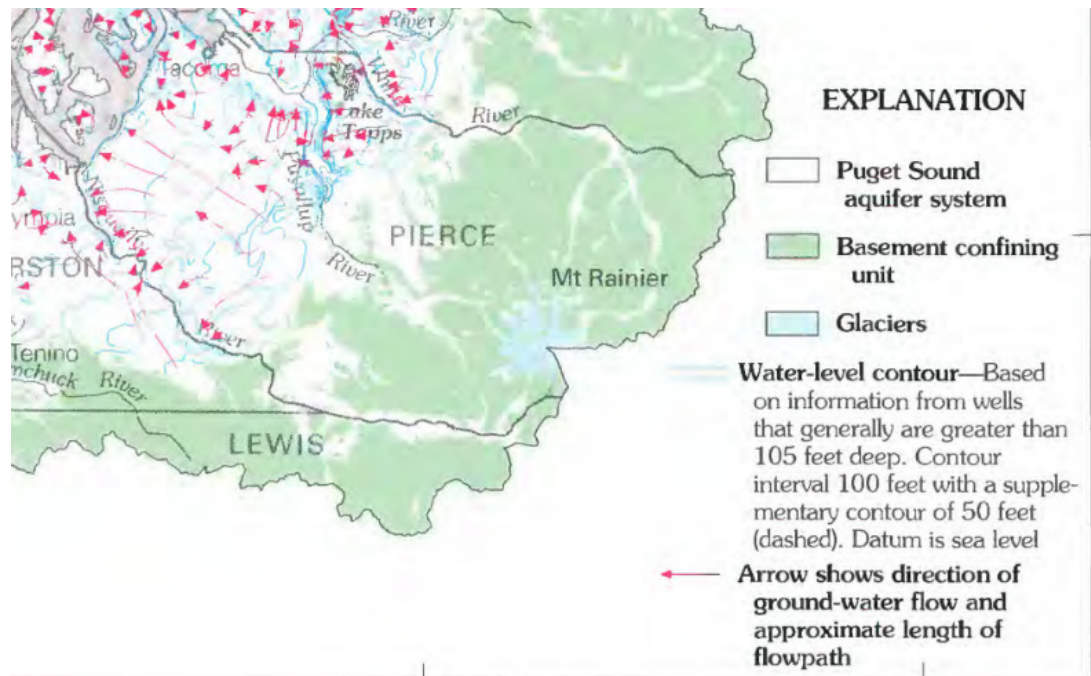


FIGURE 16.—Generalized pattern of ground-water movement for the Puget Sound aquifer system. Lateral hydraulic gradients are indicated by spacing of generalized water-level contours.



Critical Areas Handbook (updated Appendix 1.a

<https://www.commerce.wa.gov/serving-communities/growth-management/guidebooks-and-resources/>

Washington Department of Commerce Growth Management Critical Areas

<https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/>

Critical Aquifer Recharge Areas Guidance

<https://apps.ecology.wa.gov/publications/documents/0510028.pdf>

Public drinking water supply also depends on groundwater availability. Without replenishment, the amount of water in aquifers can be diminished or even depleted.

Groundwater is inextricably linked with all of the critical areas including wetlands, fish and wildlife habitat, critical aquifer recharge areas, frequently flooded areas, and geologically hazardous areas. Groundwater is a source of water to streams, lakes, estuaries, wetlands, and springs; and therefore serves a critical function for wildlife and fish habitat. Some plants that provide habitat, like willows, depend on shallow ground water. Groundwater is often a key factor in flooding and geologic hazards. The GMA also requires that local jurisdictions give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries. Since groundwater is an important component of stream flow, it is necessary to maintain the groundwater supply to streams where needed to protect salmon and other anadromous species. Watershed planning under the Streamflow Protection law supports this goal. See section 3

Stormwater that infiltrates into the ground is important for recharging groundwater.

Manage groundwater withdrawals and recharge. The goals of managing groundwater withdrawals and recharge are to:

- Maintain availability for drinking water sources.
- Maintain adequate recharge so stream-base flow from groundwater to support instream flows is retained, especially for salmon-bearing streams.
- Initiatives under watershed planning, streamflow restoration, aquifer storage and recovery, and stormwater support the GMA goals for water availability.

Recharge Development has a profound effect on the hydrology of an area. Increases in impervious surfaces and disturbance of natural vegetation result in increasing runoff and decreasing recharge. Local jurisdictions can improve recharge by encouraging methods that maintain or increase recharge. Methods include limiting impervious surfaces and promoting stormwater infiltration. Methods of stormwater infiltration, such as low impact development, storm water infiltration ponds, rain gardens, and underground injection wells are described in the stormwater manuals and in guidance on Low Impact Development (LID). Many organizations have information about Low Impact Development (LID) resources, including the Department of Ecology Low Impact Development Guidance <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Low-Impact-Development-guidance> and the Puget Sound Partnership. The Washington Stormwater Center⁸³ is a good central place to access LID resources from many different sources. <https://www.wastormwatercenter.org/lid-manuals-guides/>

Best available science for Critical Aquifer Recharge Areas is required by the Growth Management Act and is defined by the Washington Administrative Code.

"In the absence of scientific information, the county should adopt a precautionary or no risk approach."

Failure to apply best available science for critical areas under the Growth Management Act may be appealed to the Growth Management Hearings Board. When the board finds a county or city in noncompliance with the Growth Management Act, the board issues a Compliance Order. Failure to comply with a board order can result in state sanctions and loss of funding. See Appendix D for where to find more information about the Growth Management Hearings Board decisions and court cases related to the GMA and best available science.

The Growth Management Act requires protection of water quality and quantity:

Planning goals include water quality and availability.

- RCW 36.70A.020 – Planning goals

Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water. <https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.020>

Publication 05-10-028 Revised March 2021 Page 51

o Comprehensive plans should address groundwater quality and quantity protection in

the land use element.

- RCW 36.70A.070 Comprehensive plans – Mandatory Elements

The land use element shall provide for protection of the quality and quantity of groundwater used for public water supplies.

Best available science for Critical Aquifer Recharge Areas, therefore, should address both quality and quantity. <https://app.leg.wa.gov/RCW/default.aspx?cite=36.70A.070>

- Quality assurance standards for water quality sampling
- Standard methods for measuring water levels
- Aquifer test methods and standards
- Field methods

Information developed for other requirements, such as stormwater studies, the Streamflow Restoration Program (see Section 3), watershed planning, or Ground Water Management Areas, is useful also for best available science for Critical Aquifer Recharge Areas. Use of these sources should be documented for the record.

Information developed for other requirements, such as stormwater studies, the Streamflow Restoration Program (see Section 3), watershed planning, or Ground Water Management Areas, is useful also for best available science for Critical Aquifer Recharge Areas. Use of these sources should be documented for the record. <https://apps.leg.wa.gov/wac/default.aspx?cite=365-196&full=true#365-196-830>

In addition to regulating public water supplies, the department administers the Source Water Protection Program¹⁶⁵ (see this website for extensive information). This program includes wellhead protection requirements and contaminant inventory requirements for public water supply purveyors. <https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/SourceWater/SourceWaterProtection>

Section 9 - - Critical Aquifer Recharge Area Reports

Many jurisdictions require that those applying for new development permits submit reports that demonstrate that the functions and values of Critical Aquifer Recharge Areas will be protected. Reports apply to both identifying Critical Aquifer Recharge Areas and to pollution prevention. The report should support the documentation of best available science.

... and demonstrate that their project prevents pollution and allows recharge as applicable. The permit application can include a checklist to make sure the correct best management practices are identified and included in the permit conditions. The proponent should also identify existing drinking water wells near their site.

Protecting the functions and values of Critical Aquifer Recharge Areas depends on knowing.

- On an area-wide basis:
 - o The location and extent of drinking water aquifers
 - o The location of wells used for drinking water, including Group A wells, Group B wells and residential wells
 - o Hydrogeologic conditions:
 - General depth to water of the water table aquifer or aquifer nearest the land surface
 - General flow direction
 - General overburden properties (glacial outwash? Clay layers? Drainage?)
 - o Where streams are that have anadromous fisheries
 - o Where there are (or have been) cleanup sites
 - o Where there has been known groundwater contamination

This information is applicable to sites to the extent that the area-wide information is adequate for specific sites.

- On a site-specific basis:
 - o Information listed above if it is not available from the local jurisdiction
 - o What critical materials are on site or are planned to be on site
 - o How critical materials are kept from spilling or leaking
 - o What preparations are to contain critical materials in case of a fire
 - o Plans (such as a spill plan, emergency plan with contacts)

Emergency plans should include contacting public water supply purveyors, and neighbors, as well as the fire dept.

- Recharge
 - o How recharge will be maintained or enhanced
 - o If recharge is not conducive given site conditions, how stormwater will otherwise be discharged in accordance with legal requirements and best practices
 - o How recharge of stormwater will be kept clean or treated. If treated, what the mechanisms are to inspect and maintain treatment effectiveness

"In the absence of scientific information, the county should adopt a precautionary or no risk approach."

Critical Aquifer Recharge Areas

<https://your.kingcounty.gov/dnrp/library/2004/kcr1562/BAS-Chap6-04.pdf>

CARA Webinar 7 - critical aquifer recharge areas

<https://vimeo.com/527793826/6036a5eee5>

Webinar 7 - CARAs
from Department of Commerce

Groundwater Degradation

- Hard to tell whether aquifer is being adequately protected when the most obvious measure of inadequacy is going to be fouled water
- Ecology groundwater quality standards – incl. antidegradation policy
- “No net loss” implies that some degree of gross loss is acceptable. Proceed with caution when it comes to drinking water! By its nature, it’s difficult or impossible to remediate, create, or replace an aquifer to offset fouled water.
- Compensatory mitigation does not apply to CARAs. The compensatory mitigation provisions of WAC 365-196-830(4) are carried through to only two specific critical areas types – geohazard areas (in WAC 365-190-120) & wetlands (in WAC 365-190-090) – but do *not* extend to CARAs (excluded from WAC 365-190-100). Applying mitigation to CARAs implies that some degree of degradation to an aquifer is acceptable, while in reality, allowing even a limited degree of harm to an aquifer could result in lost potability.

degree of loss might be okay.

82

Coordinated Water System Plan and Regional Supplement 2021 Update

https://www.piercecountywa.gov/DocumentCenter/View/107222/WEBSITE_Coordinated-Water-System-Plan?bidId=

Nowhere in this document are the words "aquifer" and "recharge"...

City of Tacoma Stormwater Management Program (SWMP) Plan ~ March 2022

https://www.cityoftacoma.org/UserFiles/Servers/Server_6/File/cms/Surfacewater/SWMPUpdates/SWMP%20Update_2022.pdf

page 15

City development review staff also coordinate with the Tacoma-Pierce County Health Department (TPCHD) regarding development in the South Tacoma Groundwater Protection District (STGPD) as codified in Chapter 13.01.090 of the TMC. All requests for infiltration of runoff from pollution-generating impervious surfaces are discussed and coordinated with TPCHD. The South Tacoma Groundwater Protection District Infiltration Policy outlines specific requirements for infiltration of pollution generating surfaces within the STGPD and procedures for staff coordination.

page 16

Actions required for permit compliance are listed in the 2022 Work Plan (Appendix C).

South Tacoma Groundwater Protection District Infiltration Policy

<https://cms.cityoftacoma.org/enviro/SurfaceWater/signed%202017%20policy%20ESD17-1.pdf>

Other cities buy the land above their aquifers and create permanent green spaces, which is what Tacoma needs to do:

Whitemarsh Township Stormwater Management

<https://www.whitemarshntp.org/275/Stormwater-Management>

Other cities aren't afraid to deny permits, instead of looking for exceptions to approve everything:

"In an already vulnerable community, the findings from the [city's health impact assessment] combined with the inherent risks of recycling operations and concerns about the company's past and potential noncompliance are too significant to ignore," said the Chicago department of public health commissioner, Allison Arwady, in a press release.

