



To: Planning Commission
From: Stephen Atkinson, Planning Services Division
Subject: **Tideflats and Industrial Land Use Regulations**
Meeting Date: January 20, 2021
Memo Date: January 14, 2021

Action Requested:

Select a regulatory option for code development for 1. Mining and Quarrying, 2. Smelting, 3. Coal Storage and Export, and 4. Chemical Manufacturing uses.

Discussion:

At the Planning Commission's meeting on January 20, 2021, staff will present a summary of pertinent policies and area-wide context that apply to the broader heavy industrial review and then discuss how these general policies and area characteristics inform the approach proposed by staff to regulate 1. Mining and Quarrying, 2. Smelting, 3. Coal Storage and Export, and 4. Chemical Manufacturing.

In the attached report, pages 1-16 provide broader context and 16-35 review each of the uses specifically under consideration. Following that is an attached presentation from the US Geological Survey discussing the impacts of coal transport.

The draft report provides an overview of each use, the issue, the policy framework to guide recommendations and consistency with the One Tacoma Comprehensive Plan, as well as supplemental information, including prior findings of fact (2017), benchmarking, definitions, and additional maps or data that will support the Commission's review.

Staff is seeking Planning Commission direction on a preferred code option to develop for release for public review and comment. Upon Commission direction, staff will begin to develop the code exhibits and will present the exhibits to the Planning Commission at an additional meeting to review and request the formal release for public review and comment.

Project Summary:

On October 20, 2020 the City Council approved Amended Ordinance No. 28696, which approved a 6-month extension of the Tideflats Interim Regulations and also directed the Planning Commission and staff to begin a process to develop new recommendations for a non-interim ordinance to replace the interim regulations.

This project will review land use regulations in the Port of Tacoma Manufacturing and Industrial Center and Industrial Zoning Districts City-wide to address the following issues:

- Public notification requirements for permits and land use amendments;
- Conversion of industrial lands to non-industrial uses;
- Encroachment of residential developments on industrial lands;
- Siting of potentially high risk/high impact heavy industrial uses.



The process will result, at a minimum, in proposed amendments to the Tacoma Municipal Code, Title 19 Shoreline Master Program and Title 13 Land Use Regulatory Code, and will be conducted in accordance with the procedural requirements of the State Shoreline Management Act, Growth Management Act, State Environmental Policy Act, and Tacoma Municipal Code.

Prior Actions:

On January 13, 2021, the Planning Commission conducted a listening session with panelists representing environment and health, neighborhoods, and port/labor/industry perspectives.

On January 6, 2021, the Planning Commission reviewed proposed regulatory options for 1. Permit Notification, 2. Conversion of Industrial Lands, and 3. Residential Encroachment.

On December 2, 2020, the Planning Commission conducted a public scoping hearing and accepted written comments on the draft scope of work. Following the hearing, the Commission discussed the public testimony and approved modifications to the scope of work.

On November 18, the Planning Commission reviewed Amended Ordinance No. 28696 and a Draft Scope of Work for the Non-interim Industrial Land Use Regulations and set a public scoping hearing for December 2, 2020. The Commission modified the scope of work to include additional potential engagement opportunities.

On May 9, 2017, the City Council adopted Resolution No. 39723 initiating a subarea planning process for the Port/Tideflats area. In addition, the resolution requested the Planning Commission consider the need for interim regulations in the Tideflats area while the subarea planning process is under way.

The Planning Commission determined that interim regulations were warranted and on October 4, 2017 forwarded its recommendation to the City Council for consideration. In support of these deliberations the Commission conducted a public hearing, at which 81 people testified, and reviewed over 200 written comments. Attached is the Commission's Findings and Recommendations Report, dated October 4, 2017.

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Attachments:

- A. Draft Options Analysis Report – Siting and Expansion of High Risk/High Impact Heavy Industrial Uses
 - B. USGS Presentation – Preparing for Ecosystem Effects of Increased Coal Transport Across the Pacific Northwest
- c. Peter Huffman, Director

Section D. Siting and Expansion of High Risk/High Impact Heavy Industrial Uses

Subsection I: General Context

1. Issue Description

Broadly, this review will consider the siting of specific potentially high risk/high impact heavy industrial uses. Current zoning and land use regulations consolidate a broad spectrum of industrial use and activity within a single heavy industrial use category despite a diverse differentiation of potential impacts and risks associated with such uses. In addition, current regulations permit heavy industrial use outright within the M-2 Heavy Industrial District and PMI Port Maritime Industrial District without special use standards tailored to address the disparate potential impacts of use and activity that fall under this category. This review will consider the compatibility of specific heavy industrial uses with the use priorities in the Port Tidelands as well as compatibility with environmental site context and surrounding land uses. The result of this review may be the establishment of more specific uses to be regulated under TMC 13.06 Zoning and Title 19 Shoreline Master Program.

2. Interim Area of Applicability

This review applies to heavy industrial uses citywide. There are five general use categories under consideration, all of which are allowed in different zoning districts throughout the City. In general, the following map indicates zoning districts that allow heavy industrial uses. However, the specific use subsections will identify other zoning districts where the uses are allowed.



3. Policy Review

In addition to policies specifically cited in Sections A, B and C of this report, the following policies from the One Tacoma Plan apply this broad review:

Use Priorities:

Policy CP–1.1 Prioritize, protect and preserve existing and planned port uses, port-related container and industrial uses and rail-related uses. Uses should consist primarily of cargo port terminal, port-related container and industrial activity, compatible manufacturing, industrial-related office, cargo yard, warehousing, transportation facilities, and other similar uses.

Policy CP–1.2 Prohibit uses that would negatively affect the availability of land for the primary port and port-related cargo and industrial function of the Core Area. Encourage aggregation of industrial land for future development as cargo port terminals and supporting uses.

Economic Development and Industrial Land Supply:

Policy EC–6.19 Provide industrial land and encourage investment in necessary services that support industrial business retention, growth and traded sector competitiveness as a West Coast trade and freight hub, a regional center of diverse manufacturing and a widely accessible base of living wage jobs, particularly for underserved and underrepresented people.

Policy EC–6.21 Protect and preserve sufficient land use capacity for water-dependent and related industrial uses within the city’s industrial shorelines.

Policy EC–1.2 Ensure that there is sufficient zoning and development capacity to accommodate the 2040 employment growth allocations.

Policy EC–1.10 Leverage Tacoma’s industry sector strengths and assets to position Tacoma as a leader and innovator in the local, regional and state economy. Policy EC–1.11 Identify and regularly update Tacoma’s target industries to better leverage the city’s economic position within the region and to respond to strategic opportunities as they arise.

Policy EC–1.12 Actively seek investments to grow Tacoma’s presence in the following target industries: a. Bio-medical and medical b. Information technology and cyber security c. Professional services d. Industrial and manufacturing e. Tourism and hospitality f. Creative economy g. International trade h. Finance and Insurance

Environment, Critical Areas, and Life Safety:

Policy DD–11.2 Limit development in or near areas prone to natural hazards where practicable, using the most current hazard and climate change-related information and maps.

Policy DD–11.3 Encourage development approaches that will enhance the ability of people, wildlife, natural systems, and property to withstand and recover from a natural disaster or other major disturbance

Policy EN–1.5 Protect the quantity, quality and function of high value environmental assets identified in the City’s natural resource inventories, including:

- a. Rivers, lakes, streams and associated riparian uplands
- b. Floodplains
- c. Riparian corridors
- d. Wetlands and buffers
- e. Groundwater
- f. Trees and urban forests
- g. Bays, estuaries and marshes
- h. Shorelines
- i. Native and other vegetation species and communities that provide habitat value
- j. Habitat complexes and corridors, rare and declining habitats such as wetlands, native oak and habitats that support special-status or at-risk plant and wildlife species
- k. Other natural resources as identified

Policy EN–1.6 Direct development activities away from critical natural features such as steep slope areas and unstable soils, wooded areas, shorelines, aquatic lands and other unique and high value natural areas when planning for growth.

Policy EN–1.26 Maintain, implement and periodically update a climate action plan and greenhouse gas inventory, and adjust greenhouse gas emission targets accordingly to ensure successful implementation and consistency with regional and state goals.

Policy EN–1.18 Evaluate climate data and consider climate risks in the development of regulations, plans and programs.

Policy EN–1.29 Protect processes and functions of Tacoma’s environmental assets (wetlands, streams, lakes) in anticipation of climate change impacts.

Policy EN–3.1 Ensure that the City achieves no-net-loss of ecological functions over time.

Policy EN–2.1 Minimize the risk of damage to life and property by establishing robust development standards that ensure avoidance and/or minimization of potential geologic hazards.

Policy EN–2.8 Regulate development in the 100-year floodplain to avoid substantial risk and damage to life, public and private property, infrastructure, and fish and wildlife habitat. Ensure these regulations, as a minimum, comply with state and federal requirements for floodplain regulations.

Transitions and Off-Site Impacts:

Policy CP–1.6 In the Core Area, allow for localized impacts associated with industrial activities, including noise, odor and visual character, that are appropriate and expected in heavy industrial areas but would not be allowed in other parts of the city. Noise and odor may be associated with transportation and manufacturing facilities. Visual character may include outdoor storage, relatively large building mass and impervious surface area. While localized impacts are permitted, continue to require Core Area industrial uses to be developed in a manner that protects the environment and preserves public health and safety from a citywide and regional perspective.

Policy CP–1.4 Reduce the potential for land use conflicts between industrial development and surrounding nonindustrial uses by providing for adequate Industrial/Commercial Buffer areas, and clear public commitment to continuation of Port and port-related cargo and industrial uses in the designated Core Area.

Policy CP–2.3 Development standards for industrial and commercial activities in the Industrial/Commercial Buffer Area should ensure compatibility with the activity levels and physical character of adjacent less intensive community character.

Policy CP–2.6 Establish development or performance standards to allow for continued viability of the Industrial/Commercial Buffer Area, while protecting the livability of adjacent areas.

Policy DD–9.3 Use land use and other regulations to limit and mitigate impacts, such as odor, noise, glare, air pollutants, and vibration that the use or development of a site may have on adjacent residential or institutional uses, and on significant fish and wildlife habitat areas.

Policy DD–9.5 Protect non-industrial zoned parcels from the adverse impacts of activities on industrial zoned parcels.

Policy DD–9.6 Buffer between designated Manufacturing/Industrial Centers and adjacent residential or mixed-use areas to protect both the viability of long-term industrial operations and the livability of adjacent areas.

Shorelines

In accordance with RCW 90.58.020, the City shall manage shorelines of statewide significance in accordance with this section and in accordance with this Program as a whole. Preference shall be given to uses that are consistent with the statewide interest in such shorelines. Uses that are not consistent with this section or do not comply with the other applicable policies and regulations of this Program shall not be permitted on shorelines of statewide significance. In managing shorelines of statewide significance, The City of Tacoma shall:

1. Recognize and protect the statewide interest over local interest;
2. Preserve the natural character of the shoreline;

3. Seek long-term benefits over short-term benefit;
4. Protect the resources and ecology of the shoreline;
5. Increase public access to publicly owned areas of the shoreline;
6. Increase recreational opportunities for the public in the shoreline; and
7. Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary

Groundwater Protection

Policy EN-3.22 Protect and preserve the quantity and quality of Tacoma's groundwater supply.

Policy EN-3.28 Protect the quality of groundwater used for public water supplies to ensure adequate sources of potable water for Tacoma and the region. Ensure that the level of protection provided corresponds with the potential for contaminating the municipal water supply aquifer.

Staff Findings and Observations:

1. Shoreline policies mandate that the City consider the long-term statewide interest over short-term benefits or local interests.
2. Comprehensive Plan policies establish use priorities for the Port of Tacoma MIC, but South Tacoma lacks the same prioritization. In the Port of Tacoma MIC, the primary use is intended for cargo related port activities, followed by uses that support that core function.
3. Policies recognize that in the Core Area localized off-site impacts are acceptable, including noise, odor, and visual impacts.
4. Policies call for development regulations that apply to industrial use in the Buffer area to ensure an appropriate transition to non-industrial areas. Both the Port of Tacoma MIC and South Tacoma MIC have significant residential and commercial areas in close proximity to heavy industry.
5. The Tideflats area is also an area with multiple vulnerabilities, including seismic, volcanic, flood, and geologic hazards, as well as long-term sea level rise. Policies call for approaches to both avoid and mitigate these vulnerabilities.
6. The Tideflats is an area with significant environmental assets including wetlands, streams, fish and wildlife areas, and restoration sites. Policies call for no net loss of ecological function and a net gain of ecological function over time.
7. Comprehensive Plan policies direct the City to utilize best available science and climate data in this review process.
8. Climate policies direct the City to support both the reduction of Greenhouse Gases over time as well as efforts to improve resilience to climate and other natural disasters.
9. The South Tacoma MIC is co-located with the South Tacoma Groundwater Protection District. This district implements policies to protect and preserve groundwater quantity and quality. This district limits specific uses that are incompatible with these policies.
10. The City's policies consider air and water quality impacts and seek to ensure that all Tacomans have access to clean air, clean water and a healthy environment.

4. Supplemental Information

a. Findings from 2017 Review

14. Likelihood of Industrial Development in Tacoma's Port/Tideflats

In addition to the regional industrial employment growth forecasts and availability of developable land within the Port/Tideflats, two major new energy projects have recently been proposed in the Port Tideflats as well as a significant expansion of an existing facility: 1. A liquefied natural gas facility that was permitted and is now under construction, 2. A gas to methanol plant that was proposed for the Tideflats but later withdrawn, and 3. An expansion of an existing refinery to produce ethanol. Multiple oil, gas and petrochemical refineries, terminals, and bulk storage sites currently operate in the Port Tideflats. In addition, a permit application was submitted and approved for a surface mine along Marine View Drive.

19. Environmental Risks to Critical Areas

The Port/Tideflats is an area with multiple environmentally sensitive areas, including fish and wildlife habitat conservation areas, streams, wetlands, and aquifer recharge areas. The subarea planning process will include an environmental review that will allow the City to conduct a more scientifically rigorous, area-wide review of the potential impacts from development in the Port/Tideflats, the scale of those impacts, and potential mitigation measures.

20. Environmental Hazards to Port/Industrial Uses

The Port/Tideflats is an area with potential risks of geologic, flood, and other natural disasters. The subarea planning process will include an environmental review that will allow the City to conduct a more scientifically rigorous, area-wide review of the potential risks to new and existing uses, development, and infrastructure, as well as the compounding impacts of a natural disaster occurring in an area with potentially hazardous chemicals and other materials.