<https://earthfirstjournal.news/2022/02/21/we-get-to-breathe-chicagoans-celebrate-as-city-blocks-metal-shredder/?fbclid=IwAR13G2f4Y6TbSDkUI2caezIUfN6EPmCqZ6J8ss3ya78AJcOaoN57lu1z5I>

"The majority of the groundwater we use comes from wells in the South Tacoma wellfield, which are critical to our future drinking water supply. Groundwater typically supplies about 5% of Tacoma's water in the summer and supplements the supply from the Green River at other times of the year." Source: <https://www.mytpu.org/about-tpu/services/water/water-source/ground-water-wells/>

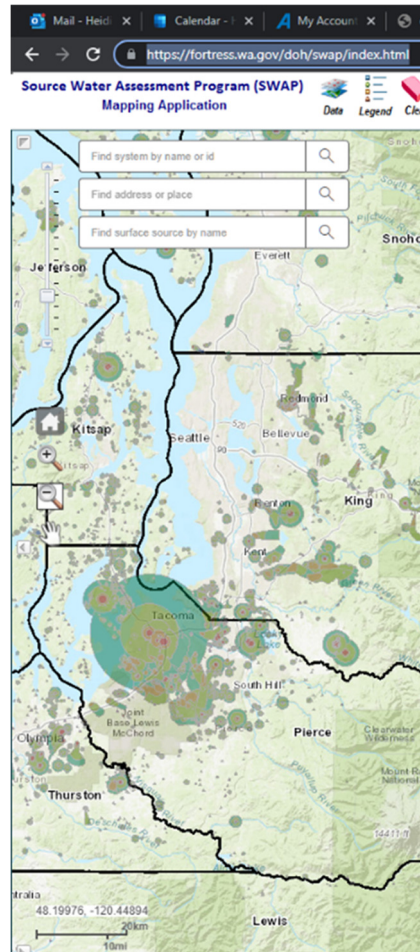
**Washington State Department of Health, Office of Drinking Water
The Source Water Assessment Program (SWAP) GIS**

<https://fortress.wa.gov/doh/swap/index.html>

mapping tool was developed to provide a graphical representation of drinking water source protection areas. Making this information available helps utilities protect their sources from unintended contamination. This site provides information about drinking water sources and known contaminants, helping users determine if their activity could impact a drinking water source.

You can select specific "time of travel" overlays as well as specific potential sources of contamination monitored (or should be) by the GWPD and the various responsible agencies.

The map below shows "times of travel" around specific wells.



This is reflected in the TPU WellHead Protection Plan - attached. <https://onedrive.live.com/?authkey=%21AMROUgh6rQsZ8dQ&cid=F58AF98DE15E423B&id=F58AF98DE15E423B%212584&parId=F58AF98DE15E423B%21920&o=OneUp>

Crucial Western Reservoir dropping to alarming levels

<https://www.msn.com/en-us/weather/topstories/crucial-western-reservoir-dropping-to-alarming-levels/vi-AAUNSVo?ocid=msedgdhp>

Climate Experts Predict Tough Times Ahead as drought conditions continue (74% of the Pacific NW is seeing drought conditions)
<https://www.opb.org/article/2022/03/03/climate-experts-predict-tough-summer-northwest-drought/>

West megadrought worsens to driest in at least 1,200 years
<https://www.opb.org/article/2022/02/14/west-megadrought-hits-worst-case-scenario-driest-since-800/>

Race to the Bottom: How big business took over Oregon's first protected aquifer
https://www.opb.org/article/2022/03/16/race-to-the-bottom-how-big-business-took-over-oregons-first-protected-aquifer/?fbclid=IwAR2FgqCNDBgfnq9EMmJy5gdiN1TUd3vtJOJTw1k04TjS0RYVDX_wsZGAitU

More than half of Washington state is in drought 3/6/2022
<https://www.msn.com/en-us/weather/topstories/more-than-half-of-washington-state-is-in-a-drought/ar-AAUCrLH?ocid=msedgdhp&pc=W000>

Washington Department of Commerce Growth Management ...
<https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/>
RCW 36.70A.030 (5) defines five types of critical areas: • Wetlands. • Areas with a critical recharging effect on aquifers used for potable water. • Frequently flooded areas. • Geologically hazardous areas. • Fish and wildlife habitat conservation areas.

From WA Dept. of Ecology:

State SEPA rules defines "significant" as "a reasonable likelihood of more than a moderate adverse impact on environmental quality." The term "reasonable likelihood" means it is not remote or speculative. The phrase "more than moderate" is based on intensity and severity; intensity depends on the magnitude and duration of an impact while severity is weighed along with the likelihood of its occurrence. An impact may be significant if its chance of occurrence is not great, but the resulting environmental impact would be severe.

An EIS is required for any proposal likely to have a significant adverse environmental impact in which actions to offset or mitigate the impacts would reduce them to a nonsignificant level. The applicant and lead agency may work together to revise the proposal's impacts or identify mitigation measures that would allow the lead agency to issue a determination of nonsignificance.

"Aquifers, whether for drinking or not, are protected. It is the city's responsibility to protect it."

Reply from City on 3/1/22... how can this be, considering county and state policy?

Tacoma does not have limits on impervious surface per lot or development for most areas. There are some requirements for landscaping minimums. These and other land use requirements would be reviewed and approved by Shirley Schultz of Planning and Development Services.

Noncompliant with impervious surface limits...

STGPD is overriding land-use policy before city zoning.

Summary of Phases in Development Process			
	Comprehensive Plan Map Designation	Zoning	Permitting
Conditions of Approval	Policy level decision only and conditions cannot be imposed	Conditions may be imposed on site specific re-zones. Area Wide Re-zoning – occurs in the case of large “area wide” rezoning actions, such as the recent Home in Tacoma project. Site Specific Re-zoning – NewCold and South Sound Christian Schools	Not directly subject to added conditions unless there is an associated discretionary permit such as a Conditional Use Permit or Variance. Permit application subject to full code compliance.
SEPA	Subject to Non-Project Action SEPA	Subject to SEPA	SEPA is required if State or City of Tacoma trigger thresholds are surpassed.
Public Notice	Public notice and public hearing	Public notice and Public Hearing	Only for associated special actions, variances, conditional use permit applications would trigger public notice and hearings
Requirements	Comprehensive Plan consistency.	Rezoning criteria apply; Must be consistent with Comprehensive Plan; Use and development standards apply to the zoning.	Must fully comply with Tacoma Municipal Code – Including; Titles 1-19; particularly Land Use/Critical Area and Shoreline Codes as well as other sections as applicable. Additional standards that must be met: <ul style="list-style-type: none"> • Federal and State requirements • Regional Air Quality requirements • Tacoma- Pierce County Health Department requirements • Stormwater Management Manual • Sanitary Sewer Manual • Public Works Design Manual, • Urban Forestry Manual Guidelines (where applicable) • Regional Air Quality Agency requirements
The process flows from the highest and broadest level of the Comprehensive Plan designation to the more specific site Zoning designation which is an implementation of the Comprehensive Plan, tied to the Land Use Code. The zoning carries with it all of the restrictions on use, development requirements and standards. At the time of actual development, permits would first need to be applied for and secured, during permit review city and interagency staff reviews the permit application, building plans, site plans, landscaping plans, stormwater detention plans for compliance with city codes. Compliance with these codes must occur. The city has in place overlapping review and analysis and before any development project can begin actual construction, a given project must meet all development standards and criteria.			

There was a partial deletion from NPL in 2005: "This partial deletion does not pertain to the groundwater portion of the South Tacoma Field or to other operable units of the South Tacoma Channel Site."

EPA documents are available here:

<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.scs&id=1000979&doc=Y&colid=37783®ion=10&type=SC>

The City discusses it here: <https://cityoftacoma.org/cms/one.aspx?page>

*"How did city come to the decision to use the below WAC which does not address or include source aquifers! They need to explain how they decided to use this WAC **and to demonstrate what is their "reasonable basis" for deciding this will not negatively affect the recharge for an aquifer that is the source of drinking water for the area's populace. They took this "optional process" out of context.** Significant impacts to this aquifer are indeed likely, and the city needs to explain how they came to the conclusion that there will be no impacts from developing on top of the people's drinking water resource aquifer recharge area."*

WAC 197-11-355

Optional DNS process.

- (1) If a GMA county/city with an integrated project review process (RCW 36.70B.060) is lead agency for a proposal and has a reasonable basis for determining significant adverse environmental impacts are unlikely, it may use a single integrated comment period to obtain comments on the notice of application and the likely threshold determination for the proposal. If this process is used, a second comment period will typically not be required when the DNS is issued (refer to subsection (4) of this section).
- (2) If the lead agency uses the optional process specified in subsection (1) of this section, the lead agency shall:
 - (a) State on the first page of the notice of application that it expects to issue a DNS for the proposal, and that:
 - (i) The optional DNS process is being used;
 - (ii) This may be the only opportunity to comment on the environmental impacts of the proposal;
 - (iii) The proposal may include mitigation measures under applicable codes, and the project review process may incorporate or require mitigation measures regardless of whether an EIS is prepared; and
 - (iv) A copy of the subsequent threshold determination for the specific proposal may be obtained upon request (in addition, the lead agency may choose to maintain a general mailing list for threshold determination distribution).
 - (b) List in the notice of application the conditions being considered to mitigate environmental impacts, if a mitigated DNS is expected;
 - (c) Comply with the requirements for a notice of application and public notice in RCW 36.70B.110; and
 - (d) Send the notice of application and environmental checklist to:
 - (i) Agencies with jurisdiction, the department of ecology, affected tribes, and each local agency or political subdivision whose public services would be changed as a result of implementation of the proposal; and
 - (ii) Anyone requesting a copy of the environmental checklist for the specific proposal (in addition, the lead agency may choose to maintain a general mailing list for checklist distribution).
- (3) If the lead agency indicates on the notice of application that a DNS is likely, an agency with jurisdiction may assume lead agency status during the comment period on the notice of application (WAC 197-11-948).
- (4) The responsible official shall consider timely comments on the notice of application and either:
 - (a) Issue a DNS or mitigated DNS with no comment period using the procedures in subsection (5) of this section;
 - (b) Issue a DNS or mitigated DNS with a comment period using the procedures in subsection (5) of this section, if the lead agency determines a comment period is necessary;
 - (c) Issue a DS; or
 - (d) Require additional information or studies prior to making a threshold determination.
- (5) If a DNS or mitigated DNS is issued under subsection (4)(a) of this section, the lead agency shall send a copy of the DNS or mitigated DNS to the department of ecology, agencies with jurisdiction, those who commented, and anyone requesting a copy. A copy of the environmental checklist need not be recirculated.

[Statutory Authority: 1995 c 347 (ESHB 1724) and RCW 43.21C.110. WSR 97-21-030 (Order 95-16), § 197-11-355, filed 10/10/97, effective 11/10/97.]

RCW [43.21C.031](#)
Significant impacts.

(1) An environmental impact statement (the detailed statement required by RCW [43.21C.030](#)(2)(c)) shall be prepared on proposals for legislation and other major actions having a probable significant, adverse environmental impact. The environmental impact statement may be combined with the recommendation or report on the proposal or issued as a separate document. The substantive decisions or recommendations shall be clearly identifiable in the combined document. Actions categorically exempt under RCW [43.21C.110](#)(1)(a) and [43.21C.450](#) do not require environmental review or the preparation of an environmental impact statement under this chapter.