21. Public Health, Safety, and Nuisance Impacts to Surrounding Neighborhoods and Employees

Some industrial and manufacturing uses carry a higher probability of health and safety concerns, or a higher risk of nuisance impacts to adjacent uses. These risks may vary considerably depending on the type of use, the location, and the building and operational design and management. Certain types of impacts may be minimized and mitigated adequately by existing regulatory structures (such as storm water management). The City has received complaints pertaining to traffic impacts, greenhouse gas emissions, odor, noise, water consumption, and lighting. The Subarea Planning process will provide a mechanism to review these complaints and potential risks and to evaluate alternative methods of minimizing and mitigating these public health, safety and nuisance risks.

22. Climate Policy (2015)

The 2015 update of the City's Comprehensive Plan, One Tacoma, included new goals and policies pertaining to the assessment of climate risks, adaptation measures, mitigation of climate causing greenhouse gas emissions, and the promotion of community resilience strategies.

23. Climate Change Resiliency Study (2016)

This study marks the beginning of a process undertaken by the City of Tacoma's Environmental Services and the Planning and Development Services Departments to better understand and proactively manage climate risks in order to protect local residents, make sound investments, and ensure that the City can prosper, even in a changing climate.

Three systems were considered in the study:

- Built infrastructure, with a focus on surface water, wastewater, solid waste, and transportation assets;
- Natural systems, including streams, lakes, wetlands, open spaces, and restoration sites; and
- Social systems, including general health and social services and potentially at-risk populations and neighborhoods.

24. Washington Coastal Resilience Project (2016-2018)

The City of Tacoma is participating as a case study in the Washington Coastal Resilience Project. Washington's Coastal Resilience Project is a three-year effort to rapidly increase the state's capacity to prepare for natural events that threaten the coast. The project will improve risk projections, provide better guidance for land use planners and strengthen capital investment programs for coastal restoration and infrastructure. These are the tools that coastal communities need to become more resilient to disasters.

26. Emergency Response

The City of Tacoma and the Port of Tacoma partnered with other agencies and private companies to initiate a study of Emergency Response systems in the tideflats area. The team included representatives from Tacoma's Planning and Development Services, Fire, and Public Works departments, as well as Tacoma Rail. In addition to active involvement from the Port of Tacoma, the Puyallup Tribe of Indians, U.S. Oil, Targa Sound Terminals, and Puget Sound Energy all participated in the study.

The Emergency Response/Intelligent Transportation System (ER/ITS) study addresses existing and future traffic congestion as well as infrastructure and operating deficiencies for emergency response in the tideflats.

b. Industry Concentrations and Employment Growth

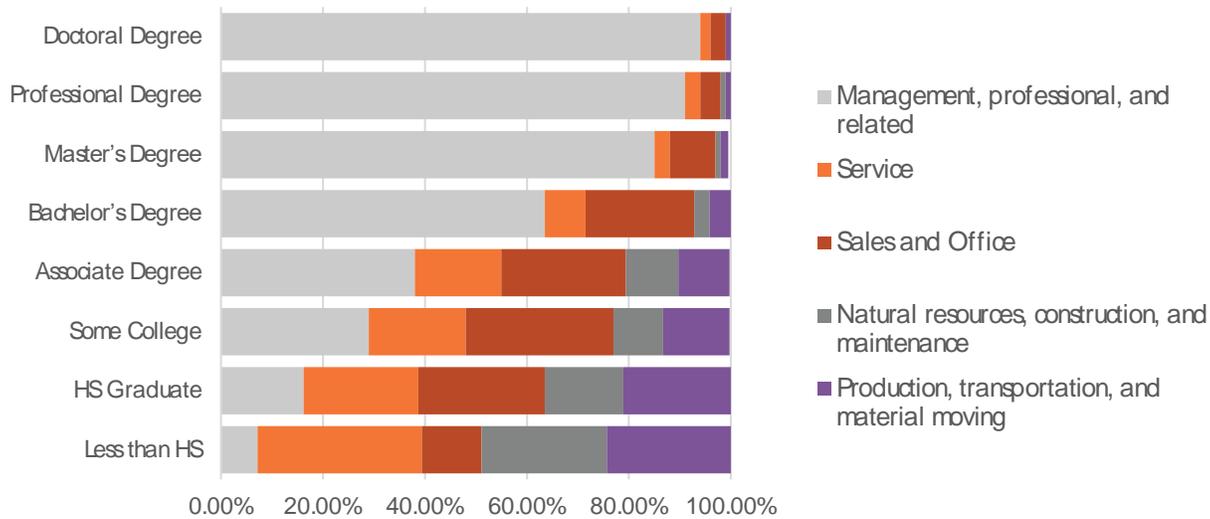
Industrial jobs in the Port of Tacoma MIC account for 9% of all industrial jobs in the County. In comparison, the Frederickson MIC accounted for about 4% of all industrial jobs in the County as of 2010 while the Sumner-Pacific MIC accounted for about 14% of all industrial jobs in the County as of 2015.¹

Industrial jobs can be a significant source of employment for people without high educational attainment levels. A large portion of Tacoma's population experiences barriers to employment due to lower education levels, less specialized or technical skillsets, language barriers, or lack of transportation or mobility. Only about 39% of Tacoma's population that is 25 years and above have a college degree.

As shown in the following graphic, occupations in production, transportation, and material moving as well as natural resources, construction, and maintenance are a strong source of employment for the employed civilian workforce without college degrees.

¹ Employment density alone does not capture the extent and impact of industrial activity, especially for an area like the Port of Tacoma MIC, since trends such as containerization have reduced the need for personnel but increased productivity.

Educational Attainment by Occupation – Employed Civilian Workforce, 2016



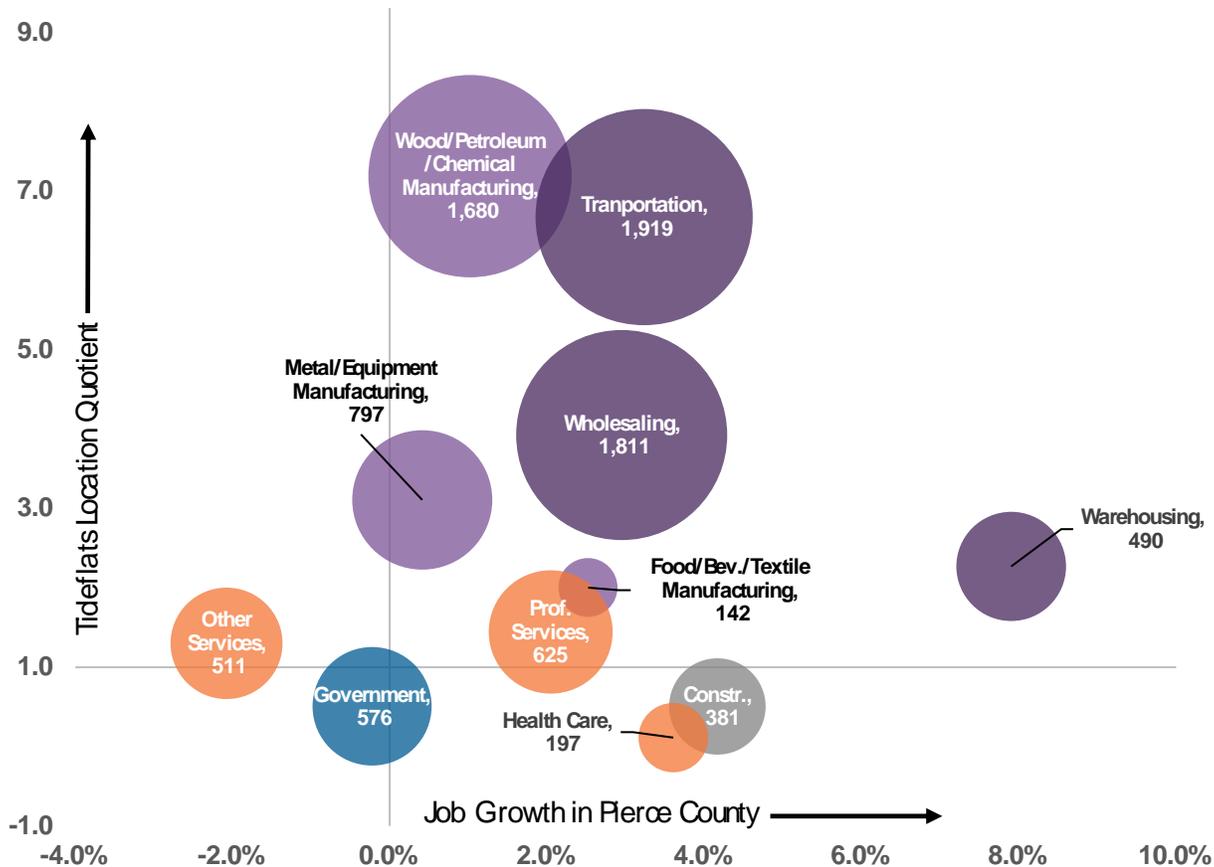
Sources: BLS, 2016; BERK, 2020.

For workers without a college degree and/or lower skilled workers, industrial jobs can typically provide higher wages, better benefits, and better opportunities for career advancement and skill development compared with other employment opportunities. For some workers in the region, these industrial jobs are a pathway to economic advancement.

Competitive Strengths

The Port of Tacoma MIC has competitive strengths in the sectoral clusters of manufacturing as well as WTU. On the vertical axis of the following graphic is the location quotient of each cluster, with sub-sectors with location quotients greater than 1.0 representing sub-sectors that have a greater concentration in the Port of Tacoma MIC than elsewhere in Pierce County. On the horizontal axis is compound annual employment growth in Pierce County over the last ten years from 2010 to 2019. The size of the bubbles represents the employment in each sub-sector in the Port of Tacoma MIC for 2019.

Location Quotient and Job Growth Analysis, 2019



Note: Job growth is calculated by taking the compound annual growth rate for each industry sector between 2010 to 2019 for Pierce County. Location quotients are calculated using 2019 employment information provided by PSRC. Sources: PSRC, 2020; BERK, 2020.

The upper right-hand quadrant of the graph shows the sub-sectoral clusters in the Port of Tacoma MIC with the highest concentration of jobs and highest employment growth. Sub-sectors with both high concentration of jobs and relatively high employment growth include transportation, warehousing, and wholesaling – all sub-sectors associated with the WTU sector. The transportation (6.7 location quotient) and wholesaling (3.9 location quotient) sub-sectors are highly concentrated in the Port of Tacoma MIC. Employment in the transportation subsector is likely fueled by Port of Tacoma marine cargo operations as well as private businesses involved in general freight trucking, coastal freight transportation, pipeline transportation, general warehousing, and storage, among others. The wholesaling subsector is made up of a diverse array of private firms wholesaling motor vehicle parts, lumber, construction equipment, professional and industrial supplies, hardware, fresh fruit, and groceries, etc.

Other sub-sectors highly concentrated in the MIC include wood, petroleum, and chemical manufacturing (7.2 location quotient) as well as metal and equipment manufacturing (3.1 location quotient). Firms in the metal and equipment sub-sector include such businesses as boat and shipbuilding firms, firms related to iron foundries and metal manufacturing, and firms manufacturing motor vehicle parts, among others. These sub-sectors are also among the slowest growing sub-sectors in Pierce County over the last several years. One potential cause for the slowing growth of these manufacturing sub-sectors may be recent innovations such as increasing automation. Studies suggest a negative relationship between automation and routine manual employment in local labor markets (Bharadwaj and Dvorkin, 2019).

c. Environmental Assets and Hazards Citywide

Fish and Wildlife Habitat, Wetlands, and Streams

The Puyallup River, Hylebos Creek, and Wapato Creek flow through the study area within highly modified channels and armored banks. The Puyallup River is tidally influenced throughout the study area and is the major source of sediment to nearshore marine habitats. Prior to construction of the waterways and dredging of the Puyallup River channel, the Commencement Bay nearshore and Puyallup River delta supported over 2,100 acres of intertidal mudflats (Kerwin 1999, as cited in City of Tacoma 2007). Today, estuarine wetlands and mudflats occur in a few isolated areas adjacent to the waterways and associated with Port of Tacoma restoration sites (USFWS 2020a; City of Tacoma 2020a). Freshwater wetlands are present in small, isolated areas within the built environment and comprise a very small percentage of the study area. According to the City of Tacoma's wetland inventory, less than 200 acres, or about 3.5% of the tideflats area supports known wetlands or areas with high probability (City of Tacoma 2020a). The inventory maps cover 40 small (<1 acre) known wetlands that are scattered throughout the area.

The Puyallup River supports several salmonid species including coastal cutthroat trout, bull trout, steelhead, Chinook (spring and fall) salmon, sockeye, coho, pink, and chum (WDFW 2020a; WDFW and NWIFC 2020). Wapato Creek and Hylebos Creeks support a smaller set of species including steelhead, coho, Chinook (fall), pink, and chum. Several of these fish species are federally listed under the Endangered Species Act (ESA), have designated critical habitat in the study area, and are also listed in Washington State by WDFW (**Error! Reference source not found.**). The waterways are characterized by narrow intertidal and shallow subtidal margins around a relatively deep channel. These margins are important migratory routes for salmon, waterfowl, and shorebirds, and serve as rearing areas for juvenile and adult salmonids and their prey. Adult salmonids are typically found in Commencement Bay in August and November, except spring Chinook and steelhead, which are present during the winter and spring (City of Tacoma 2007). Juvenile Chinook salmon use the Commencement Bay nearshore and the waterways, particularly after the releases of hatchery fish in mid to late May (Kerwin 1999, as cited in City of Tacoma 2007).

Despite substantial modification of the Commencement Bay nearshore, WDFW has documented forage fish (i.e., surf smelt and sand lance) spawning at the west edge of the Middle Waterway, near the mouth of the Puyallup River, and along the upper intertidal zone of the sand-gravel beaches of the former Milwaukee Waterway, which is a small rectangular area located between the Puyallup River and Sitcum Waterway (WDFW 2020b). The WDFW surveys documented mostly surf smelt spawning at these locations with only a small area of sand lance spawning observed at the spit on the west side of the Puyallup River.

The Puyallup Tribe operates a robust program to maximize and optimize the shellfish harvest by protecting the habitats and populations of shellfish while also providing a safe environment for commercial, ceremonial, and subsistence fishing opportunities for Tribal members. The Tribe manages this fishery per their Revised Puyallup Tribal Shellfish Code (Chapter 12.12), and it includes crab (Dungeness, red rock, graceful), sea cucumber, geoduck, and spot prawn, among other species. Despite productive habitat for crab along edges of the waterways, there is no Tribal harvest within the Tideflats study area due to ship traffic associated with Port activities (Winfrey, pers. comm., 2020). The closest approved commercial harvest for shellfish is north of the study area between Browns Point and Dash Point. Recreational harvest of spot shrimp occurs near the barge rafts on the west side of Commencement Bay, and common squid are harvested from areas near Les Davis pier adjacent to Ruston Way (Winfrey, pers. comm., 2020). According to WDFW, documented shellfish resources include Dungeness crab and geoduck clams, although the Washington State Department of Health

has closed all of Commencement Bay shoreline to shellfish harvesting due to a combination of marine biotoxins and pollution.