(2) An environmental impact statement is required to analyze only those probable adverse environmental impacts which are significant. Beneficial environmental impacts may be discussed. The responsible official shall consult with agencies and the public to identify such impacts and limit the scope of an environmental impact statement. The subjects listed in RCW [43.21C.030](#)(2)(c) need not be treated as separate sections of an environmental impact statement. Discussions of significant short-term and long-term environmental impacts, significant irrevocable commitments of natural resources, significant alternatives including mitigation measures, and significant environmental impacts which cannot be mitigated should be consolidated or included, as applicable, in those sections of an environmental impact statement where the responsible official decides they logically belong.

[[2012 1st sp.s. c 1 § 302](#); [1995 c 347 § 203](#); [1983 c 117 § 1](#).]

WAC 246-290-100 Water system plan.

(4) The purveyor shall, at a minimum, address the following elements in the water system plan: (a) Description of the water system, including:

(iii) Related plans, such as coordinated water system plans, abbreviated coordinated water system plans, local land use plans, **groundwater management plans**, and basin plans;

RCW [36.36.010](#)

Purpose.

The protection of subterranean water from pollution or degradation is of great concern. The depletion of subterranean water is of great concern. The purpose of this chapter is to allow the creation of aquifer protection areas to finance the protection, preservation, and rehabilitation of subterranean water, and to reduce special assessments imposed upon households to finance facilities for such purposes. Pollution and degradation of subterranean drinking water supplies, and the depletion of subterranean drinking water supplies, pose immediate threats to the safety and welfare of the citizens of this state.

WAC [365-196-830](#)

Protection of critical areas.

(1) The act requires the designation of critical areas and the adoption of regulations for the protection of such areas by all counties and cities, including those that do not plan under RCW 36.70A.040. The department has adopted minimum guidelines in chapter 365-190 WAC detailing the process involved in establishing a program to protect critical areas.

(2) Critical areas that must be protected include the following areas and ecosystems:

(a) Wetlands;

(b) Areas of critical recharging effect on aquifers used for potable water;

(c) Fish and wildlife habitat conservation areas;

(d) Frequently flooded areas; and

(e) Geologically hazardous areas.

(3) "Protection" in this context means preservation of the functions and values of the natural environment, or to safeguard the public from hazards to health and safety.

(4) Although counties and cities may protect critical areas in different ways or may allow some localized impacts to critical areas, or even the potential loss of some critical areas, development regulations must preserve the existing functions and values of critical areas. If development regulations allow harm to critical areas, they must require compensatory mitigation of the harm. Development regulations may not allow a net loss of the functions and values of the ecosystem that includes the impacted or lost critical areas.

(5) Counties and cities must include the best available science in developing policies and development regulations to protect functions and values of critical areas. See chapter 365-195 WAC.

(6) Functions and values must be evaluated at a scale appropriate to the function being evaluated. Functions are the conditions and processes that support the ecosystem. Conditions and processes operate on varying geographic scales ranging from site-specific to watershed and even regional scales. Some critical areas, such as wetlands and fish and wildlife habitat conservation areas, may constitute ecosystems or parts of ecosystems that transcend the boundaries of individual parcels and jurisdictions, so that protection of their function, and values should be considered on a larger scale.

(7) Protecting some critical areas may require using both regulatory and nonregulatory measures. When impacts to critical areas are from development beyond jurisdictional control, counties and cities are encouraged to use regional approaches to protect functions and values. It is especially important to use a regional approach when giving special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries. Conservation and protection measures may address land uses on any lands within a jurisdiction, and not only lands with designated critical areas.

(8) Local government may develop and implement alternative means of protecting critical areas from some activities using best management practices or a combination of regulatory and nonregulatory programs.

(a) When developing alternative means of protection, counties and cities must assure no net loss of functions and values and must include the best available science.

"One would think that everyone would be aware of the growing water shortage here and the dramatic loss of groundwater resources and recharge, but they are all blinded by \$\$\$ and the competition to be the biggest and best, but best what, and at what cost to the people? I had a conversation with TPU last fall about the Green River, they boasted that they have a huge volume permit so can easily accommodate a lot of development, but lost the brag when I pointed out that the continuing drought has caused a dramatic loss of snowpack in the mountains which in fact has had a direct effect on the Green. At that time, they had agreed to share their water with the county so the county can continue to build on every inch of land... they will not be supplying the UGA now."

"Aquifer infiltration is simply the surface water that drains into the ground over an aquifer. It is the city's responsibility to assure no contaminated water gets into the groundwater recharge and that the recharge area therefore the aquifer will not become contaminated - whether or not it is being used for a drinking water supply at the time, the aquifers still have to be protected.. That would apply to the whole recharge area, so getting that info is important."

Dept. of Health Office of Drinking Water Policy

<https://doh.wa.gov/sites/default/files/legacy/Documents/4200//P-B07.pdf>

• Groundwater Area Management Plans Water system plans must discuss related plans such as groundwater area management plans under WAC 246-290-100(4)(a)(iii). If a local government documents an inconsistency with a requirement of an approved groundwater area management plan that directly relates to a source of potable water supply discussed in a water system plan, the department will not approve the water system plan until the inconsistency is resolved.

Title 13 Land Use Regulatory Code

<https://cms.cityoftacoma.org/cityclerk/files/municipalcode/Title13-LandUseRegulatoryCode.pdf>

4. General provisions.²

a. District Designated (Location).

For the purposes of this chapter and to carry out these regulations, the boundaries of the South Tacoma Groundwater Protection District are delineated on a map, and accompanying legal description as now or hereafter updated and supplemented, which are made part hereof by this reference. Planning and Development Services shall maintain this map. Note: Copies of the map are available from Planning and Development Services. The boundaries of the South Tacoma Groundwater Protection District will be reviewed by the Department and the City of Tacoma not less frequently than every ten years to account for best available science, development, and zoning changes. The physical boundaries of the South Tacoma Groundwater Protection District are more particularly described in the General Guidance and Performance Standards.

b. District Designated (Environmentally Sensitive Area).

Pursuant to Ecology's Chapter 197-11-908 WAC and TMC Section 13.12.908 of this title as may be amended from time to time, the area described above is hereby designated as an environmentally (geohydrologically) sensitive area.

c. Development and Adoption of Technical Standards.

The TPCHD shall hereafter maintain a document entitled "General Guidance and Performance Standards for the South Tacoma Groundwater Protection District" (hereinafter referred to as the "General Guidance and Performance Standards"). These standards shall prescribe the minimum acceptable best management practices and design solutions which are consistent with the requirements of this chapter. This document, to the extent that it assists in meeting the purposes and intent of this chapter and the Critical Areas Preservation Ordinance, is incorporated herein as though fully set forth. This document is available from the TPCHD. Periodically, the TPCHD shall review these standards to assure that improvements in technology are considered and that the standards are consistent with this chapter. d. Permits. Applications for permits shall be filed with the TPCHD. Application forms shall contain information prescribed by the TPCHD.



13.01.110 Critical Areas Preservation Definitions.1

For the purposes of Chapter 13.11 Critical Areas Preservation, the following terms and phrases used in this chapter shall be interpreted as defined below. Where ambiguity exists, words or phrases shall be

interpreted so as to give this chapter its most reasonable application in carrying out its regulatory purpose.

“Aquifer.” A geologic formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

“Aquifer critical recharging areas.” Areas that, due to the presence of certain soils, geology, and surface water act to recharge groundwater by percolation.

“Critical areas.” Critical areas include the following ecosystems: areas with a critical recharging effect on aquifers used for drinking water, fish and wildlife habitat conservation areas (FWHCAs), frequently flooded areas, geologically hazardous areas, wetlands, and streams.

“Environment” means any air, land, water, or groundwater.

CHAPTER 13.11 CRITICAL AREAS PRESERVATION

Sections:

13.11.180 Critical Area Designation and SEPA.

13.11.800 Aquifer Recharge Areas.

13.11.800 Aquifer Recharge Areas.

The 800 section contains the regulations for aquifer recharge areas, including the following: 13.11.810 Classification. 13.11.820 Standards. (Ord. 27431 § 54; passed Nov. 15, 2005)

13.11.810 Classification.

Classification of recharge areas as critical areas shall be based upon the susceptibility of the aquifer to degradation and contamination. High susceptibility is indicative of land uses which produce contaminants that may degrade groundwater and low susceptibility is indicative of land uses which will not. The following criteria should be considered in designating areas with critical recharging effects:

A. Availability of adequate information on the location and extent of the aquifer;

B. Vulnerability of the aquifer to contamination that would create a significant public health hazard. When determining vulnerability, depth of groundwater, macro and micro permeability of soils, soil types, presence of a potential source of contamination and other relevant factors should be considered; and

C. The extent to which the aquifer is an essential source of drinking water. (Ord. 27431 § 55; passed Nov. 15, 2005) 13.11.820 Standards. Standards for development in aquifer recharge areas shall be in accordance with the provisions in Chapter 13.09, South Tacoma Groundwater Protection District, of the TMC and other local, state, and federal regulations. (Ord. 27431 § 56; passed Nov. 15, 2005)

State overall guidance document for developing wellhead protection mechanisms found here:

<https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs//331-018.pdf>

[Wellhead Protection Program Guidance Document](#)

Page 1 Wellhead Protection Program Guidance Document Executive Summary Overview The Safe Drinking Water Act requires every state to develop a wellhead protection program.

doh.wa.gov

2019 Stormwater Management Manual for Western Washington (SWMMWW)

<https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/Content/Resources/DocsForDownload/2019SWMMWW.pdf>

State requirements are in addition to the federal requirements, and require a State Waste Discharge Permit for disposal of waste material into "waters of the state," which include rivers, lakes, streams, and all underground waters and aquifers. A State Waste Discharge Permit may be required for facilities that have stormwater runoff to surface waters

The development of an Industrial Stormwater Pollution Prevention Plan (SWPPP) by each facility is a key Industrial Stormwater Permit requirement. The Industrial SWPPP requirements include:

A local code or rule adopted as part of a Wellhead Protection Program established under the Federal Safe Drinking Water Act; or adopted to protect a Critical Aquifer Recharge Area established under the State Growth Management Act.

Stormwater is treated according to the requirements of this section prior to reaching the aquifer (storm-water requires pre-treatment - filtering)

The unsaturated geologic material between the bottom of the UIC well and the top of an unconfined aquifer, herein called the vadose zone, usually provides some level of treatment by removing contaminants by filtration, adsorption, and/or degradation. In some cases, the treatment provided by the vadose zone is suitable for protecting ground water quality from contamination by stormwater runoff. In other cases, additional treatment may be required to protect ground water quality. I-4.16 Determining Treatment Requirements and I-4.17 Classification of Vadose Zone Treatment Capacity describe these assessments and their application.

Runoff Treatment The BMPs chosen for the site must remove or reduce the target pollutants to levels that will comply with State ground water quality standards when the discharge reaches the ground water table...

Landscape unit An area of land that has a specified boundary used for planning purposes that defines an area of interrelated physical, chemical, and biological processes. A watershed or drainage basin is a common type of landscape unit. A ground water aquifer is another type of landscape unit.

Critical Areas Identify critical areas adjacent to or within the site. Critical areas may include flood hazard areas, mine hazard areas, slide hazard areas, sole source aquifers, wetlands, streambanks, fish-bearing streams, and other water bodies. Any critical areas within or adjacent to the site should exert a strong influence on land development decisions. Delineate critical areas and their buffers on the Construction SWPPP drawings and clearly flag critical areas in the field. Chain link fencing may be more useful than flagging to assure that equipment operators stay out of critical areas. Only unavoidable work should take place within critical areas and their buffers. Such unavoidable work will require special BMPs, permit restrictions, and mitigation plans – documented routinely in the Construction SWPPP.

1. A survey prepared by a registered land surveyor, civil engineer, or other qualified professional showing:

I Aquifer and wellhead protection areas on or adjacent to the site, if present.