Marine mammals that have or may have occurred in Commencement Bay include Pacific harbor seal, California sea lion, and killer whale. Seal and sea lion haul-outs have been documented along Tacoma's marine shoreline on buoys, floats, and logbooms in northeast Commencement Bay (Jeffries et al. 2000, as cited in City of Tacoma 2007). In general, marine mammals are unlikely to use nearshore marine habitats in the study area due to shipping traffic.

Commencement Bay is located within the Pacific Flyway, a major north-south migratory corridor which extends from Mexico north into Canada and the state of Alaska. The marine waters along with the restored intertidal wetlands and riparian buffers associated with mitigation sites provide habitat for shorebirds, waterfowl, and upland birds to breed and overwinter. The WDFW Priority Habitats and Species (PHS) database online mapper also documents big brown bat, purple martin, bald eagle, great blue heron, and western pond turtle in the study area (WDFW 2020c). None of these species are listed under the federal ESA or have specific protections under state regulations. Coyote and beaver are frequently found in the study area with the latter species requiring active management to maintain stream and ditch conveyance and reduce localized flooding issues.

South Tacoma Groundwater Protection District (from TMC 13.06)

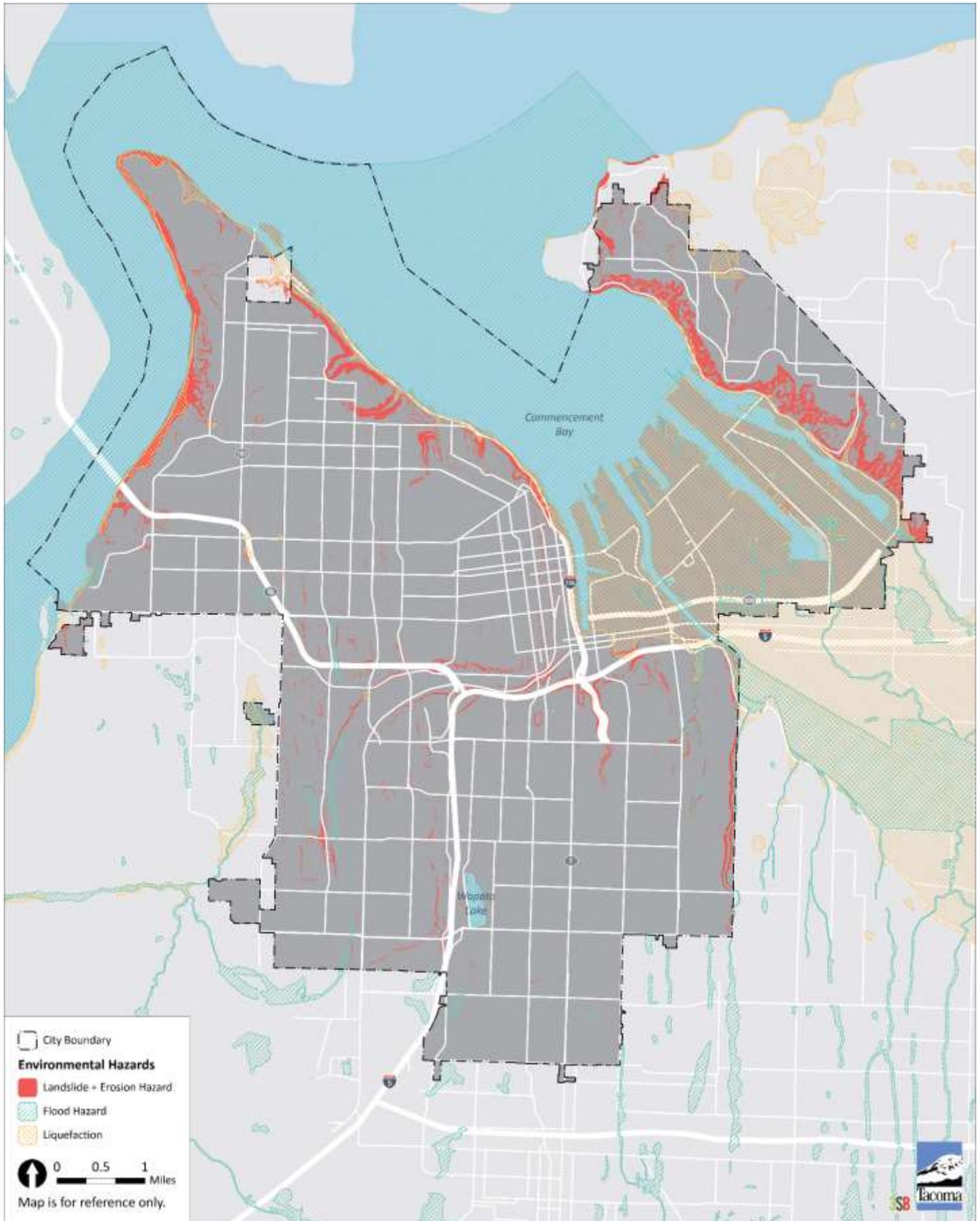
The South Tacoma groundwater aquifer system serves as a significant source of drinking water for the City of Tacoma. It may supply as much as 40 percent of the City's total water demand during periods of peak summer usage. For future growth, supplemental supply, and emergency response, this resource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

It has been found and determined that a major cause of historical groundwater contamination in the South Tacoma aquifer system is from accidental or improper release of hazardous substances from spillage, leaks, or discharges from local industry. Due to the large number of potential sources of toxic and hazardous substances within the area which recharges the aquifer system and the possibility of further contamination, the City of Tacoma found that it was necessary and in the public interest to establish the South Tacoma Groundwater Protection District in 1988.

The South Tacoma Groundwater Protection District is an overlay zoning and land use control district specifically designed to prevent the degradation of groundwater in the South Tacoma aquifer system by controlling the handling, storage and disposal of hazardous substances by businesses. The overlay zoning district imposes additional restrictions on high impact land use development in order to protect public health and safety by preserving and maintaining the existing groundwater supply for current and potential users and to protect the City of Tacoma from costs which might be incurred if unsuitable high impact land uses were to reduce either the quality or quantity of this important public water supply source.

It is the intent of this chapter to establish orderly procedures that reduce the risks to public health and safety and to the existing groundwater supply. These procedures shall ensure that within the South Tacoma Groundwater Protection District, properties that have stormwater infiltration facilities and properties that store hazardous substances meet appropriate performance standards, and those properties are properly maintained, inspected, and tested when necessary.





Seismic Hazards

The Seattle Fault Zone runs roughly east-west just south of downtown Seattle and runs roughly parallel to I-90. A fault is considered active when it has shown evidence of displacement within the last 11,600 years. An earthquake on the Seattle Fault poses substantial risk to the Puget Sound region. Deep quakes are the most common large earthquakes that have occurred in the Puget Sound region. Quakes larger than magnitude 6.0 occurred in 1909, 1939, 1946, 1949, 1965, and 2001 (PNSN 2020). However, shallow quakes can create more damage than deep quakes because of the proximity to the epicenter. Resulting damage from earthquakes depends on many factors including distance to epicenter, soil and bedrock properties, and the duration of shaking.

Basins containing thick deposits of unconsolidated materials can amplify earthquake waves and cause far more damage to structures than the same waves passing through bedrock. As noted above, the depth to bedrock in the study area is relatively deep at between 500 and 600 meters. In addition, the study area includes large areas of undocumented fill where the geotechnical engineering characteristics are unknown and thus may be susceptible to higher ground shaking hazards without either the use of engineered fill, specially designed foundation types, or use of deep foundation systems (e.g., pile supports).

Liquefaction

According to mapping compiled by the Washington State Department of Natural Resources (DNR), the entire study area is susceptible to liquefaction hazards (DNR 2003).

Liquefaction occurs where surface soils are primarily loose, granular in consistency, and located below the water table. Saturated loose soils that are generally within 50 feet of the ground surface are at most risk of liquefaction. Liquefaction is of particular concern because it has often been the cause of damage to structures during past earthquakes. The consequences of liquefaction include loss in the strength and settlement of the soil. The loss of strength can result in lateral spreading, bearing failures, or flotation of buried vaults and pipes. Typical of marshland and tidal areas, soils in low-lying areas near bodies of water can contain enough saturated sandy sediments that they are commonly susceptible to liquefaction.

Tsunami and Seiche Waves

Tsunami and seiche waves are possible secondary effects that can occur from seismic events or other large displacements of materials. Tsunamis, often incorrectly described as tidal waves, are sea waves usually caused by the displacement of the ocean floor. Typically generated by seismic or volcanic activity or by underwater landslides, a tsunami consists of a series of high-energy waves that radiate outward like pond ripples from the area where the generating event occurred. For the Puget Sound region, either a large subduction zone quake off the coast or along the Seattle or Tacoma Faults could produce a tsunami. In the case of a subduction zone quake, a tsunami would travel from the coast through the Strait of Juan de Fuca into Puget Sound, and then south. Numerical modeling of tsunamis generated by earthquakes on the Seattle Fault and the Tacoma Fault show that the City of Tacoma would be subjected to larger and more damaging tsunami waves from a Seattle Fault earthquake (USGS 2010). While the Seattle Fault is considerably more distant than the Tacoma Fault, the Seattle Fault traverses Puget Sound in much deeper water and can therefore displace more water, resulting in bigger tsunami waves.

Seiche waves consist of a series of standing waves of an enclosed body or partially enclosed body of water caused by earthquake shaking, similar to what could be described as sloshing action. Seiche waves can affect harbors, bays, lakes, rivers, and canals. Both Puget Sound and Lake Washington have experienced seiche waves in 1891, 1949, and 1964. The

“sloshing” effect of a seiche event can damage facilities close to the water and could potentially be experienced within Commencement Bay.

The Washington Geological Survey’s tsunami hazards database maps inundation extents for a variety of earthquake scenarios, including a Cascadia Subduction Zone magnitude 9.0 scenario, and other scenarios that include modeled inundation extents for local crustal earthquakes on the Tacoma and Seattle Faults. The entire study area is located in an area that could be inundated in a tsunami event (**Error! Reference source not found.**; DNR 2020a). According to a more detailed evaluation, with the modeled scenario of a 7.3 magnitude earthquake on the Seattle Fault (considered the worst-case credible event), the study area would experience inundation ranging from less than 0.5 meter (approximately 1.6 feet) up to as much as 5 meters (approximately 16 feet) (DGER 2009).

d. Tideflats Emergency Response Plan (2016)

Link: https://cms.cityoftacoma.org/Planning/ER-ITS/Tideflats_ER_Plan_Final_March2016.pdf

Excerpt:

THE EMERGENCY RESPONSE PROBLEM

The emergency response problem has two facets. First, the Tideflats has a mix of land uses and operations that have the potential for serious fire or EMS emergencies. Second, the emergency response times to the Tideflats have increased over the past several years. Each of these factors is summarized below.

TIDEFLATS LAND USE AND OPERATIONS

Within the City of Tacoma, the Tideflats is the highest risk zone for Hazardous Material (HazMat) incidents. Within the area, there is resurgence in manufacturing, particularly on the Blair-Hylebos peninsula. Several of the proposals include operations with higher emergency risk potential. While potentially adding to the demand for fire services, these developments will help restore the economic and tax-generating base within the Tideflats. There are other key factors that heighten the emergency response needs within the Tideflats:

Geographic

- Location of incidents spread out through entire zone
- Marinas are in fairly remote locations so land response is longer; not quickly or easily accessible by water routes either
- Access to area limited by waterways, rail, vacated streets and closed bridges

Demographic

- Low residential population but a 1575-bed detention center and a 75-bed reentry facility and a high daytime worker population

Physical

- Mostly chemical releases and combustible/flammable liquid spills/leaks
- Large un-sprinkled buildings/yards with high fire load
- Private hydrants with limited water

- Presence of flammable liquid pipelines
- Abundant ignition sources

The past decade has seen an increase in the Tacoma Fire Departments (TFD) emergency response times to the Tidelands area due to a number of factors. Contributing factors for the response time deficiencies are listed below.

- Temporary blockage of certain roadways within the Port area by Tacoma Rail and other Port operations
- Roadway congestion resulting from local and regional traffic patterns
- Permanent vacation of a portion of Alexander Avenue north of SR509 and other recent street vacations
- Poor roadway surfaces within the Port that make travel difficult for fire apparatus
- Permanent closures of bridges and an increase in truck activity/congestion
- Closure and relocation of fire stations

e. Sea Level Rise and Flood Conditions

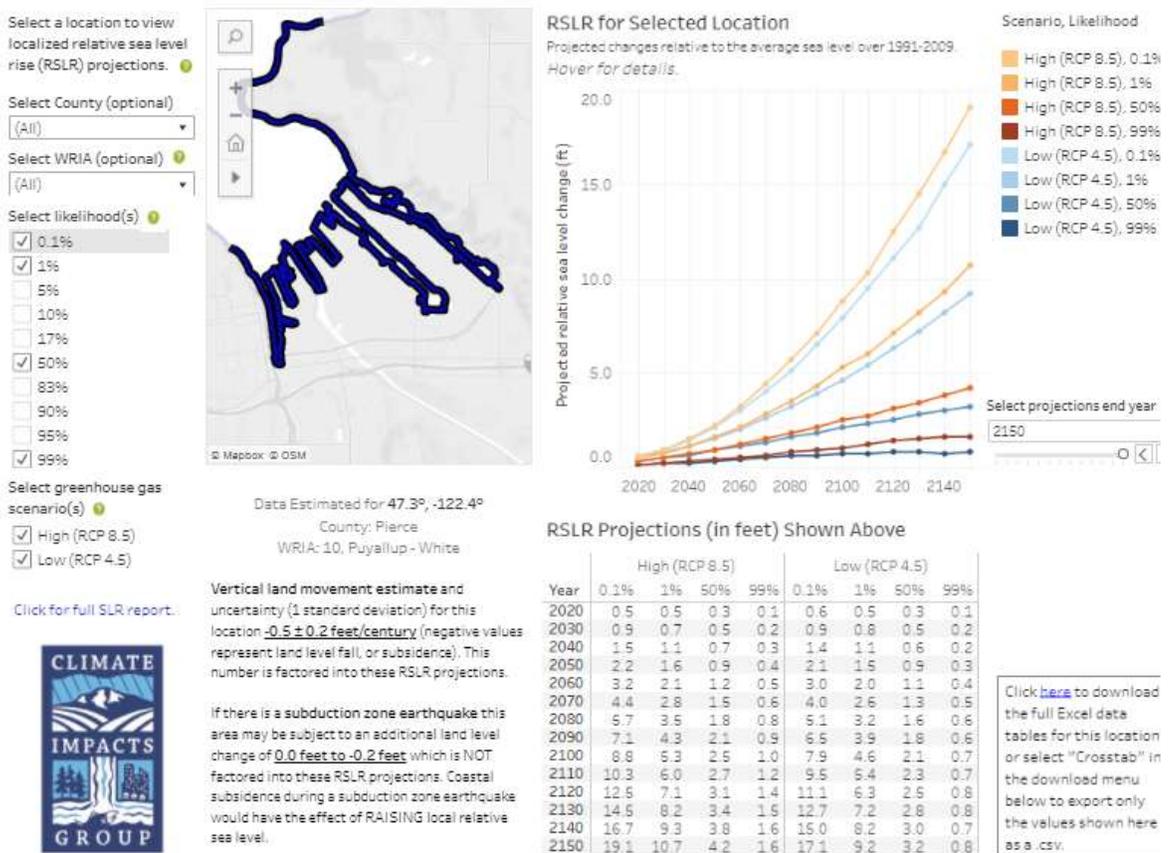
In 2015 the City updated the Comprehensive Plan, incorporating sea level rise and climate resilience policies to the Environment and Watershed Health Chapter. Following that, the City has conducted vulnerability assessments and partnered with Washington Sea Grant and the Climate Impacts Group to evaluate sea level rise probabilities. Much of that analysis and modeling work is now available at:

<http://wacoastalnetwork.com/chrn/research/sea-level-rise-research/>

The following is a screenshot demonstrating the modeling capabilities. Additional sea level rise estimates and vulnerability assessments are being conducted as part of the Tidelands Subarea Plan and is available as part of the agenda packet for the January 14, 2021 meeting of the Tidelands Steering Committee at:

www.cityoftacoma.org/onetacoma.

VISUALIZATION #1: Projected sea level change by year



Subsection II: Mining and Quarrying

1. Issue Description

Use Definition: This use category includes all industry sectors identified under NAICS Code 21 Mining, Quarrying, and Oil and Gas Extraction. The Mining, Quarrying, and Oil and Gas Extraction sector comprises establishments that extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas. The term mining is used in the broad sense to include quarrying, well operations, beneficiating (e.g., crushing, screening, washing, and flotation), and other preparation customarily performed at the mine site, or as a part of mining activity.

Associated Impacts: Traffic, noise, odor, clearing, grading, stormwater runoff, light. Impacts can occur to nearby residential areas as well as to fish and wildlife habitat.

Likelihood of Development: Mining and quarrying uses have historically been permitted along Marine View Drive. The City permitted a mining and quarrying operation in 2017 prior to the interim regulations taking effect.

Examples:



2. Area of Applicability

Surface mining is currently allowed in most zoning districts citywide as a conditional use, including residential, commercial, industrial, and mixed-use zoning districts. This review will address surface mining citywide.

3. Policy Review

In addition to the general policies cited previously, the following is a summary of policies that are specific to mining and quarrying.

Growth Management Act

RCW 36.70A.060 (emphases and highlights added)

(1)(a) Each county that is required or chooses to plan under RCW [36.70A.040](#), and each city within such county, shall adopt development regulations on or before September 1, 1991, to assure the conservation of agricultural, forest, and mineral resource lands designated under RCW [36.70A.170](#). Regulations adopted under this subsection may not prohibit uses legally existing on any parcel prior to their adoption and shall remain in effect until the county or city adopts development regulations pursuant to RCW [36.70A.040](#). *Such regulations shall assure that the use of lands adjacent to agricultural, forest, or mineral resource lands shall not interfere with the continued use, in the accustomed manner and in accordance with best management practices, of these designated lands for the production of food, agricultural products, or timber, or for the extraction of minerals.* Any county located to the west of the crest of the Cascade mountains that has both a population of at least four hundred thousand and a border that touches another state, and any city in such county, may adopt development regulations to assure that agriculture, forest, and mineral resource lands adjacent to short line railroads may be developed for freight rail dependent uses.

(b) Counties and cities shall require that all plats, short plats, development permits, and building permits issued for development activities on, or within five hundred feet of, lands designated as agricultural lands, forestlands, or mineral resource lands, contain a notice that the subject property is within or near designated agricultural lands, forestlands, or mineral resource lands on which a variety of *commercial activities may occur that are not compatible with residential development for certain periods of limited duration.* The notice for mineral resource lands shall also inform that an application might be made for mining-related activities, including mining, extraction, washing, crushing, stockpiling, blasting, transporting, and recycling of minerals.

* * *

(3) *Such counties and cities shall review these designations and development regulations when adopting their comprehensive plans under RCW [36.70A.040](#) and implementing development regulations under RCW [36.70A.120](#) and may alter such designations and development regulations to insure consistency.*

One Tacoma Plan – Urban Form

Overall Planning Targets: 127,000 new residents + 97,000 new jobs

Centers

Centers are compact, walkable and pedestrian-oriented urban places. They are connected by public transit and active transportation networks. They anchor complete neighborhoods with retail stores and businesses (grocery stores, restaurants, markets, shops, etc.) civic amenities (libraries, schools, community centers, places of worship, etc.), housing options, health clinics, daycare centers, employment centers, plazas and parks and other public gathering places. Centers will be the primary areas for growth and change in Tacoma over the next 25 years.

Focusing new growth in centers helps achieve goals of having more Tacomans live in complete neighborhoods, use public transit and active transportation—walking, biking and rolling—to commute to work and complete errands, and

Tideflats and Industrial Land Use Amendments

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it will help mitigate and prepare for the effects of climate change. Clustering and co-locating destinations and housing within compact, walkable centers makes access by transit, walking, wheelchair, and bicycle more practical and reduces the amount of driving needed to access services, reducing the impact on roadways, reducing congestion, and facilitating freight movement.

Commercial Districts:

Commercial development involves a wide variety of uses and can range in scale from small neighborhood convenience shops to regional shopping centers. Commercial areas are the activity centers of the community. Commercial districts should be safe, well designed, appropriately scaled, and integrated into the fabric of the community. Infill development and intensification of existing commercial areas will aid their continued economic viability. In some limited instances, physical expansion of existing areas may be permitted; however, linear expansion is to be strictly limited. Commercial development within the mixed-use centers is also guided by policies in Section II specifically addressing the designated centers.

Major institutional Campus

Institutions in the health care and education sectors are concentrated in large hospital and college campuses and dispersed smaller facilities. Major institutions are large employers with campuses that vary from pastoral expanses to more concentrated urban grounds. They are located throughout the city, often in or adjacent to residential areas.

Manufacturing + Industrial Areas

Manufacturing/Industrial areas are in the low, flat areas along the Port/ Tideflats and the Nalley Valley. The manufacturing and distribution sectors concentrate here. Manufacturing/industrial centers are intended to be well-served by major transportation facilities including rail, interstate and transit systems. Many of the industrial uses are land intensive in nature. To preserve land at these centers, large retail, residential or nonrelated office uses are discouraged.

Open Space Corridors

Open Space Corridors are natural areas that provide safe, healthy places for resident and migratory fish and wildlife species that live in and move through the city. Maintaining diverse, connected habitat corridors will help fish and wildlife adapt to continued human population growth, development, and climate change. Open Space Corridors also benefit Tacomans by keeping air and water clean and cool, reducing the risks from landslides and flooding, and providing places for people to play, learn and experience nature. Open Space Corridors encompass the city's most valuable and distinctive natural features—streams and sloughs, wetlands, and large forested areas, such as Hylebos Creek, Swan Creek, Wapato Lake, Snake Lake, China Lake, and the City's many gulches. Other urban habitats are woven throughout the built environment and include things like street and yard trees, backyard plantings, parks, and bridges that provide opportunities for bird nesting. Enhancing or establishing new Open Space Corridors will involve preserving and restoring existing natural features, creating vegetated connections between tree canopy and greenspaces, and incorporating nature into the design of buildings and landscaping, streetscapes, parking lots, and infrastructure.

Residential Pattern Areas

Tacoma has six distinct Historic Residential Pattern Areas, as shown in Figure 8. The development patterns and characteristics of these areas are influenced by the natural landscape and how and when these parts of the city were developed. Each Historic Residential Pattern Area has unique physical, social, cultural and environmental qualities that

differentiate them and create their sense of place. In order to maintain and enhance the positive qualities and sense of place in each pattern area, it is desirable to have policies and regulations that respond to each area's unique natural and built assets. The following policies identify key characteristics of each of Tacoma's Historic Residential Areas that are relevant to decisions related to future development in these areas as well as special opportunities to enhance the residential environment.

One Tacoma Plan – Environment and Watershed Health

Policy EN-4.13 Ensure that plans and investments are consistent with and advance efforts to improve terrestrial and aquatic habitat connectivity for fish and wildlife by:

- a. Preventing habitat fragmentation
- b. Improving habitat quality
- c. Preserving or creating habitat areas as feasible on new development and redevelopment sites
- d. Creating and enhancing Open Space Corridors that allow fish and wildlife to safely access and move through and between habitat areas

Policy EN-4.29 Ensure that plans and investments are consistent with and advance efforts to improve the quantity, quality and equitable distribution of Tacoma's urban forest:

- a. Strive to achieve a citywide tree canopy cover of 30 per cent by the Copper Beech at Wright Park year 2030 ("30-by-30")
- b. Require or encourage the preservation of large healthy trees, native trees and vegetation, tree groves and forested areas as an element of discretionary land use reviews
- c. Coordinate plans and investments with efforts to improve tree species diversity and age diversity
- d. Invest in tree planting and maintenance, especially in low canopy areas, neighborhoods with underserved or under-represented communities and within and near Open Space Corridors
- e. Promote the restoration of native trees and vegetation in Open Space Corridors, buffers and shorelines
- f. Encourage planting of native or climate adapted trees and vegetation generally, especially in Open Space Corridors
- g. Identify priority areas for tree preservation and planting in the development of subarea, neighborhood and watershed plans

Staff Findings:

- Mineral Resource Lands are a protected use under the Growth Management Act.
- State policies recognize inherent incompatibility between natural resource uses and urban densities of surrounding development and suggest that areas surrounding natural resource uses should have standards in place to limit encroachment of incompatible uses.
- Cities planning under GMA were required to designate and protect such lands prior to the development of the first Comprehensive Plans. Upon adoption of the Comprehensive Plan, such use allowances and development

regulations that protect mineral resource lands may be amended for consistency with Comprehensive Plan policies.

- The City of Tacoma is designated as a Metropolitan City in VISION 2040, and is expected to accommodate significant population and employment growth (127,000 new residents and 97,000 new jobs). The Growth Management Act.
- Continuing to designate and allow such uses could detrimentally impact population and housing growth in adjacent areas.
- Further, such uses are potential source of significant off-site impacts, including noise, traffic, odor, and light.
- Mining and quarrying uses are inconsistent with urban form, urban densities, employment growth targets, and walkability policies established in the Comprehensive Plan for Residential, Commercial, Mixed-use areas.
- Mining and quarrying uses are not preferred or prioritized uses within the City's Industrial Lands.
- Mineral resource lands are inconsistent with the policy intent for areas designated as parks and open space. Further, the City has scarce opportunities to maintain and enhance fish and wildlife habitat areas within the City and continuing to allow mineral resource extraction would have a detrimental impact on these areas.

4. Options Comparison

Option A: Alternative	Option B: Baseline Ordinance	Option C: Current Ordinance
Use broad definition from Current Ordinance	<p>Surface Mining Definition: “Surface mining.” Any premises from which the removal of any rocks, sand, gravel, stone, earth, topsoil, peat, minerals, or other natural resources results in the following:</p> <ol style="list-style-type: none"> 1. More than three acres of disturbed area; 2. Surface mined slopes greater than 30 feet high and steeper than 1.0 foot horizontal to 1.0 foot vertical; or 3. More than one acre of disturbed area within an eight acre area, when the disturbed area results from mineral prospecting or exploration activities. <p>Surface mining shall exclude excavations or grading necessary for the construction of a structure for which a building permit has been duly issued.</p>	<p>This use category includes all industry sectors identified under NAICS Code 21 Mining, Quarrying, and Oil and Gas Extraction. The Mining, Quarrying, and Oil and Gas Extraction sector comprises establishments that extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas. The term mining is used in the broad sense to include quarrying, well operations, beneficiating (e.g., crushing, screening, washing, and flotation), and other preparation customarily performed at the mine site, or as a part of mining activity.</p>
<p>New Mining and Quarrying: Prohibited</p> <p>Existing Mining and Quarrying: Nonconforming Use</p>	<p>Surface Mining allowed as a conditional use permit:</p> <ul style="list-style-type: none"> • All industrial districts • All X-Districts except NRX • All commercial districts • All residential districts. 	<p>New Mining and Quarrying: Prohibited</p> <p>Existing Mining and Quarrying: Permitted</p>
Maintain current standards for applicability to existing operations.	<p>Surface Mining Development Standards:</p> <p>The Growth Management Act (“GMA”), under RCW 36.70A.170, requires the designation of mineral resource lands. Mineral resources of Tacoma consist of rock and gravel deposits. The legislature has found that the extraction of these minerals by surface mining is an essential activity making an important contribution to the economic well-being of the state and nation. This section allows for surface mining, in accordance with Section 13.01.060, where the applicant can show that such uses are:</p>	No additional standards.

	<p>a. Located in an area sufficiently removed from existing residential or commercial developments;</p> <p>b. That a safe and reasonable re-use of the property shall be possible upon expiration of the operation;</p> <p>c. That adjoining properties and residences shall be safeguarded against undue, hazardous, or prolonged nuisances occasioned either by noise, odor, smoke, dust, debris, or other unsightly or obnoxious conditions. Special requirements for construction in residential districts within 400 feet of a mineral resource lands area can be found in Section 13.06.080.K.</p>	
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Subsection III: Smelting

1. Issue Description

Use Definition: (1) Primary Smelting and Refining of Copper. This industry comprises establishments primarily engaged in (1) smelting copper ore and/or (2) the primary refining of copper by electrolytic methods or other processes. Establishments in this industry make primary copper and copper-based alloys, such as brass and bronze, from ore or concentrates. NAICS Code 331411.

(2) Alumina Refining and Primary Aluminum Production. This industry comprises establishments primarily engaged in one or more of the following: (1) refining alumina (i.e., aluminum oxide) generally from bauxite; (2) making aluminum from alumina; and/or (3) making aluminum from alumina and rolling, drawing, extruding, or casting the aluminum they make into primary forms. establishments in this industry may make primary aluminum or aluminum-based alloys from alumina. NAICS Code 331313

(3) Nonferrous Metal (except Aluminum) Smelting and Refining. This industry comprises establishments primarily engaged in (1) smelting ores into nonferrous metals and/or (2) the primary refining of nonferrous metals (except aluminum) by electrolytic methods or other processes. NAICS Code 331410.