I In fueling locations that are in close proximity to sensitive aquifers, designated wetlands, wetland buffers, or other waters of the State, approval by local jurisdictions is necessary to ensure compliance with additional local requirements.

Provide ground water monitoring wells (or driven well points if there is shallow depth to ground water) to locate the ground water table and establish its gradient, direction of flow, and seasonal variations, considering both confined and unconfined aquifers. For infiltration BMPs with a contributing basin that is less than an acre, establish that the depth to ground water or other hydraulic restriction layer will be at least 10 feet below the base of the BMP. Use subsurface explorations or information from nearby wells.

Infiltration Receptor Data - page 741

I Horizontal hydraulic conductivity of the saturated zone to assess the aquifer's ability to laterally transport the infiltrated water.

(BMP Best Management Practice)

SSC-2 Ground Water Protection Areas A site is not suitable for an infiltration BMP if the infiltration BMP will cause a violation of Ecology's Ground Water Quality Standards (Chapter 173-200 WAC). See SSC-3 High Vehicle Traffic Areas through SSC-6 Soil Physical and Chemical Suitability for Treatment, and SSC-8 Cold Climate and Impact of Roadway Deicers for measures to protect ground water quality. Local jurisdiction staff and local ordinances should be consulted for applicable pretreatment requirements if the project site is located in an aquifer sensitive area, sole source aquifer, wellhead protection area, or critical aquifer recharge area. 2019 Stormwater Management Manual for Western Washington Volume V - Chapter 5 - Page 742 SSC-3 High Vehicle Traffic Areas An infiltration BMP may be considered for runoff from areas that require an oil control BMP per III1.2 Choosing Your Runoff Treatment BMPs. For such applications, provide the oil control BMP upstream of the infiltration BMP to ensure that ground water quality standards will not be violated and that the infiltration BMP is not adversely affected. SSC-4 Soil Infiltration Rate/Drawdown Time

I-2.6 Industrial Stormwater Permits What are Industrial Stormwater Permits? Ecology issues Industrial Stormwater Permits to regulate stormwater discharges from industrial facilities. The permits are used to meet both federal and state requirements:

SSC-4 Soil Infiltration Rate/Drawdown Time Infiltration Rates: measured (initial) and design (long-term) For infiltration BMPs used for Runoff Treatment purposes, the measured (initial) soil infiltration rate should be 9 in/hr or less (For BMP T5.15: Permeable Pavements, this rate can be 12 in/hr or less). Design (long-term) infiltration rates up to 3.0 inches/hour can also be considered, if the infiltration receptor is not a sole-source aquifer, and in the judgment of the site professional, the treatment soil has characteristics comparable to those specified in SSC-6 Soil Physical and Chemical Suitability for Treatment to adequately control the target pollutants. Project sites with infiltration rates lower than those identified in the infeasibility criteria may be used for infiltration of stormwater, if the local jurisdiction approves the design. The design infiltration rate should also be used for maximum drawdown time and routing calculations.

Media Filter Drain

Signing Nonreflective guideposts will delineate the media filter drain. This practice allows personnel to identify where the system is installed and to make appropriate repairs should damage occur to the system. If the media filter drain is in a critical aquifer recharge area for drinking water supplies, signage prohibiting the use of pesticides must be provided.

Definitions

Aquifer A geologic stratum containing ground water that can be withdrawn and used for human purposes.

Critical Areas At a minimum, areas which include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas, including unstable slopes, and associated areas and ecosystems

Ground water Water in a saturated zone or stratum beneath the land surface or a surface waterbody.

Ground water protection area The area surrounding a drinking water source evaluated as part of SSC-2

Ground Water Protection Areas that includes the wellhead protection area and may also include aquifer sensitive areas, sole source aquifers, ground water management areas, or critical aquifer recharge areas.

Ground water recharge Inflow to a ground water reservoir. **Ground water table** The free surface of the ground water, that surface subject to atmospheric pressure under the ground, generally rising and falling with the season, the rate of withdrawal, the rate of restoration, and other conditions. It is seldom static.

Infiltration

Means the downward movement of water from the surface to the subsoil.

Infiltration facility (or system)

A drainage facility designed to use the hydrologic process of surface and stormwater runoff soaking into the ground, commonly referred to as a percolation, to dispose of surface and stormwater runoff.

Infiltration rate

The rate, usually expressed in inches/hour, at which water moves downward (percolates) through the soil profile. Short-term infiltration rates may be inferred from soil analysis or derived from field measurements. Long-term infiltration rates are affected by variability in soils and subsurface conditions at the site, the effectiveness of pretreatment or influent control, and the degree of long-term maintenance of the infiltration facility.

Recharge The addition of water to the zone of saturation (i.e., an aquifer).

Saturation point In soils, the point at which a soil or an aquifer will no longer absorb any amount of water without losing an equal amount.

Susceptibility The ease with which contaminants can move from the land surface to the aquifer, based solely on the types of surface and subsurface materials in the area. Susceptibility usually defines the rate at which a contaminant will reach an aquifer unimpeded by chemical interactions with the vadose zone media.

Vulnerability 2019 Stormwater Management Manual for Western Washington 1090 Vulnerability is a water source's potential for contamination. Two factors influence vulnerability: I Physical susceptibility to contaminant infiltration. Susceptibility depends on conditions that affect the movement of contaminants from the land surface into a water supply. This includes the depth of the well, its construction, the geology of the area, the pumping rate, the source(s) of ground water recharge, and the aquifer material. I The source's risk of exposure to contaminants. The risk of exposure is measured by determining whether contaminants were used in the water supply area. However, each type of contaminant may behave differently in the environment, making it difficult to predict ground water pollution from surface exposure accurately. For this reason, susceptibility is the key factor used in determining vulnerability. See Washington State Wellhead Protection Program Guidance Document (WSDOH, 2010).

Urbanization effects on hydrologic changes

As settlement occurs and the population grows, trees are logged and land is cleared for the addition of impervious surfaces such as rooftops, roads, parking lots, and sidewalks. Maintained landscapes that have much higher runoff characteristics typically replace the natural vegetation. The natural soil structure is also lost due to grading and compaction during construction. Roads are cut through slopes and low spots are filled. Drainage patterns are irrevocably altered. All of this results in drastic changes in the natural hydrology, including: I Increased volumetric flow rates of runoff I Increased volume of runoff I Decreased time for runoff to reach a natural receiving water I Reduced ground water recharge I Increased frequency and duration of high stream flows during and after wet weather I Reduced stream flows during the dry season I Wetlands inundation during and after wet weather I Reduced wetlands water levels during the dry season I Greater stream velocities.

...The runoff from roads and highways is contaminated with pollutants from vehicles. Oil and grease, polynuclear aromatic hydrocarbons (PAH's), lead, zinc, copper, cadmium, as well as sediments (soil particles) and road salts are typical pollutants in road runoff. Runoff from industrial areas typically contains even more types of heavy metals, sediments, and a broad range of man-made organic pollutants, including phthalates, PAH's, and other petroleum hydrocarbons. Residential areas contribute the same road-based pollutants to runoff, as well as herbicides, pesticides, nutrients (from fertilizers), bacteria and viruses (from animal waste). All of these contaminants can seriously impair beneficial uses of receiving waters. Regardless of the eventual land use conversion, the sediment load produced by a construction site can turn the receiving waters turbid and be deposited over the natural sediments of the receiving water. The pollutants added by urbanization can be dissolved in the water column or can be attached to particulates that settle in streambeds, lakes, wetlands, or marine estuaries. A number of urban bays in Puget Sound have contaminated sediments due to pollutants associated with particulates in stormwater runoff. Urbanization also tends to cause changes in water temperature. Heated stormwater from impervious surfaces and exposed stormwater ponds discharges to streams with less riparian vegetation for shade. Urbanization also reduces ground water recharge, which reduces sources of cool ground water inputs to streams. In winter, stream temperatures may lower due to loss of riparian cover. There is also concern that the replacement of warmer ground water inputs with colder surface runoff during colder periods may have biological impacts

Competing needs criteria

A local code or rule adopted as part of a Wellhead Protection Program established under the Federal Safe Drinking Water Act; or adopted to protect a Critical Aquifer Recharge Area established under the State Growth Management Act.

Supplemental Guidelines

Drainage from areas in native vegetation should not be mixed with untreated runoff from streets and driveways, if possible. It is best to infiltrate or disperse this relatively clean runoff to maximize recharge to shallow ground water, wetlands, and streams.

The objective of this Minimum Requirement is to ensure that wetlands receive the same level of protection as any other water of the state. Wetlands are extremely important natural resources that provide multiple functions and values, including ground water recharge, flood control, and stream channel erosion protection. They are easily impacted by development unless careful planning and management are conducted. Wetlands can be severely degraded by stormwater discharges from urban development due to pollutants in the runoff and also due to disruption of the natural hydrologic pattern of the wetland

Local jurisdictions may have ordinances that apply to development within ground water protection areas, such as sole source aquifers, ground water management areas, wellhead protection areas, and areas designated as Critical Aquifer Recharge Areas. To locate the wellhead areas and the associated water districts in each county, see the Washington State Department of Health (DOH) Source Water

Assessment Program maps at the following web address: <https://fortress.wa.gov/doh/swap/> Consult with the local jurisdiction for information on ground water protection areas.

Information for Wetlands Protection Planning 1. A map of the contributing watershed to the wetlands, or other appropriate landscape unit (see I-C.8 Wetland Protection Definitions), and an estimate of its area. 2. Approximate or precise wetland boundaries. Wetland boundaries may have been previously delineated by the jurisdiction or by a project proponents working in the vicinity. Boundaries should be delineated using the latest approved Federal Manuals. Refer to <https://ecology.wa.gov/Water-Shorelines/Wetlands/Tools-resources/Delineation-resources> for details. Use the best information available. 3. A definition of environmental and development goals for the landscape unit subject to planning and management. 4. Existing management and monitoring plans. 5. Existing and projected land uses in the landscape unit in the following categories, expressed as percentages of the total watershed area: I commercial, I industrial, I multi-family residential, I single-family residential, I agricultural, I various categories of undeveloped, and I areas subject to active logging or construction. 6. Hydrologic network throughout the landscape unit. 7. Soil conditions, including soil types, infiltration rates, and elevation of water table as it changes seasonally, and the presence of any restrictive layers. 8. Ground water recharge and discharge points.

Wetland functions

The ecological (physical, chemical, and biological) processes or attributes of a wetland. Functions are often defined in terms of the processes that provide value to society, but they can also be defined based on processes that are not value based. Wetland functions include food chain support, provision of ecosystem diversity and fish and wildlife habitat, flood flow alteration, ground water recharge and discharge, water quality improvement, and soil stabilization.

Design and Installation Specifications

Meet the following requirements for disturbed areas that will be developed as lawn or landscaped areas at the completed project site:

Field exploration of the site shall be made to determine if there is surface soil of sufficient quantity and quality to justify stripping. Topsoil shall be friable and loamy (loam, sandy loam, 2019 Stormwater Management Manual for Western Washington Volume II - Chapter 3 - Page 302 silt loam, sandy clay loam, and clay loam). Avoid areas of natural ground water recharge.

Infiltration refers to the use of the filtration, adsorption, and biological properties of native soils, with or without amendments, to remove pollutants as stormwater soaks into the ground. Infiltration can provide multiple benefits including pollutant removal, peak flow control, ground water recharge, and flood control. One condition that can limit the use of infiltration is the potential adverse impact on ground water quality. You must understand the difference between infiltrating in soils that are suitable for Runoff Treatment and soils only suitable for Flow Control to protect ground water. Sufficient organic content and sorption capacity to remove pollutants must be present for soils to provide Runoff Treatment. See V-5.6 Site Suitability Criteria (SSC) for details. Examples of suitable soils are silty and sandy loams. Coarser soils, such as gravelly sands, can provide flow control but are not suitable for providing runoff treatment. The use of coarser soils to provide Flow Control for runoff from pollutant generating surfaces must always be preceded by Runoff Treatment to protect ground water quality. Thus, there will be instances when soils are suitable for Runoff Treatment but not Flow Control, and vice versa. Due to the multiple hydrologic benefits of infiltration, Ecology encourages infiltration to the maximum extent practicable. S

SSC-2 Ground Water Protection Areas A site is not suitable for an infiltration BMP if the infiltration BMP will cause a violation of Ecology's Ground Water Quality Standards (Chapter 173-200 WAC). See SSC-3 High Vehicle Traffic Areas through SSC-6 Soil Physical and Chemical Suitability for Treatment, and SSC-8 Cold Climate and Impact of Roadway Deicers for measures to protect ground water quality. Local jurisdiction staff and local ordinances should be consulted for applicable pretreatment requirements if the project site is located in an aquifer sensitive area, sole source aquifer, wellhead protection area, or critical aquifer recharge area.

If the media filter drain is in a critical aquifer recharge area for drinking water supplies, signage prohibiting the use of pesticides must be provided.

The use of pesticides may be prohibited if the media filter drain is in a critical aquifer recharge area for drinking water supplies. The designer should check with the local area water purveyor or local health department.

The ecological (physical, chemical, and biological) processes or attributes of a wetland without regard for their importance to society (see also values). Wetland functions include food chain support, provision of ecosystem diversity and fish and wildlife habitat, floodflow alteration, ground water recharge and discharge, water quality improvement, and soil stabilization.

Values Wetland processes or attributes that are valuable or beneficial to society (also see Functions). Wetland values include support of commercial and sport fish and wildlife species, protection of life and property from flooding, recreation, education, and aesthetic enhancement of human communities.

Ground water protection area The area surrounding a drinking water source evaluated as part of SSC-2 Ground Water Protection Areas that includes the wellhead protection area and may also include aquifer sensitive areas, sole source aquifers, ground water management areas, or critical aquifer recharge areas. Ground water recharge Inflow to a ground water reservoir. Ground water table The free surface of the ground water, that surface subject to atmospheric pressure under the ground, generally rising and falling with the season, the rate of withdrawal, the rate of restoration, and other conditions. It is seldom static.

The South Tacoma Groundwater Protection District overlay should be the primacy land-use consideration, as well as other state and federal codes regarding critical aquifer areas, not noted here but can be found in WACs and RCWs.

Tacoma Municipal Code, Title 13 - (protection district overlay should be the primacy land-use consideration)

<https://cms.cityoftacoma.org/cityclerk/files/municipalcode/Title13-LandUseRegulatoryCode.pdf>

D. South Tacoma Groundwater Protection District (STGPD)

2. Background, purpose, and intent. The South Tacoma groundwater aquifer system serves as a significant source of drinking water for the City of Tacoma. It may supply as much as 40 percent of the City's total water demand during periods of peak summer usage. For future growth, supplemental supply, and emergency response, this resource will continue to be extremely important to the City of Tacoma.

4. General provisions

b. District Designated (Environmentally Sensitive Area). Pursuant to Ecology's Chapter 197-11-908 WAC and TMC Section 13.12.908 of this title as may be amended from time to time, the area described above is hereby designated as an environmentally (geohydrologically) sensitive area.

South Tacoma Groundwater Protection District" and its aquifer's importance to our water supply. We have a large dependence on this groundwater, and protecting it will be more and more important into the future. In addition, it's considered a "vulnerable" aquifer (has fewer natural protection layers) -- so, not only should current policy have better awareness and enforcement, but it also needs appropriate updating.

STGPD Infiltration Policy

<https://www.tpchd.org/home/showpublisheddocument/886/636427358251970000>

Besides STGPD, there's the whole Critical Areas Preservation chapter in the Tacoma Municipal Code:

Tacoma Municipal Code City Clerk's Office 13-465 (Updated 03/2022)

CHAPTER 13.11 CRITICAL AREAS PRESERVATION

13.11.180 Critical Area Designation and SEPA. A. Pursuant to WAC 197-11-908 and Section 13.12.930 of the TMC, aquifer recharge areas, fish and wildlife habitat conservation areas (FWHCAs), flood hazard areas, geologically hazard areas, wetlands, and streams are hereby designated as critical areas. Many of these areas are mapped on Tacoma's Generalized Critical Areas Maps available in the Planning and Development Services Department or as defined by this chapter. The following SEPA categorical exemptions shall not apply within these areas, unless the changes or alterations are confined to the interior of an **existing structure** or unless the project does not require a permit under this chapter: Section 13.12.310 of the TMC and the following subsections of WAC 197-11- 800(1)(b); (2)(d) excluding landscaping, (e), (f), and (g); (3); 24(a), (b), (c), and (d). B. The scope of environmental review of actions within critical areas shall be limited to: (a) documenting whether the proposal is consistent with the requirements of this chapter; and (b) evaluating potentially significant impacts on the critical area resources not adequately addressed by development regulations, if any, including any additional mitigation measures needed to protect the critical areas in order to achieve consistency with SEPA and other applicable environmental review laws. (Ord. 28109 Ex. O; passed Dec. 4, 2012; Ord. 28070 Ex. B; passed May 8, 2012; Ord. 27431 § 20; passed Nov. 15, 2005; Ord. 27294 § 2; passed Nov. 16, 2004) Tacoma Municipal Code City Clerk's Office 13-469 (Updated 03/2022) 13.11.190 Review Process. A. The Review Process is used to determine whether a critical area, buffer, management area, or geo-setback is present on or adjacent to a proposal, and whether additional review or permitting is required. Critical area may be located through the use of information from the United States Department of Agriculture Natural Resource Conservation Service, the United States Geological Survey, the Washington Department of Ecology, the Coastal Zone Atlas, the Washington Department of Fish and Wildlife stream maps and Priority Habitat and Species maps, Washington DNR Aquatic Lands maps and geologic mapping, the National Wetlands Inventory maps, Tacoma topography maps, the City's Generalized Wetland and Critical Areas Inventory maps, and Pierce County Assessor's maps to establish general locations and/or verify the location of any critical area on site. The City's Generalized Wetland and Critical Area Inventory maps and other above-listed sources are only guidelines available for reference. The City maps are not exhaustive, and other areas meeting the definition or intent will be included. The actual location of critical areas must be determined on a site-bysite basis according to the classification criteria. The City may utilize information from any source referred to above or available in order to establish general locations and/or to verify the location of any critical area. B. Site Review. In order to assist customers with potential proposals, City staff will provide an initial site review based on existing information, maps and a potential site visit to identify potential critical areas, and their associated buffers/geo-setbacks or management areas within 300 feet. The review area may be expanded where priority species or habitat are present. Site reviews are completed on a case by case basis and may require the applicant to submit a critical areas assessment. Following the site visit and Review Process, a project may proceed without further critical area permitting if the applicant can demonstrate the following: **1. There are no adverse impacts to the critical area or buffer, geo-setback, or management area, and 2. Structures and alterations are all located outside the critical area and beyond the required buffers or management areas, and 3. Existing hydrology will be maintained to support critical areas,** and 4. The proposed use or activity is consistent with WDFW priority species management recommendations. C. In conjunction with the site review process, the Director of Planning and Development Services (the "Director"; see 13.01.110.D) may require additional information on the physical, biological, and anthropogenic features that contribute to the existing ecological conditions and functions to determine whether a formal critical area permit is required.

13.11.200

Critical Areas Allowed Activities (I don't see that any new building is allowed at all in a protected critical area)...

<https://www.tacomapermits.org/tip-sheet-index/critical-areas-allowed-activities>

- Reconstruction or exterior remodeling, of existing structures and accessory structures provided that disturbance of native vegetation is kept to a minimum and any vegetation that is disturbed shall be replaced. Activities must comply with WDFW management recommendations where applicable. This shall not apply to reconstruction which is proposed as a result of structural damage associated with a critical area, such as slope failure in a landslide hazard area or flooding in a flood hazard area.
- One-time expansion of existing structures and accessory structures, provided that expansion of the developed footprint within the critical area or buffer does not increase by more than 25 percent and that the new construction or related use extends away from the critical area ; keeps disturbance of native vegetation to a minimum; and replaces native vegetation that may be disturbed This expansion may also occur in a direction parallel to the critical area if the expansion takes place upon existing impervious surfaces.

We're continually told by TPCHD of their "limited" oversight of STGPD for business practices, only, yet the TMC (and Dept. of Ecology) says that TPCHD is the primary agency to monitor and enforce. So, I've still found no one taking responsibility for aquifer health and infiltration protection.

How we'll help protect your health with a proposed South Tacoma warehouse complex.

<https://www.tpchd.org/Home/Components/Blog/Blog/32441/333?backlist=%2f>

... We have limited regulatory authority in the South Tacoma Groundwater Protection District (STGPD). It applies to businesses within the district with hazardous substances or infiltration systems. We might be involved again once it's clear what the business and activities on the property will be.

... Current zoning regulations permit projects like this. We're currently working with the City on South Tacoma Neighborhood Council's proposal to update the regulation and create an Environmental Green Zone.

...We also know people who live near the site care about their community and health. **Health Impact Assessments help decision-makers** consider health in policymaking.

An HIA should help all stakeholders learn more about:

Diesel fumes.

Air quality.

Other public health concerns not covered in the routine SEPA review.

We urge the City to take time in this process to consider health. Decisions today should support better health outcomes for this community in the future.

Yet WA DoEcY and CoT all say that TPCHD is the sole overseer, and the TMC says:

TMC 13.06.070 D. (Excerpts)

The Tacoma-Pierce County Health Department ("TPCHD") will be responsible for implementing the South Tacoma Groundwater Protection District regulations established in TMC 13.06.070. The Tacoma-Pierce County Board of Health may adopt regulations consistent with this section.

The TPCHD shall hereafter maintain a document entitled "General Guidance and Performance Standards for the South Tacoma Groundwater Protection District" (hereinafter referred to as the "General Guidance and Performance Standards"). These standards shall prescribe the minimum acceptable best management practices and design solutions which are consistent with the requirements of this chapter. This document, to the extent that it assists in meeting the purposes and intent of this chapter and the **Critical Areas Preservation Ordinance**, is incorporated herein as though fully set forth. This document is available from the TPCHD. Periodically, the TPCHD shall review these standards to assure that improvements in technology are considered and that the standards are consistent with this chapter.

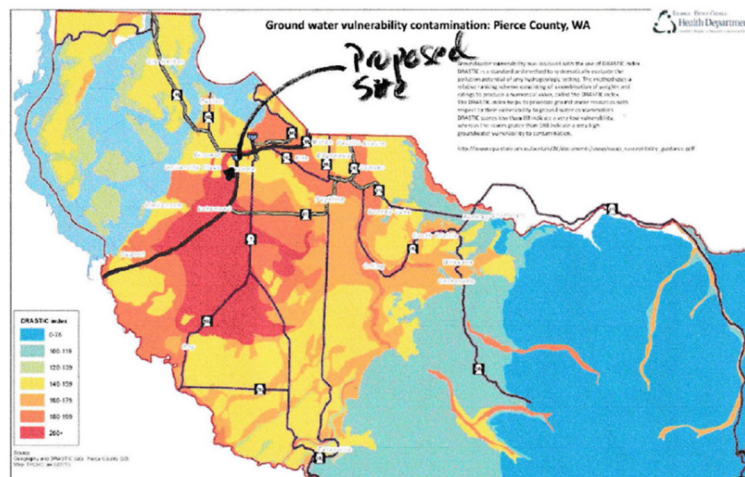
The above high impact uses should be periodically revised, updated, and amended, as appropriate, by Planning and Development Services or its successor agency in consultation with the TPCHD in order to take into account other potential high impact uses or improvements in technology, pollution control, and management.