Associated Impacts: Smelting requires massive amounts of power and water. Requires significant land area (180 acres for proposed site in Eastern WA). Principal impacts include wastewater and slag, air emissions, particularly emissions that contribute to acid rain, chemical spill and discharge, explosion and fire risks.

Likelihood of Development: Limited evidence and examples at this time. A silicon smelting facility was proposed in Eastern Washington (<https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Industrial-facilities-permits/PacWest-Silicon-project>). Growth in solar panels is driving investment in silicon smelting. History of smelting in the Northwest, including Tacoma.

Examples:



Image from UW Tacoma

Asarco Smelter



Photo Courtesy of: <https://www.sms-group.com/press-media/press-releases/press-detail/successful-commissioning-of-the-silicon-metal-plant-of-mississippi-silicon-usa-495/>

2. Area of Applicability

This review applies to zoning districts citywide that allow heavy industrial uses, including WR - Warehouse Residential, PMI - Port Maritime Industrial, M-2 Heavy Industrial, S-1a Shoreline District (Narrows Marina), S-9 Puyallup River, and S-10 Port Industrial, and S-7 Schuster Parkway.

3. Policy Review

No additional policies specific to smelting uses.

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4. Options Comparison

	Alternative Ordinance	Baseline Ordinance	Current Interim Ordinance
Definitions	Smelting is a process of applying heat to ore in order to extract a base metal. It is a form of extractive metallurgy. It is used to extract many metals from their ores, including silver, iron, copper, and other base metals. Reference appropriate NAICS codes.	“Industry, heavy.” Manufacturing of any and all parts or products, provision of industrial services, and commercial production and sale of goods and services. This classification includes, but is not limited to, basic industrial processing from raw materials, food processing, industrial boatyards, industrial recycling facilities, scrap metal yards, CDL waste recycling facilities, port/terminal uses, log yards, sawmills, chemical plants, hulk hauling yards, wrecking yards, and bulk or raw materials storage.	(1) Primary Smelting and Refining of Copper. This industry comprises establishments primarily engaged in (1) smelting copper ore and/or (2) the primary refining of copper by electrolytic methods or other processes. Establishments in this industry make primary copper and copper-based alloys, such as brass and bronze, from ore or concentrates. NAICS Code 331411. (2) Alumina Refining and Primary Aluminum Production. This industry comprises establishments primarily engaged in one or more of the following: (1) refining alumina (i.e., aluminum oxide) generally from bauxite; (2) making aluminum from alumina; and/or (3) making aluminum from alumina and rolling, drawing, extruding, or casting the aluminum they make into primary forms. establishments in this industry may make primary aluminum or aluminum-based alloys from alumina. NAICS Code 331313 (3) Nonferrous Metal (except Aluminum) Smelting and Refining. This industry comprises establishments primarily engaged in (1) smelting ores into nonferrous metals and/or (2) the primary refining of nonferrous metals (except aluminum) by

			electrolytic methods or other processes. NAICS Code 331410.
Use	Prohibit citywide.	Heavy industrial uses permitted in multiple zoning districts citywide.	Prohibited citywide.
Special Use Standards	None.	In WR and S-1a, must be located in a building. Blast furnaces allowed in PMI only	None.

5. Supplemental Information

The following resources are helpful to explain the smelting process, potential impacts, and terminology.

- <https://www.northernminer.com/news/milling-smelting-and-the-environment/1000197293/#:~:text=Apart%20from%20the%20ores%20they,chemicals%20to%20extract%20the%20metals.&text=The%20milling%20process%20uses%20plenty,several%20hundred%20litres%20per%20minute>
- <https://www.semanticscholar.org/paper/Life-Cycle-Inventory-Assessment-of-Smelting-Process-Mabiza-Mbohwa/4dbd3bcd0114e32fe48744cd9b3c4e6aa6dc646d>
- <https://uppersouthplatte.org/learn/wp-content/uploads/2015/04/Milling-and-Processing-Worksheet-Key.pdf>

Subsection IV: Coal Storage and Export

1. Issue Description

Use Definition: The bulk storage or wholesale distribution of coal and coal products or transfer of coal products via shipping terminal.

Associated Impacts: Increased cancer risks to nearby communities, traffic congestion, increased vessel traffic, rail impacts, impacts to fish and wildlife (mercury and PAHs), air quality (emissions and particulate matter), impacts to Treaty fishing rights.

Likelihood of Development: In the past decade, multiple projects have been proposed for major coal terminals throughout the Pacific Northwest due to the declining use of coal for energy production in the United States and overseas demand for coal. These project proposals include:

- Millennium Bulk Terminals, Longview WA (2018): Permits denied by the Department of Ecology due to unavoidable and irreparable harm.
- Grays Harbor Coal Export Facility (2012): RailAmerica canceled plans for the facility citing other economic uses for the site that would provide more jobs, tax revenues, and business for the port.
- Gateway Pacific Terminal, Cherry Point, near Ferndale WA (2017): The permits were denied by the Army Corps of Engineers, determining that the project would impact legally-protected treaty fishing rights of the Lummi Nation. In 2017, Pacific International Terminals withdrew the environmental impact statement.

Example: From <https://gorgefriends.org/protect-the-gorge/coal-export.html>



A open-top coal train thunders alongside Washington State Route 14 in the Columbia River Gorge. (photographer: Daniel Dancer)



Photo from: <https://www.sierraclub.org/san-francisco-bay/coalfreeoakland>

2. Area of Applicability

This review applies to zoning districts citywide that allow heavy industrial uses, including WR - Warehouse Residential, PMI - Port Maritime Industrial, M-2 Heavy Industrial, S-1a Shoreline District (Narrows Marina), S-9 Puyallup River, and S-10 Port Industrial, and S-7 Schuster Parkway.

3. Policy Review

The following is a summary of policies from the Growth Management Act, Shoreline Management Act, Multicounty Planning Policies (VISION 2040), and the One Tacoma Comprehensive Plan that will be used to guide this land use regulatory code review and determine consistency with applicable goals and policies.

One Tacoma Plan Policies:

- Policy EN–1.3 Consider the impacts of climate change and the risks to the city’s environmental assets in all phases of planning, programming and investing.
- Policy EN–1.18 Evaluate climate data and consider climate risks in the development of regulations, plans and programs..

- Policy EN–3.26 Prevent groundwater contamination through performance criteria and guidelines for siting, design, construction and operation of commercial and industrial structures and activities.
- Policy EN–4.7 Ensure that plans and investments are consistent with, and advance, efforts to improve air quality and reduce exposure to air toxics, criteria pollutants and urban heat island effects. Consider air quality related health impacts on all Tacomans.
- Policy EN–4.10 Ensure that plans and investments are consistent with and advance efforts to improve water quality in rivers, streams, marine waters, floodplains, groundwater and wetlands. This includes reducing toxics, bacteria, temperature, metals and sediment pollution. Consider water quality related health impacts on all Tacomans.
- Policy EN–4.43 Reduce greenhouse gas emissions associated with single occupant vehicles and trucks hauling freight by creating a safe, clean and integrated multimodal transportation system.
- Policy EN–4.41 Support the reduction of Tacoma’s greenhouse gas emissions consistent with the City’s adopted targets.

4. Options Summary

The baseline ordinance allows coal facilities in the City of Tacoma, whereas the interim ordinance broadly prohibits the use. For the purpose of the public review document, staff recommends a preliminary amendment to prohibit the use citywide.

5. Supplemental Information

a. Links to other stories and information:

- <https://www.eia.gov/energyexplained/coal/imports-and-exports.php>
- https://www.usgs.gov/centers/or-water/science/ecosystem-effects-increased-coal-transport-across-pacific-northwest?qt-science_center_objects=0#qt-science_center_objects
- <https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-at-Ecology/Millennium>
- <http://mrsc.org/Home/Explore-Topics/Environment/Special-Topics/Coal-and-Oil-Transportation-in-the-Northwest.aspx>
- <https://www.bellinghamherald.com/news/local/article45648606.html>

b. United States Geologic Survey Presentation (attached to end of this report)

Subsection V: Chemical Manufacturing

1. Issue Description

Use Definition: Chemical manufacturing. The Chemical Manufacturing subsector is based on the transformation of organic and inorganic raw materials by a chemical process and the formulation of products. This subsector distinguishes the production of basic chemicals that comprise the first industry group from the production of intermediate and end products produced by further processing of basic chemicals that make up the remaining industry groups. For the purposes of these special use restrictions, this definition will apply to all industries classified as subcategories of NAICS Code 325 Chemical Manufacturing.

Chemical and allied products wholesalers. This industry comprises establishments primarily engaged in the merchant wholesale distribution of chemicals and allied products (except agricultural and medicinal chemicals, paints and varnishes, fireworks, and plastics materials and basic forms and shapes).

Associated Impacts: The breadth of chemicals and chemical processes in this category span a broad range of potential impacts and associated risks. Chemical production is also a key component of broader industrial and manufacturing processes. Determining specific risks, impacts, and vulnerabilities is dependent on the location, specific chemical processes, and amount of chemicals stored and processed, as well as the character of nearby areas. In general, these can include: explosive and fire risks, spill, exposure to toxic chemicals, odor, stormwater and waste products, and air quality emissions including greenhouse gases. In addition, due to the vulnerabilities of the area, risk of spill and discharge is a factor that could compound the impacts of other natural disasters. Transport by rail or vessel introduces risk of spill during transfer and transport. Chemicals span varying degrees of toxicity to plants and wildlife. Some chemicals may pose a fire or explosion danger, but not pose any toxicity or air emissions impacts.

Likelihood of Development: The City has multiple existing chemical wholesale and distribution facilities. Prior to the Interim Regulations a methanol plant was proposed within the Tideflats that is within the chemical manufacturing use category. The industry is growing nationally with some evidence of potential expansion into Tacoma.

Examples:

The following is a summary of the North American Industrial Classification system for Chemical Manufacturing

NAICS Codes	Titles	Total Marketable US Businesses
• 325110	Petrochemical Manufacturing	1,474
• 325120	Industrial Gas Manufacturing	1,414
• 325130	Synthetic Dye and Pigment Manufacturing	282
• 325180	Other Basic Inorganic Chemical Manufacturing	2,701
• 325193	Ethyl Alcohol Manufacturing	227
• 325194	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	203
• 325199	All Other Basic Organic Chemical Manufacturing	1,819
• 3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments Manufacturing	3,269
• 325211	Plastics Material and Resin Manufacturing	2,781
• 325212	Synthetic Rubber Manufacturing	256
• 325220	Artificial and Synthetic Fibers and Filaments Manufacturing	232
• 3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	2,185

- 325311 Nitrogenous Fertilizer Manufacturing 470
- 325312 Phosphatic Fertilizer Manufacturing 111
- 325314 Fertilizer (Mixing Only) Manufacturing 595
- 325320 Pesticide and Other Agricultural Chemical Manufacturing 1,009
- 3254 Pharmaceutical and Medicine Manufacturing 12,440
- 325411 Medicinal and Botanical Manufacturing 1,242
- 325412 Pharmaceutical Preparation Manufacturing 9,164
- 325413 In-Vitro Diagnostic Substance Manufacturing 168
- 325414 Biological Product (except Diagnostic) Manufacturing 1,866
- 3255 Paint, Coating, and Adhesive Manufacturing 3,435
- 325510 Paint and Coating Manufacturing 2,251
- 325520 Adhesive Manufacturing 1,184
- 3256 Soap, Cleaning Compound, and Toilet Preparation Manufacturing 8,008
- 325611 Soap and Other Detergent Manufacturing 1,289
- 325612 Polish and Other Sanitation Good Manufacturing 2,059
- 325613 Surface Active Agent Manufacturing 161
- 325620 Toilet Preparation Manufacturing 4,499
- 3259 Other Chemical Product and Preparation Manufacturing 4,651
- 325910 Printing Ink Manufacturing 628
- 325920 Explosives Manufacturing 241
- 325991 Custom Compounding of Purchased Resins 147
- 325992 Photographic Film, Paper, Plate, and Chemical Manufacturing 328
- 325998 All Other Miscellaneous Chemical Product and Preparation Manufacturing 3,307

2. Area of Applicability

This review applies to zoning districts citywide that allow heavy industrial uses, including WR - Warehouse Residential, PMI - Port Maritime Industrial, M-2 Heavy Industrial, S-1a Shoreline District (Narrows Marina), S-9 Puyallup River, and S-10 Port Industrial, and S-7 Schuster Parkway.

3. Policy Review

The following is a summary of policies from the Growth Management Act, Shoreline Management Act, Multicounty Planning Policies (VISION 2040), and the One Tacoma Comprehensive Plan that will be used to guide this land use regulatory code review and determine consistency with applicable goals and policies.

4. Options Comparison

Baseline Ordinance:

- Port of Tacoma MIC and Industrial Zones outside the Groundwater Protection District: Allows chemical manufacturing under the heavy industrial use category. The baseline ordinance prohibits acid manufacturing except in the PMI District.
- South Tacoma Groundwater Protection District: The following uses are prohibited in the South Tacoma Groundwater Protection District:
 - (1) Chemical manufacture and reprocessing.
 - (2) Creosote/asphalt manufacture or treatment.
 - (3) Electroplating activities.
 - (4) Manufacture of Class 1A or 1B flammable liquids as defined in the Fire Code.
 - (5) Petroleum and petroleum products refinery, including reprocessing.
 - (6) Wood products preserving.
 - (7) Hazardous waste treatment, storage, or disposal facilities. (“Designated Facility” per Ecology’s Chapter 173-303 WAC et seq.).

Current Interim Ordinance: Prohibits new chemical manufacturing uses citywide. Allows expansion of existing uses, except where otherwise prohibited in the Groundwater Protection District.

Option A: Alternative Ordinance

i) Definitions: Utilize NAICS Code definitions for chemical manufacturing:

“Chemical manufacturing. The Chemical Manufacturing subsector is based on the transformation of organic and inorganic raw materials by a chemical process and the formulation of products. This subsector distinguishes the production of basic chemicals that comprise the first industry group from the production of intermediate and end products produced by further processing of basic chemicals that make up the remaining industry groups. For the purposes of these special use restrictions, this definition will apply to all industries classified as subcategories of NAICS Code 325 Chemical Manufacturing.”

Additional Definition Choice: Include Wholesaling within the use classification.