The TPCHD may, at its discretion, elect to defer enforcement of specific South Tacoma Groundwater Protection District requirements if other state, local, or federal regulations or permits provide an equivalent or superior level of environmental protection. Such deferrals shall be subject to periodic review by the TPCHD and may be revoked or modified upon a finding that an equivalent or superior level of environmental protection is no longer provided.

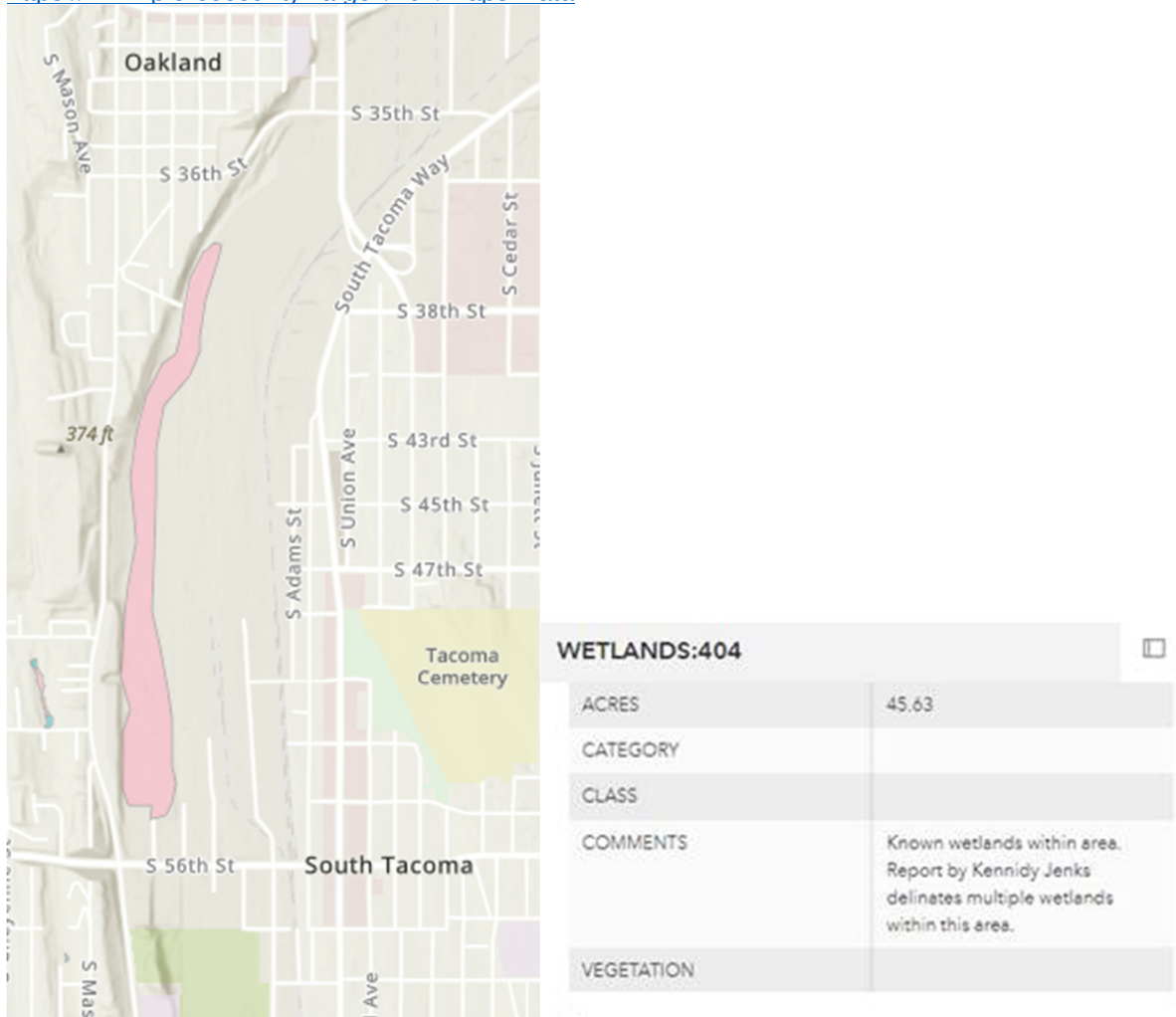
18. Enforcement Responsibility. 3 a. It shall be the duty of the TPCHD Director to enforce and administer the provisions of this chapter...

25. Other Remedies. 2 The TPCHD reserves the right to pursue other remedies in order to reduce or eliminate threats to the groundwater resource from improper handling, storage, and disposal of hazardous substances by regulated businesses.

Tacoma Pierce County Health Department Vulnerability Equity Maps
<https://www.tpchd.org/healthy-people/health-equity/health-equity-maps>



Pierce County wetlands map tool:
<https://www.piercecountywa.gov/491/Maps-Data>



It appears the wetlands will be partially covered up with building D if the project goes forward, yet the SEPA checklist says no wetlands will be filled in.

RCW is revised code of WA, and every RCW is a US Code law revised for a local govt (State) with Federal approval. It remains that RCW trumps local codes (city, county etc) every time on all occasions. Tacoma is not exempt. They are obligated to uphold and abide by RCW law, and at no time may a Tacoma code supersede or overturn, dismiss, diminish or lessen any RCW which is in effect US Code. That includes the laws that protect aquifers, and especially if that aquifer is a source of drinking water for the public. **Those aquifers are protected and so is the recharge area on top of the aquifer.**

Critical Aquifer Recharge Areas Guidance - Wa

<https://apps.ecology.wa.gov/publications/documents/0510028.pdf>

associated costs can be prevented. Public **drinking water** supply also depends on groundwater availability. Without replenishment, the amount of **water** in **aquifers** can be diminished or even depleted. This guidance document helps local jurisdictions and the public understand what is required for

[Revised Code of Washington \(RCW\)](#)

<https://apps.leg.wa.gov/rcw>

The Revised Code of Washington (**RCW**) is the compilation of **all permanent laws now in force**. It is a collection of Session Laws (enacted by the Legislature, and signed by the Governor, or enacted via the initiative process), arranged by topic, with amendments added and repealed laws removed.

[Groundwater | WA - DNR](#)

<https://www.dnr.wa.gov/geology-groundwater>

Authority is given to the Washington State Department of Ecology through the Revised Code of Washington (**RCW**). Chapter 173-200 WAC-Water Quality Standards for Groundwaters of the State of Washington. The limits of contaminants in groundwater, primarily for drinking water, are listed in a table in section 40.

RCW [90.44.400](#)

Groundwater management areas—Purpose—Standards—Identification—Designation.

(1) This legislation is enacted for the purpose of identifying groundwater management procedures that are consistent with both local needs **and state water resource policies and management objectives; including the protection of water quality, assurance of quantity, and efficient management of water resources to meet future needs.**

In recognition of existing water rights and the need to manage groundwater aquifers for future use, the **department of ecology shall**, by rule, establish standards, criteria, and a process for the designation of specific groundwater areas or sub-areas, or separate depth zones within such area or sub-area, and provide for either the department of ecology, local governments, or groundwater users of the area to initiate development of a groundwater management program for each area or sub-area, consistent with state and local government objectives, policies, and authorities. The department shall develop and adopt these rules by January 1, 1986.

(2) The department of ecology, in cooperation with other state agencies, local government, and user groups, shall identify probable groundwater management areas or sub-areas. The department shall also prepare a general schedule for the development of groundwater management programs that recognizes the available local or state agency staff and financial resources to carry out the intent of RCW [90.44.400](#) through [90.44.420](#). The department shall also provide the option for locally initiated studies and for local government to assume the lead agency role in developing the groundwater management program and in implementing the provisions of RCW [90.44.400](#) through [90.44.420](#). The criteria to guide identification of the groundwater areas or sub-areas shall include but not be limited to, the following:

- (a) Aquifer systems that are declining due to restricted recharge or over-utilization;
- (b) Aquifer systems in which overappropriation may have occurred and adjudication of water rights has not yet been completed;
- (c) Aquifer systems currently being considered for water supply reservation under chapter [90.54](#) RCW for future beneficial uses;
- (d) Aquifers identified as the primary source of supply for public water supply systems;
- (e) Aquifers designated as a sole source aquifer by the federal environmental protection agency; and
- (f) Geographical areas where land use may result in contamination or degradation of the groundwater quality.

(3) In developing the groundwater management programs, priority shall be given to areas or sub-areas where water quality is imminently threatened.

[[1985 c 453 § 1](#).]

[RCWs](#) > [Title 90](#) > [Chapter 90.44](#) > [Section 90.44.410](#)
[90.44.400](#) << 90.44.410 >> [90.44.420](#)

RCW [90.44.410](#)

Requirements for groundwater management programs—Review of programs.

- (1) The groundwater area or sub-area management programs shall include:
- (a) A description of the specific groundwater area or sub-areas, or separate depth zones within any such area or sub-area, and the relationship of this zone or area to the land use management responsibilities of county government;
 - (b) A management program based on long-term monitoring and resource management objectives for the area or sub-area;
 - (c) Identification of water resources and the allocation of the resources to meet state and local needs;
 - (d) Projection of water supply needs for existing and future identified user groups and beneficial uses;
 - (e) Identification of water resource management policies and/or practices that may impact the recharge of the designated area or policies that may affect the safe yield and quantity of water available for future appropriation;
 - (f) Identification of land use and other activities that may impact the quality and efficient use of the groundwater, including domestic, industrial, solid, and other waste disposal, underground storage facilities, or stormwater management practices;
 - (g) The design of the program necessary to manage the resource to assure long-term benefits to the citizens of the state;
 - (h) Identification of water quality objectives for the aquifer system which recognize existing and future uses of the aquifer and that are in accordance with department of ecology and department of social and health services drinking and surface water quality standards;
 - (i) Long-term policies and construction practices necessary to protect existing water rights and subsequent facilities installed in accordance with the groundwater area or sub-area management programs and/or other water right procedures;
 - (j) Annual withdrawal rates and safe yield guidelines which are directed by the long-term management programs that recognize annual variations in aquifer recharge;
 - (k) A description of conditions and potential conflicts and identification of a program to resolve conflicts with existing water rights;
 - (l) Alternative management programs to meet future needs and existing conditions, including water conservation plans; and
 - (m) A process for the periodic review of the groundwater management program and monitoring of the implementation of the program.
- (2) The groundwater area or sub-area management programs shall be submitted for review in accordance with the state environmental policy act.

Chapter 36.36 RCW AQUIFER PROTECTION AREAS

<https://app.leg.wa.gov/rcw/default.aspx?cite=36.36&full=true>

The **protection** of subterranean water from pollution or degradation is of great concern.

The **depletion** of subterranean water is of great concern.

Groundwater / Pierce County

<https://www.piercecountywa.gov/7393/Groundwater>

Vulnerable Deep Aquifer Areas / Pierce County - Aquifer - Vulnerable Deep Aquifer Areas

Vulnerable/not vulnerable polygon areas of the Clover/Chambers Creek aquifer

<https://internal.open.piercecountywa.gov/dataset/Aquifer-Vulnerable-Deep-Aquifer-Areas/sded-wr9m/data>

Chapter 90.44 RCW

REGULATION OF PUBLIC GROUNDWATERS

<https://app.leg.wa.gov/rcw/default.aspx?cite=90.44>

Groundwater management areas—Purpose—Standards—Identification—Designation.

<https://app.leg.wa.gov/rcw/default.aspx?cite=90.44.400>

(a) Aquifer systems that are declining due to restricted recharge or over-utilization;

Groundwater management programs—Guidance to local governments and certain departments.

RCW 90.44.430

Groundwater management programs—Guidance to local governments and certain departments.