“This industry comprises establishments primarily engaged in the merchant wholesale distribution of chemicals and allied products (except agricultural and medicinal chemicals, paints and varnishes, fireworks, and plastics materials and basic forms and shapes).”

ii) Zoning Use Table Amendment Options:

Tier 1: Citywide

- Prohibit petrochemical manufacturing, fertilizer manufacturing, and explosives manufacturing (subcategories of chemical manufacturing)

Tier 2: Port Industrial Core Area

- Allow chemical manufacturing, processing, and wholesaling outright, except, require a conditional use permit for the manufacture and wholesaling of hazardous materials as referenced in the City’s Fire Code: “Hazardous Materials” as classified in the UN Hazard Classification System, include: (1) Explosives; (2) Gases; (3) Flammable liquids; (4) Flammable solids; (5) Oxidizing substances and Organic peroxides; (6) Toxic and Infectious substances; (7) Radioactive materials; (8) Corrosive substances; and (9) Miscellaneous hazardous materials, products, substances, or organisms in amounts requiring a permit from the Tacoma Fire Department, the Washington State Department of Ecology, the Tacoma Pierce County Health Department, or any amounts requiring a license from the state of Washington.

- Conditional Use Process and Criteria for both Shoreline Conditional Use Permits and non-Shoreline Conditional Use Permits:
 1. The Hearings Examiner will seek input from the Fire Chief, Tacoma-Pierce County Health Department, Puyallup Tribe of Indians, and any other subject matter experts necessary to determine the potential risks and impacts of the proposed facility, as well as appropriate mitigation measures.
 2. A management plan may be required. The Hearings Examiner may determine the level of detail to be disclosed in the plan based on the probable impacts and/or the scale of the effects. Discussion of materials handling and storage, odor control, transportation, spill prevention, and other factors may be required;
 3. The nature of the materials produced and/or the scale of manufacturing operations may be limited in order to minimize the degree and severity of risks to public health and safety;
 4. Plans and sufficient, realistic performance bonding for decommissioning and failure incidents are provided to ensure that the site will be rehabilitated after the use or activity is completed, terminated, or abandoned.

Criteria:

1. The lot is located so that large concentrations of people, particularly in residential and commercial areas, are not exposed to unreasonable adverse impacts. The City will use the methodology for Acceptable Separation Distances as published by the Department of Housing and Urban Development to inform appropriate separation distances from nearby residential and commercial areas as well as on site mitigation measures.
2. The lot is located and the use can be appropriately mitigated to avoid any adverse impacts on HUD funding for affordable housing and community development. All reasonable steps are taken to avoid and minimize adverse environmental impacts, including impacts on migration routes and habitat areas of species listed as endangered or threatened, environmentally critical and sensitive habitats such as breeding, spawning, nursery, foraging areas and wetlands;
3. All reasonable steps are taken to avoid and minimize adverse social and economic impacts, including impacts on recreation, tourism, navigation, air quality, and recreational, commercial, and tribal fishing;
4. All impacts can be sufficiently mitigated or compensated so as to achieve no net loss of ecological functions over time;
5. The finished product as packaged for sale or distribution shall be in such a form that product handling and shipment does not constitute a significant public health risk.

Tier 3: M-2, M-1

- All chemical manufacturing, processing and wholesale uses subject to a conditional use permit. All uses when the hazardous materials are present in quantities greater than 2,500 pounds of solids, 275 gallons of liquids, or 1,000 cubic feet of gas at any time. Apply similar conditional use permits as in Tier 2 above.

Tier 4: Warehouse Residential and S-1a Shoreline District

- Amend to allow light industrial uses and prohibit heavy industrial uses in both zones.
- Require conditional use permit for all uses when hazardous materials are present in quantities greater than 2,500 pounds of solids, 275 gallons of liquids, or 1,000 cubic feet of gas at any time.

Tier 5: Shoreline Districts

- Prohibit chemical manufacturing, processing, and wholesaling within shoreline jurisdiction.
- Water-dependent piers, wharves, docks, and floats that serve upland chemical uses may be permitted in the S-10 District as a conditional use but are prohibited elsewhere.

5. Supplemental Information

- <https://www.iea.org/reports/the-future-of-petrochemicals>
- <https://www.eia.gov/consumption/manufacturing/briefs/chemical/index.php>

Preparing for Ecosystem Effects of Increased Coal Transport Across the Pacific Northwest

U.S. Geological Survey Baseline
Reconnaissance

Robert Black (Washington Water Science Center, Tacoma, WA)

Elena Nilsen (Oregon Water Science Center, Portland, OR)

Collin Eagles-Smith (Forest and Rangeland Ecosystem Science Center, Corvallis, OR)

D. Krabbenhoft, C. Smith (USGS)

L. Johnson, G. Ylitalo, S. Sol, D. Lomax (NOAA)

J. Davis (USFWS)

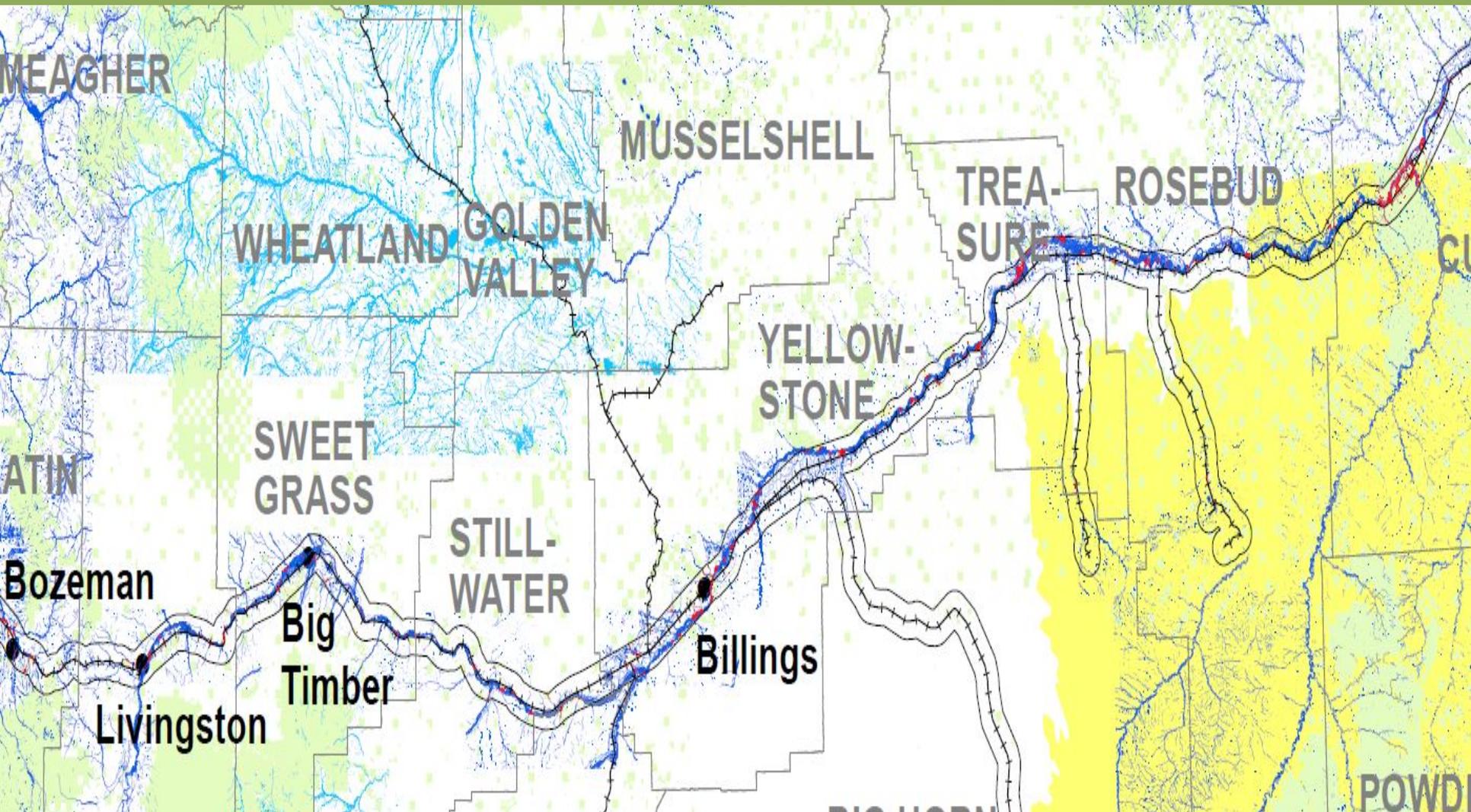
Proposed Increase in Coal Transport

- Currently, fewer than 5 trains bearing coal travel from the Powder River Basin through the Columbia River Gorge per day (sightline.org)
- Proposals call for 18-30 times increase in coal train traffic through the Columbia River Gorge National Scenic Area (coaltrainfacts.org)
- Coal dust lost during transport (Surface Transportation Board Hearing Transcript July 29, 2010)
 - Each train car can lose up to 500 pounds in a single trip
 - 120 cars per train
 - ~60,000 lbs of coal dust lost/train

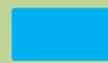
Public Interest in Coal Transport and Export

- **Washington and Oregon** - Scoping process for permitting of transfer terminals produced ~400,000 specific comments. >50 news articles
- **Idaho** – “Coal Exports Pack a Big Carbon Punch”
- **Idaho** – “Coal Trains Threaten Environment and Public Health”
- **Montana** - “Surface Transportation Board: BNSF can require coal-dust suppression”
- **Montana**- “Groups rally for Montana inclusion in Army Corps' environmental assessment”

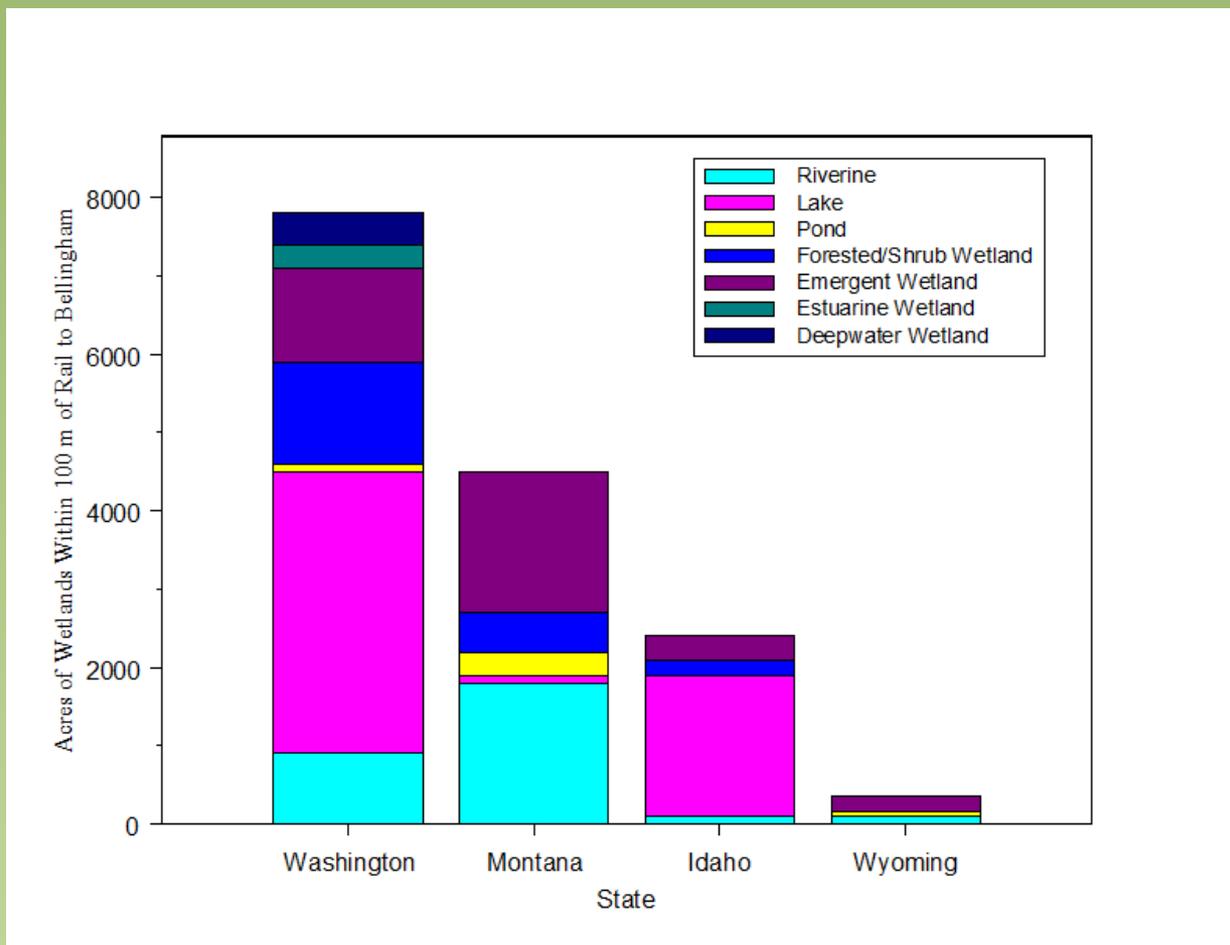
Aquatic Resources Near Rail Lines



 Wetland Public Lands
 Wetlands

 Provisional Wetlands
 Public Lands

Exposure of Aquatic Resources to Coal Transport



Sampling Sites, Proposed Coal Terminals, Rail Line, and Adjacent Resources



Sources: Wyoming State Geological Survey

Particulates Measured in Air as Train Passes near Seattle, WA

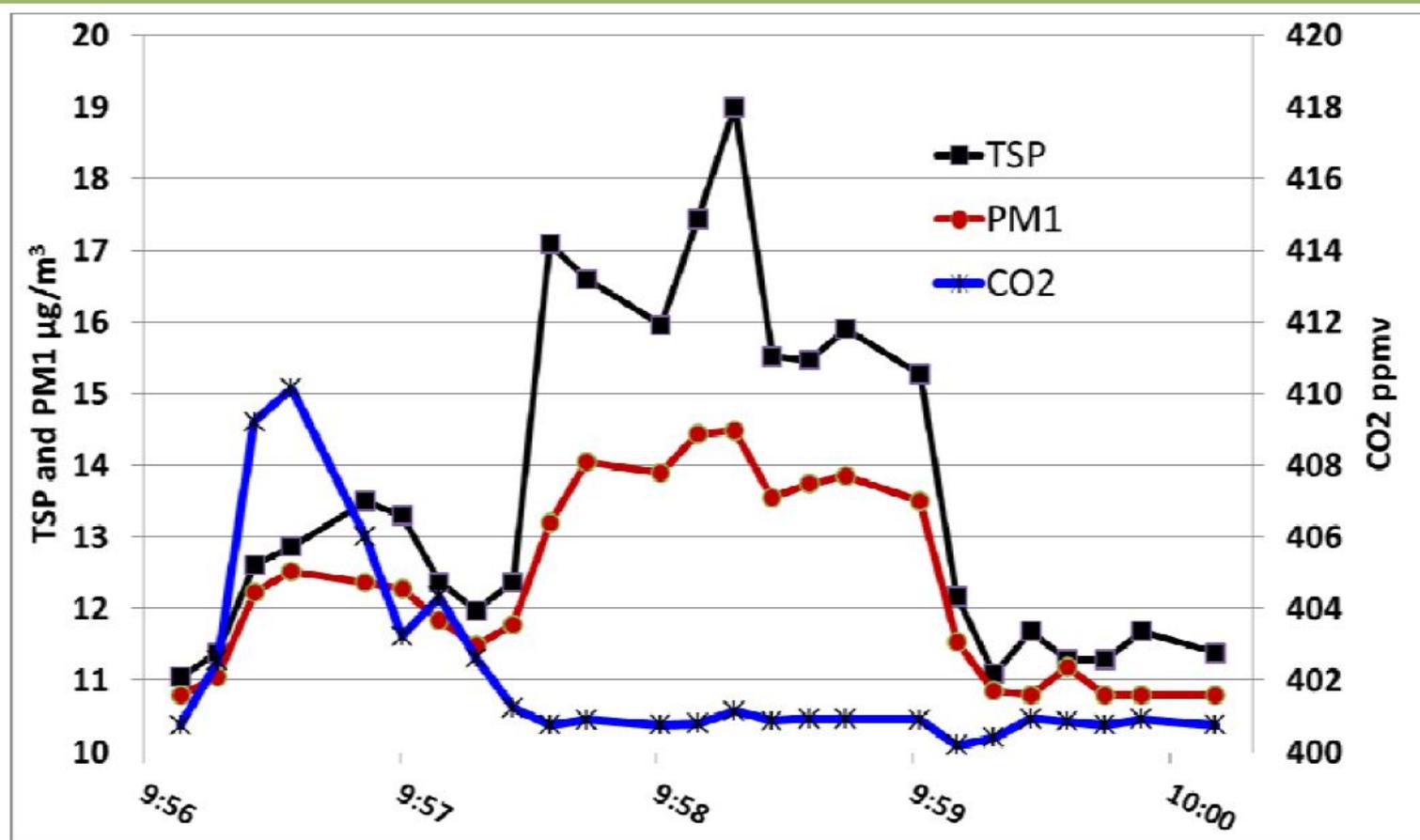
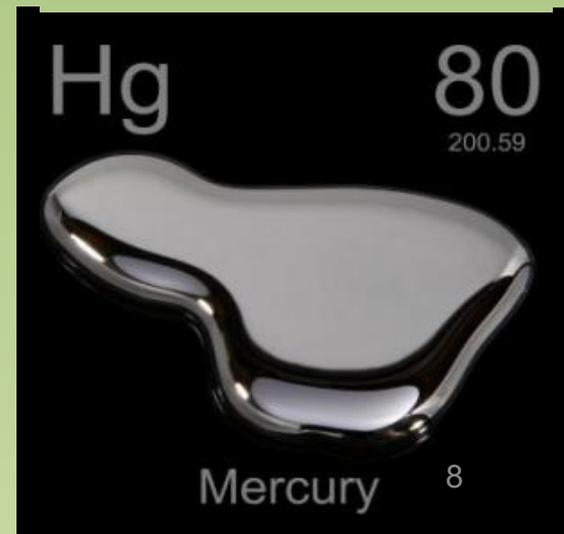
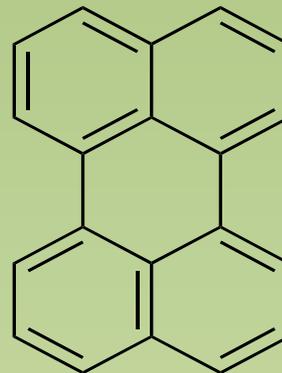
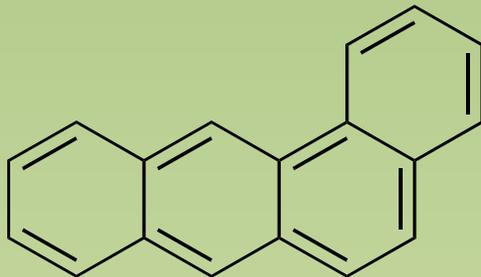


Figure 6. PM_{10} and total suspended particulate (TSP) in $\mu\text{g}/\text{m}^3$ and CO_2 (ppmv) concentrations during passage of a coal train at the Blue Ridge site at 9:56 (PDT) on August 13, 2013.

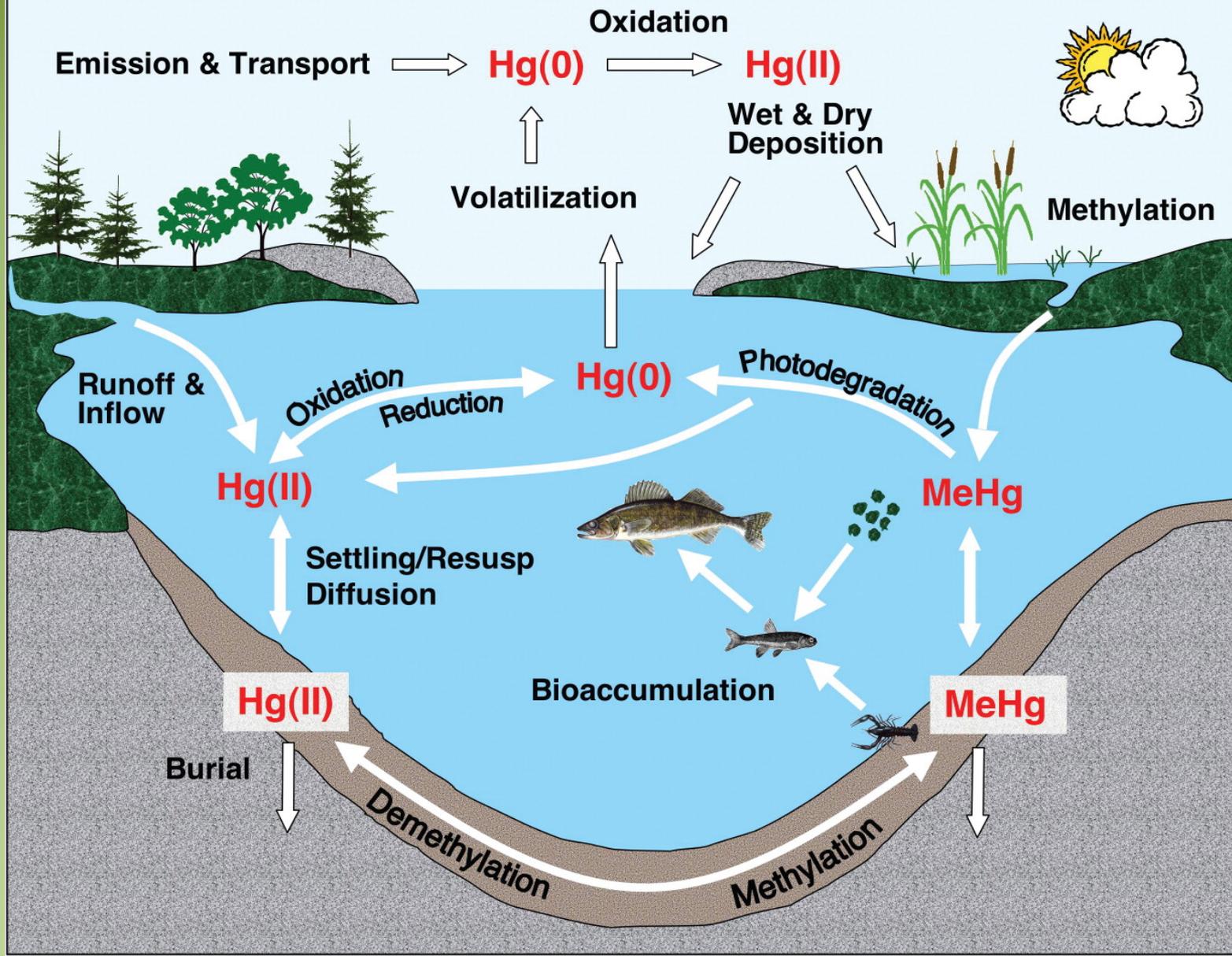
PM1 refers to particulate matter particles of diameter less than 1 micron

Environmental Concerns

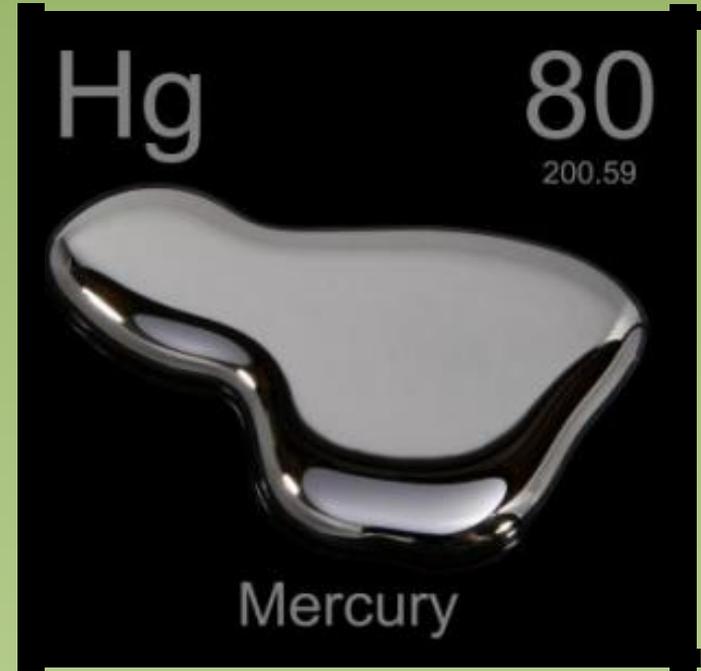
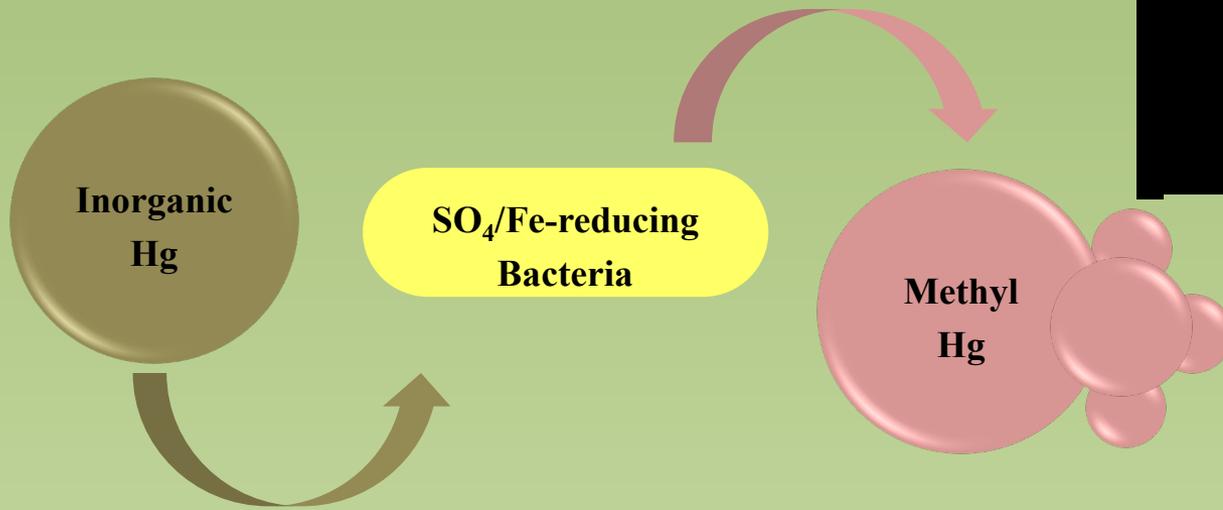
- Environmental contaminants associated with coal:
 - PAHs (polycyclic aromatic hydrocarbons), Mercury, Chromium, Selenium, Lead, Arsenic
- Nervous system damage, impaired reproduction, cardiovascular issues, urinary tract and lung cancers



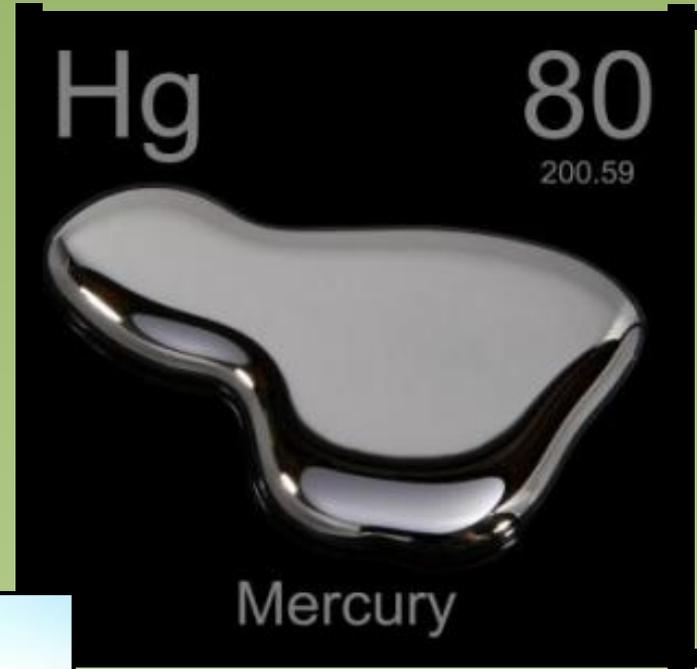
USGS Fact Sheet FS-095-01 and others



Methylmercury is produced by some bacterial groups found in the environment...