The department of ecology, the department of social and health services, and affected local governments shall be guided by the adopted program when reviewing and considering approval of all studies, plans, and facilities that may utilize or impact the implementation of the program.

Chapter 90.94 RCW

STREAMFLOW RESTORATION

<https://app.leg.wa.gov/rcw/default.aspx?cite=90.94>

Sections

90.94.010 Definitions.

90.94.020 Authorization for new domestic groundwater withdrawals exempt from permitting with a potential impact on a closed water body and potential impairment to an instream flow—Requirements—Fees—Adoption of rules.

90.94.030 Authorization for new domestic groundwater withdrawals exempt from permitting with a potential impact on a closed water body and potential impairment to an instream flow—Requirements—Watershed restoration and enhancement committees—Watershed restoration and enhancement plan—Fees—Adoption of rules—Application of section.

90.94.040 Pilot projects to measure water use from all new groundwater withdrawals for domestic purposes exempt from permitting—Areas—Report to the legislature.

90.94.050 Report to the legislature—Elements.

90.94.060 Watershed restoration and enhancement account.

90.94.070 Watershed restoration and enhancement taxable bond account.

90.94.080 Watershed restoration and enhancement bond account.

90.94.090 Joint legislative task force on water resource mitigation—Water resource mitigation pilot projects.

90.94.900 Effective date—2018 c 1.

Aquifer - Vulnerable Deep Aquifer Areas - Vulnerable/not vulnerable polygon areas of the Clover/Chambers Creek aquifer.

https://matterhorn.co.pierce.wa.us/GISmetadata/pdbplan_aquifer_vulnerable_deep_areas.html#Identification_Information

Map

<https://open.piercecountywa.gov/dataset/Aquifer-Vulnerable-Deep-Aquifer-Areas/7fqg-q4kr>

Chapter 18E.50 AQUIFER RECHARGE AND WELLHEAD PROTECTION AREAS

<https://www.codepublishing.com/WA/PierceCounty/html/PierceCounty18E/PierceCounty18E50.html>

18E.50.010 Purpose.

The purpose of this Chapter is to protect critical aquifer recharge and wellhead protection areas from degradation or depletion resulting from new or changed land use activities. Due to the exceptional susceptibility and/or vulnerability of groundwater underlying aquifer recharge areas to contamination and the importance of such groundwater as sources of public water supply, it is the intent of this Chapter to safeguard groundwater resources and wellhead protection areas by mitigating or precluding future discharges of contaminants from new land use activities. (Ord. 2004-57s § 2 (part), 2004)

18E.50.020 Aquifer Recharge and Wellhead Protection Areas.

A. General. Aquifer recharge and wellhead protection areas are areas that have a critical recharging effect on groundwater used for potable water supplies and/or that demonstrate a high level of susceptibility or vulnerability to groundwater contamination from land use activities.

B. Aquifer Recharge Areas.

1. The boundaries of the two highest DRASTIC zones that are rated 180 and above on the DRASTIC index range, as identified in Map of Groundwater Pollution Potential, Pierce County, Washington, National Water Well Association, U.S. Environmental Protection Agency; and

2. The Clover/Chambers Creek Aquifer Basin boundary as identified in the Clover/Chambers Creek Basin Groundwater Management Program (TPCHD 1991).

C. Wellhead Protection Areas. Wellhead protection areas that lie within the ten-year time-of-travel zone boundary of a group A public water system well, as delineated by the water system purveyor or its designee, pursuant to WAC 246-290-135.

(Ord. 2004-57s § 2 (part), 2004)

18E.50.030 Aquifer Recharge and Wellhead Protection Area Review Procedures.

A. General Requirements.

1. The Pierce County Critical Areas Atlas-Aquifer Recharge and Wellhead Protection Area Map provides an indication of where aquifer recharge and wellhead protection areas are located within the County.

2. The Department will complete a review of the Aquifer Recharge Area Map for any development proposal to determine whether the proposed project area for a regulated activity falls within an aquifer recharge or wellhead protection area.

3. When the Department's maps or sources indicate that the proposed project area for a regulated activity is located within an aquifer recharge or wellhead protection area, the Department shall require aquifer recharge and wellhead protection area review as set forth in this Chapter.

4. Any regulated activity located within an aquifer recharge or wellhead protection area shall comply with the standards set forth in PCC 18E.50.040.

5. Any hazardous uses, as defined in PCC 18E.50.040, shall require the submittal of a hydrogeologic assessment, as set forth in PCC 18E.50.030 B. below.

6. The Department may waive some of the critical area protective measure provisions contained in PCC 18E.10.080.

B. Hydrogeologic Assessment.

1. The hydrogeologic assessment shall be prepared under the responsible charge of an appropriately licensed geotechnical professional, and signed, sealed, and dated by an appropriately licensed geotechnical professional.
2. The hydrogeologic assessment shall be submitted in the form of a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies. The hydrogeologic assessment shall, at a minimum, include the following:
 - a. Information sources;
 - b. Geologic setting – Include well logs or borings used to identify information;
 - c. Background water quality;
 - d. Groundwater elevations;
 - e. Location/depth to perched water tables;
 - f. Recharge potential of facility site (permeability/transmissivity);
 - g. Groundwater flow direction and gradient;
 - h. Currently available data on wells located within 1/4 mile of the site;
 - i. Currently available data on any spring within 1/4 mile of the site;
 - j. Surface water location and recharge potential;
 - k. Water source supply to facility (e.g., high capacity well);
 - l. Any sampling schedules necessary;
 - m. Discussion of the effects of the proposed project on the groundwater resource;
 - n. Discussion of potential mitigation measures, should it be determined that the proposed project will have an adverse impact on groundwater resources; and
 - o. Any other information as required by the TPCHD, including information required under Washington Department of Ecology Publication 97-30.
3. The TPCHD shall provide written notice to all Group A water systems in whose wellhead protection area the proposed regulated activity lies. The TPCHD shall consider comments received from the water system(s) when reviewing the hydrogeologic assessment.
4. Uses requiring a hydrogeologic assessment may be conditioned or denied based upon the TPCHD's evaluation of the hydrogeologic assessment. Any project denied a permit based upon the TPCHD's evaluation of the hydrogeologic assessment shall receive a written explanation of the reason(s) for denial and an explanation of standards required, if any, to comply with these regulations.

18E.50.040 Aquifer Recharge and Wellhead Protection Area Standards.

- A. General. All regulated activities that are not exempt, prohibited, or otherwise excluded in the following standards under the provisions of this Chapter shall ensure sufficient groundwater recharge. In order to achieve sufficient groundwater recharge the applicant shall either comply with the impervious surface limitations set forth in Table 18E.50.040 A or demonstrate that the volume of water infiltrated at the proposed project area will be the same or greater amount for post-development as the pre-development volume. Also see Title 18J PCC, Development Regulations – Design Standards and Guidelines, Chapter 18J.30 PCC, for additional impervious surface standards.
- B.

(1) The maximum impervious surface coverage is calculated for the total amount of impervious surface per each individual site. The percentage for maximum total impervious surface per lot or site may be exceeded if the applicant can demonstrate that the effective impervious surface on the site is less than or equal to what is allowed for the total impervious surface.

Aquifer Clover Chambers Creek - Clover/Chambers Creek aquifer area in Pierce County.

<https://gisdata.piercecowi.opendata.arcgis.com/datasets/piercecowi::aquifer-clover-chambers-creek/about>

Aquifer recharge areas in Pierce County. Defines wellhead protection and potential groundwater pollution areas.

<https://www.arcgis.com/home/item.html?id=56467deaa1a64b19a275096d0e83a51f#:~:text=Description-,Pierce%20County's%20aquifer%20recharge%20area%20polygons%20are%20used%20to%20define,of%20a%20aquifer%20recharge%20areas.>

Predicting Ground-Water Vulnerability to Nitrate in the Puget Sound Basin

<https://wa.water.usgs.gov/pubs/fs/fs.061-97/>

Att 8 Clover Creek Basin Plan Volume I.pdf

[https://yosemite.epa.gov/oa/eab_web_docket.nsf/Attachments%20By%20ParentFilingId/0AAC48DFA9AE03E485257C62005375CF/\\$FILE/Att%208%20%20Clover%20Creek%20Basin%20Plan%20Volume%20I.pdf](https://yosemite.epa.gov/oa/eab_web_docket.nsf/Attachments%20By%20ParentFilingId/0AAC48DFA9AE03E485257C62005375CF/$FILE/Att%208%20%20Clover%20Creek%20Basin%20Plan%20Volume%20I.pdf)

Under the Safe Drinking Water Act, the EPA has designated the Clover/Chambers Creekaquifer as a sole source aquifer.

Local governments are required to classify and designate “resource lands of long-term commercial significance” and “critical areas.” Resource lands of long-term commercial significance include agricultural, forest, and mineral resource lands. Critical areas include wetlands, fish and wildlife habitat areas, aquifer recharge areas, frequently flooded areas, and geological hazardous areas.

The region’s geological history determined the characteristics of groundwater bodies and aquifers in the basin. Shallow aquifers are perched on top of layers of impermeable glacial till and are overlain with permeable gravels, which allow precipitation and surface water flows to infiltrate and recharge the aquifers. Infiltration from precipitation is estimated to be the primary mechanism for recharging the groundwater

Ecology declared the Clover/Chambers Creek Basin to be a Ground Water Management Area in 1986. The groundwater management program for the basin provides protection and responsible management of the area of influence for the aquifer system. The plan was completed in 1991. The program addresses the following: Groundwater reservation

- Water conservation program
- Environmentally sensitive area designation
- Sole-source aquifer designation.

Page 94: Limited information is available regarding wetland loss trends in Pierce County or the Clover

Creek Basin, but development pressures in the Puget Sound region generally have resulted in an overall loss of wetland area.. In a 1983 study conducted by Ecology, USGS topographic maps for Pierce County were compared with similar maps from 1880. This comparison showed that in the Tacoma South Quadrangle, for example, approximately 75 percent of probable wetland areas were lost between 1880 and 1983 due to dredging, draining, and filling.

Approximately 13 square miles of the Clover Creek Basin is in this quadrangle. Given these historical estimates of wetland loss in the South Tacoma area, it is likely that significant wetland areas have been lost or altered in the Clover Creek Basin (KCM 1996).

2019 Stormwater Management Manual for Western Washington Site Suitability Criteria

<https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/2019SWMMWW.htm#Topics/VolumetricInfiltrationBMPs/SiteSuitabilityCriteria.htm>

Setback Criteria

Ground Water Protection

High Vehicle Traffic Areas

Soil Infiltration Rate/Drawdown Time

Depth to Bedrock, Water Table, or Impermeable Layer

Impact of Roadway Deicers

Chapter 173-200 WAC

WATER QUALITY STANDARDS FOR GROUNDWATERS OF THE STATE OF WASHINGTON

<https://apps.leg.wa.gov/WAC/default.aspx?cite=173-200&full=true&pdf=true>

WAC 173-200-090 Special protection areas. (1) The purpose of a special protection area is to identify and designate groundwaters that require special consideration or increased protection because of one or more unique characteristics.

(2) The unique characteristics of a special protection area shall be considered by the department when regulating activities, developing regulations, guidelines, and policies, and when prioritizing department resources for groundwater quality protection programs.

(3) The characteristics to guide designation of a special protection area shall include, but not be limited to, the following:

(a) Groundwaters that support a beneficial use or an ecological system requiring more stringent criteria than drinking water standards;

(b) Groundwaters, including, but not limited to, recharge areas and wellhead protection areas, that are vulnerable to pollution because of hydrogeologic characteristics;

Clover Creek Basin Plan Volume 2 – Appendices
<https://www.piercecountywa.gov/Archive/ViewFile/Item/1263>

Ecology's Ground Water Quality Standards
<https://apps.leg.wa.gov/WAC/default.aspx?cite=173-200>

Critical Aquifer Recharge Areas
<https://ecology.wa.gov/Water-Shorelines/Water-quality/Groundwater/Protecting-aquifers/Critical-aquifer-recharge-areas>

2005 Critical Aquifer Recharge Areas Guidance Document
<https://apps.ecology.wa.gov/publications/parts/0510028part2.pdf>

Draft – 2021 Critical Aquifer Recharge Areas: Guidance Document
<https://apps.ecology.wa.gov/publications/documents/0510028.pdf>

Groundwater WA - DNR
<https://www.dnr.wa.gov/geology-groundwater#:~:text=In%20western%20Washington%2C%20the%20aquifers%20are%20primarily%20made,confined%2C%20unconfined%2C%20or%20a%20combination%20of%20the%20two.>

According to the Environmental Protection Agency (EPA), 75 percent of Washington's total water supply is from surface water and 25 percent is from groundwater. However, over 60 percent of drinking water in Washington State is supplied by groundwater. Groundwater is therefore an important resource for millions of people in Washington.

EPA seeks to label parts of CT with 'severe' non-compliance of federal air quality standards due to smog."

<https://www.nhregister.com/hartford/article/EPA-seeks-to-label-parts-of-CT-with-severe-17082096.php?t=993016a087&src=nhrhppromostrip>

Asmeret Asefaw Berhe re: soil's part in protecting against climate change.
"Soil can sequestering carbon, so a small change in soil affects carbon in the air. Plants take CO₂ from the air and transfer it to soil where can be stored long-term in soil. Paving-over and degrading soil is another is contributing to global warming."

LU21-0125 Permit Files

From Consolidated Comments file:

B.4.j. A hydrologic report including any mitigative measures for alterations of the hydroperiod. the City may required additional pre-and post-development field studies and/or monitoring to establish water levels, hydroperiods, and water quality. Water quality shall be required for pollution generating surfaces using all known, available, and reasonable methods of prevention, control and treatment.

B.4.k. when mitigation includes creation or restoration of critical areas, surface and subsurface hydrologic conditions including existing and proposed hydrologic regimes shall be provided. Describe the anticipated hydrogeomorphical class and illustrate how data for existing hydrologic conditions were utilized to form estimates of future hydrologic conditions.

2. I am concerned with the function of the buffer being disturbed in the areas where compensatory storage is being proposed. Additional information is required describing the appropriateness for the compensatory floodplain areas proposed within the wetland and stream buffers. Please provide storm modeling showing how long these areas will be flooded and correlate that to the species proposed to be planted. Provide cross sections showing depth of water and proposed plants and how the water will drain out of the areas without scour or disturbing and washing out the plants within the compensatory storage area, or within the receiving wetland and stream.

3. The proposed mitigation approach is not described with regard to the City of Tacoma critical area code. The proposed referenced recent guidance from DOE which would more appropriately be used as Best Available Science under TMC 13.11.270.M for a "preferred environmental alternative".

Provide a response to the code criteria. The proposed wetland creation or enlargement would offer higher functions than additional buffer area provided the existing buffer will continue to function. Similarly, how does Best Available Science how does tie back to the compensatory storage areas and their function?

Karla Kluge

Page 6 of 11

4. Provide a response for access provisions for long term maintenance monitoring access to the wetlands and stream buffers.

2/25/22 Land Use Comments

SEPA review is not complete, public/agency comment extends through March 10.

Additional information required for EPA/ECY related to the CERCLA portion of the site.

Additional information required about impacts to STGPD from paving (water quantity)

I expect comments/requests from agencies with expertise, including ECY and the Health Dept, as well as public comment.

8/26/21 Land Use Comments - revisions required prior to public notice

SEPA is a little bit nuanced. The WAC says that a city shall use the same SEPA determination for the same project and this is nearly the same project as 2007.

3. Use of the 2007 survey may not be accurate 15 years later. Strongly recommend confirming/updating the existing survey to accurately reflect existing conditions

Document Name: 1st Resubmittal-Floodplain Study-Part 3-Comments.pdf

Document Category: Report

146 and 187 acres of forested conditions seems inaccurate for these basins. Areas around Snake Lake, for instance, have a high percentage of trees but have been developed and generally lack the undergrowth of a forested condition.

Trevor Perkins

125

There is concern in these lower reaches that the model shows flooding of the adjacent roadway and private property. New development shall not increase this potential and will ideally reduce flooding potential to downstream roadways and properties

Document Category: Report flett

Trevor Perkins

23 This site has adjacent wetlands that historically receive water from the site. Compliance with MR#8 is required.

Trevor Perkins

27 Please be advised that wetland protection requirements have changed since 2007. The project will be required to comply with MR #8 per the 2021 SWMM.

Trevor Perkins

29 cf or yds? specify unit for grade and fill

Conceptual Mitigation Plan

Page ii

The proposed mitigation actions, along with the new stormwater infrastructure, including infiltration, will ensure no adverse impacts to the FWHCA and will result in a net gain in ecological functions when compared to the existing degraded conditions of the onsite critical areas proposed to be impacted.

Repeated on page 4

The proposed mitigation actions, along with the new stormwater infrastructure, including infiltration, will ensure no adverse impacts to the FWHCA and will result in a net gain in ecological functions when compared to the existing degraded conditions of the onsite critical areas proposed to be impacted.

In addition, stormwater infiltration will be utilized to the extent feasible to minimize the size of the aboveground stormwater pond.

No detailed effects to the aquifer, and the acres and acres of grassland for natural infiltration. Is not including appropriate county/state/federal codes which apply to the aquifer. Same considerations from SEPA checklist regarding new plantings compared to mature trees. How incredibly arrogant to suggest a "net gain" in ecological function and "no adverse impacts" to Fish Wildlife Habitat Conservation Areas by paving over approximately 150 acres of currently natural land.

*** How many mature trees will be lost? ***

Just because BNSF left the property in an unnatural, unrestored state, doesn't mean it shouldn't be naturally restored... it can and should.

Questions of fertilizer to be used, due to specific limitations within a critical aquifer area.

I doubt the applicant will keep up the required maintenance and monitoring of the area, if not, who will be monitoring for it?

2.9

Critical Area Protection - the entire area qualifies for critical area protection.

Geotechnical Report

shallow groundwater table

given current site conditions, we expect stripping depths of about four to six inches will be required to remove the vegetation

If excessively yielding areas are observed and the subgrade cannot be stabilized in place by compaction, additional removal of the existing fill will need to be considered

Some of the near-surface native soils and existing mineral soil fills observed at the site contain a sufficient amount of fines (silt and clay-sized particles) that will make them difficult to compact as structural fill if they are too wet or too dry. Accordingly, the ability to use these soils from site excavations as structural fill will depend on their moisture content and the prevailing weather conditions when site grading activities take place. Soils that are too wet to properly compact could be dried by aeration during dry weather conditions or mixed with an additive such as cement or lime to stabilize the soil and facilitate compaction. If an additive is used, additional Best Management Practices (BMPs) for its use will need to be incorporated into the Temporary Erosion and Sedimentation Control (TESC) plan for the project

Based on our study, groundwater seepage with volumes and flow rates sufficient to require some level of dewatering should be anticipated within excavations in the southwestern portion of the site that extend deeper than about seven feet during the normally wet winter season. Excavations that are relatively shallow and do not extend more than about two feet below the water table can likely be dewatered by conventional sump-pumping procedures along with a system of collection trenches. Deeper excavations extending into the coarse gravel with sand deposits will likely require dewatering by well points or isolated deep-pump wells. The utility subcontractor should be prepared to implement excavation dewatering by well point or deep-pump wells, as needed. This will be an especially critical consideration for any deep utility excavation...

4.7 Infiltration Feasibility The granular native soils and depth to groundwater in the central and northern areas of the site would generally be favorable for stormwater infiltration. Based on the soil and groundwater conditions we observed in our subsurface explorations and a review of existing information, an infiltration rate of seven inches per hour can be used for preliminary design purposes of infiltration facilities founded in the native Steilacoom Gravel deposits. The design infiltration rate will be confirmed by field infiltration testing conducted at the specific facility locations and elevations in accordance with the City of Tacoma's current stormwater manual when design of the storm water system is closer to its' final layout.

4.9 Drainage Surface Final exterior grades should promote free and positive drainage away from the buildings at all times. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building areas. If a positive drainage gradient cannot be provided, surface water should be collected adjacent to the structures and directed to appropriate stormwater facilities

Wetland Evaluation: Inadequate review -- requires in-depth long-term monitoring. Again did not include aquifer in the critical area requirements.

DNR Stream Typing(Appendix B6)and WDFW Salmonscape (Appendix B7)do not identify any potential streams or salmonid habitat on or within 300 feet of the site. PHS identifies potential Western pond turtle (Actinemys marmorata) and little brown bat (Myotis lucifugus) presence within the township, but not necessarily onsite.

The City of Tacoma maps a Biodiversity Area and Corridor(Appendix B11)on the western portion of the subject property adjacent to the mapped stream

Biological Evaluation

Incomplete review of the pocket gopher and inadequate acknowledgment of the entire area as a thriving habitat... eliminating 150+ acres of open space will, of course, have a tremendous impact on the small mammals, birds, coyotes as well as insects and tiny organisms and micro-organisms.

Making this statement about hydrologic dynamics though decline of evapotranspiration and decrease in infiltration, does not equate to insignificant results. The report refers to no "measurable impact" and yet that is precisely what is required to have been already measured regarding aquifer infiltration/recharge effects.

The proposed development will result in an increase of impervious surfaces compared to the present, previously developed and undeveloped areas onsite. Increases in impervious surfaces can change hydrologic dynamics through a decline in evapotranspiration and decreases in infiltration (NOAA, 2003). The project's proposal will not likely have a measurable impact on the watershed or ESA-listed species. However, on a watershed scale cumulative actions that increase impervious surfaces can also have an overall negative impact on hydrology. Changes in hydrology from increases in impervious surfaces can reduce water infiltration and dilution. Urban runoff and discharges can increase loading of nutrients, bacteria, metals, pesticides, and other toxicants to streams (NOAA, 2003). In addition, changes in hydrology can increase frequency and severity of flooding and accelerate channel erosion and streambed substrate disturbance (NOAA, 2003). The proposed industrial redevelopment is not anticipated to significantly change ecological functions onsite

Western US Scrambles to Secure Water Supplies as it Faces Historic Drought

<https://www.washingtonexaminer.com/policy/western-us-scrambles-to-secure-water-supplies-as-it-faces-historic-drought>

Tires are poisoning rivers and killing aquatic life

https://www.dailymaverick.co.za/article/2022-03-29-our-tyres-are-poisoning-rivers-and-killing-aquatic-life-studies-show/?fbclid=IwAR0EY8c9hb630hf7kijLy_NqRIEtxd89wp2L12UjJjeN-4Of7lyCzAVNA

Redlining in WA pollution disparity

<https://crosscut.com/environment/2022/03/redlinings-enduring-impact-shows-wa-pollution-disparity?fbclid=IwAR2K7QY8v6420-CPgcCPb76oFJ7fmTDRHluUpYRmT8dtm6ZyDGMWesomwtU>

Repeal Opportunity Zones

<https://www.taxnotes.com/featured-analysis/repeal-opportunity-zones/2020/10/23/2d13w>

Mega Warehouse Proposal for South Tacoma

<https://mynorthwest.com/3379364/mega-warehouse-proposal-south-tacoma/>

"We are wanting to keep that area open and green so the water that infiltrates down is cleaned before it gets to the aquifer, and that enough water can infiltrate down to **keep the aquifer filled**," Heidi Stephens said. "We're very concerned about the **environmental impacts, impacts to public health**, on an already quite disenfranchised, marginalized community of some of the lowest-income and diverse residents in the City of Tacoma."