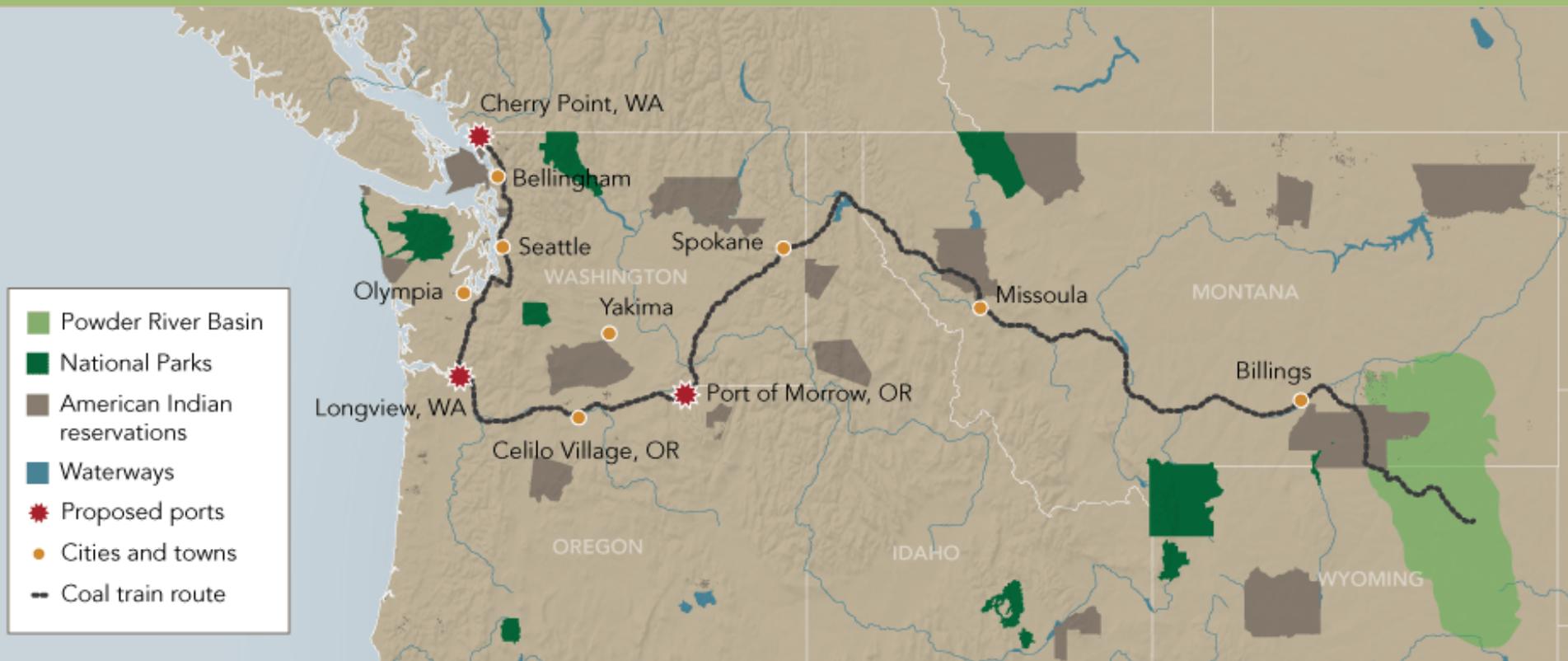
...which require the presence of certain biogeochemical conditions that facilitate methylmercury production.



Questions and Methods

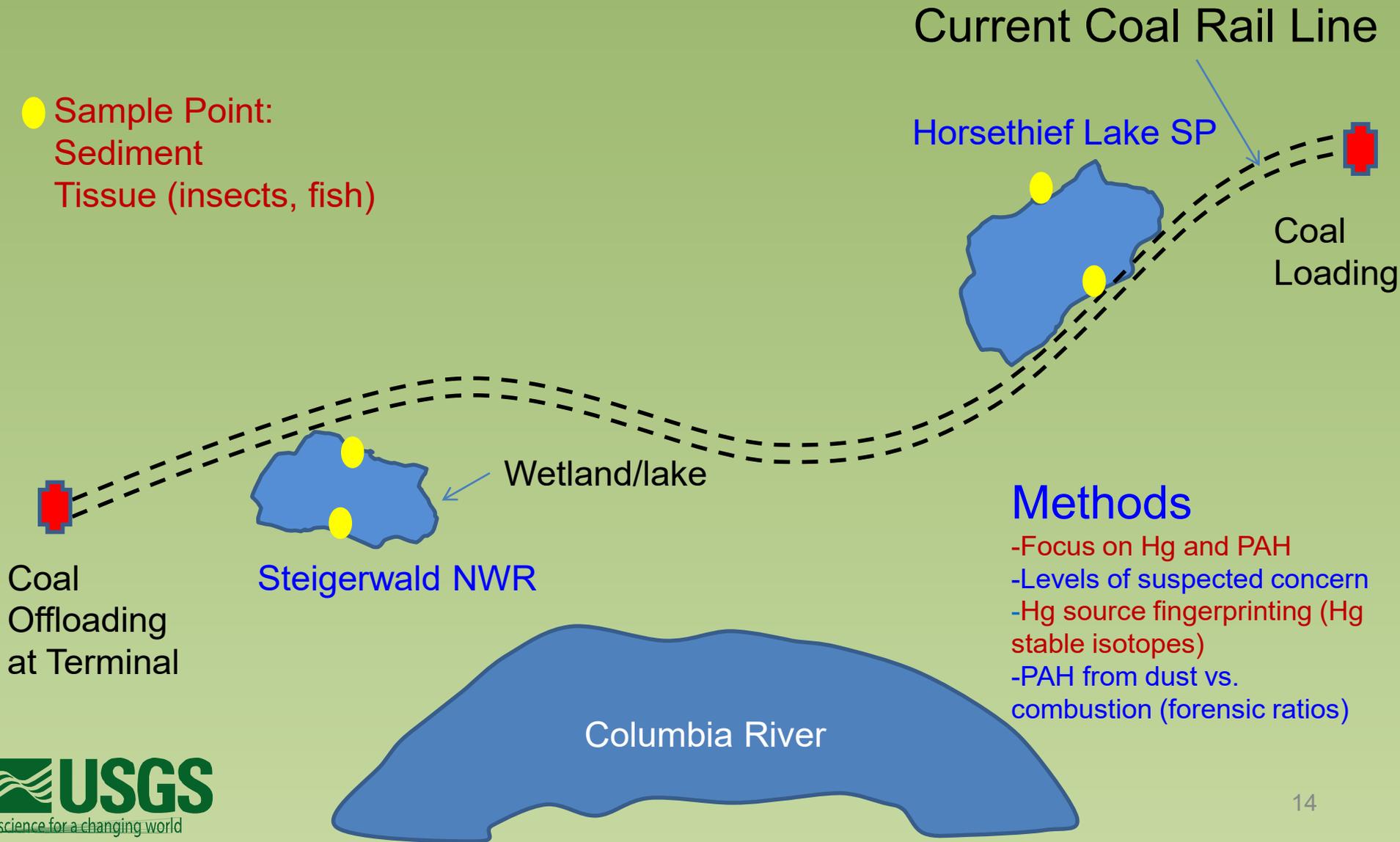
- Are there measurable levels of coal-related compounds in sediment and/or biota along rail corridors?
 - Baseline
- Can sources be determined?
 - “Fingerprinting” using PAH ratios, Hg isotopes
- Do levels change with proximity to rail lines?
- Are there differences between species?
- Sampling
 - Sediment
 - Aquatic insects
 - Multiple fish species

USGS Baseline Sampling at Horsethief Lake and Steigerwald



Sources: Wyoming State Geological Survey

Study Design



Horsethief Lake Sampling Locations



rail line



prevailing winds

Google Earth

Steigerwald Refuge Sampling



rail line



prevailing winds

Sediment Sampling



Target: Fine sediment (silt)

Aquatic Insect Sampling



Dragonfly
and damselfly larvae



Fish Sampling

Insect-eating juvenile fish

- sculpin
- pike minnow
- small mouth bass
- salmonids
- pumpkinseed
- yellow perch



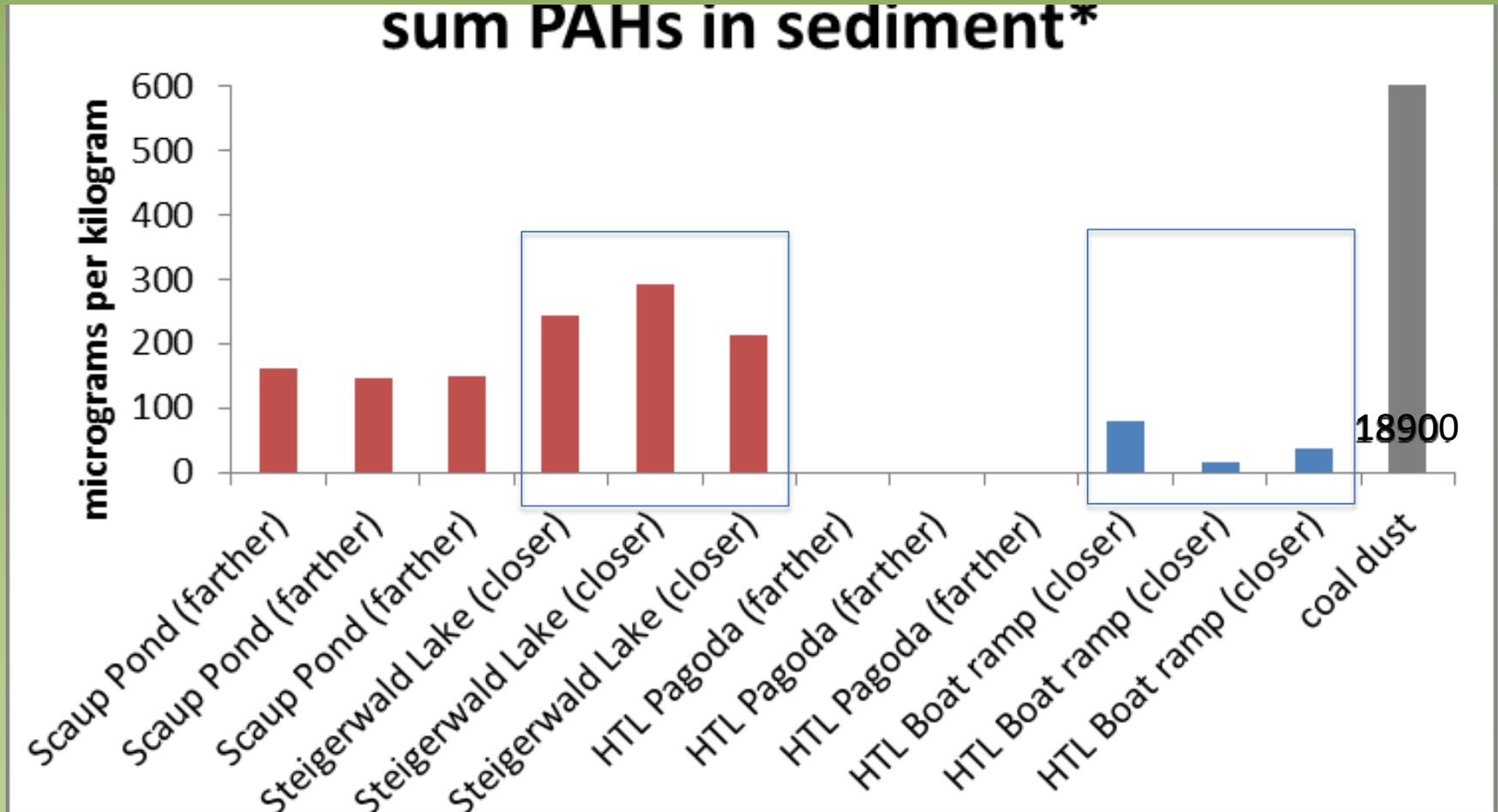
- Beach seines
- Minnow traps



Project Status

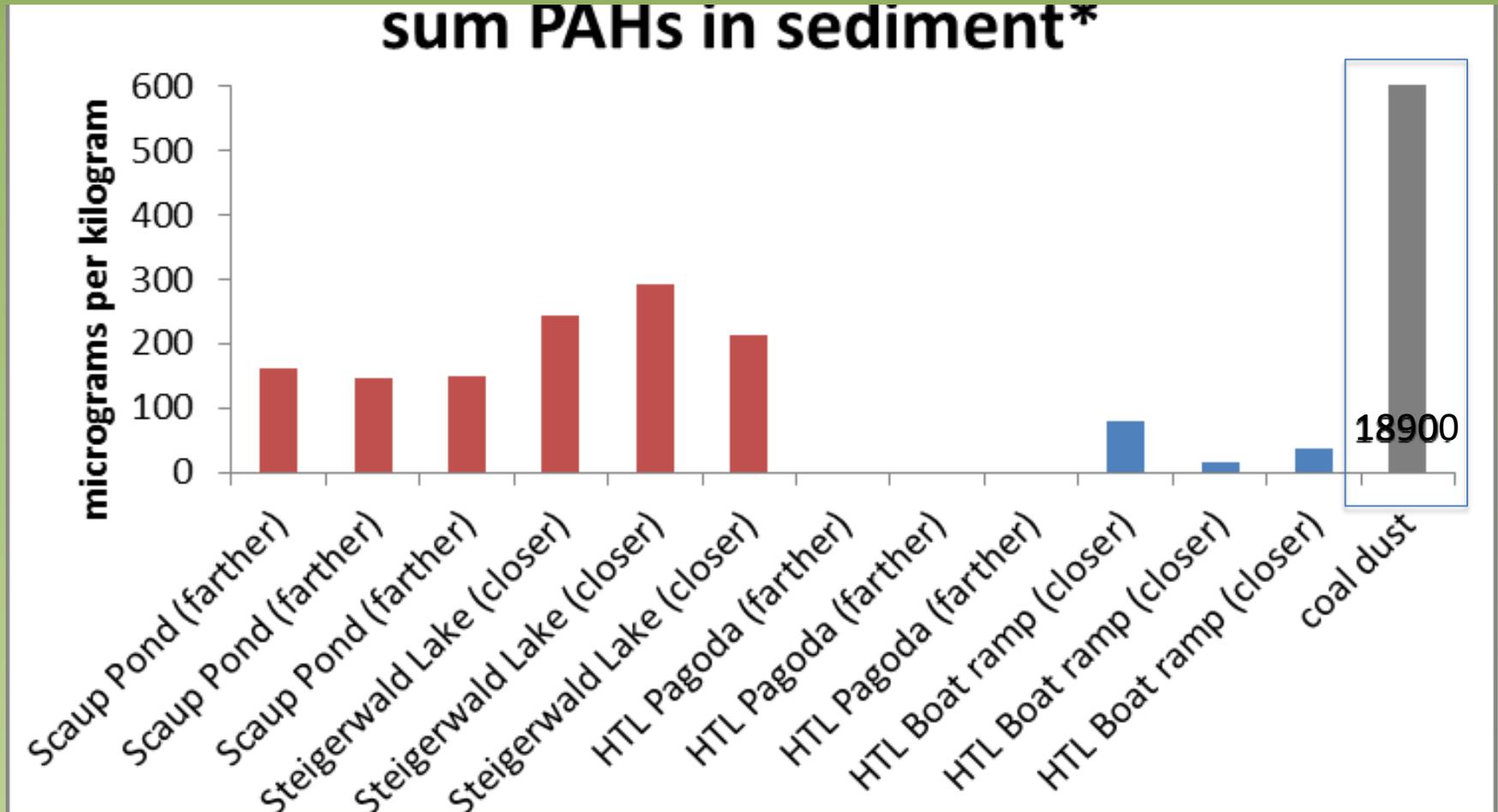
- Field sampling complete
- Participating laboratories and sample status
 - USGS National Water Quality Lab – complete
 - PAHs and trace metals in sediments
 - NOAA analytical chemistry lab - complete
 - PAHs in fish tissues, invertebrates, aquatic plants
 - USGS-FRESC mercury lab - complete

Results



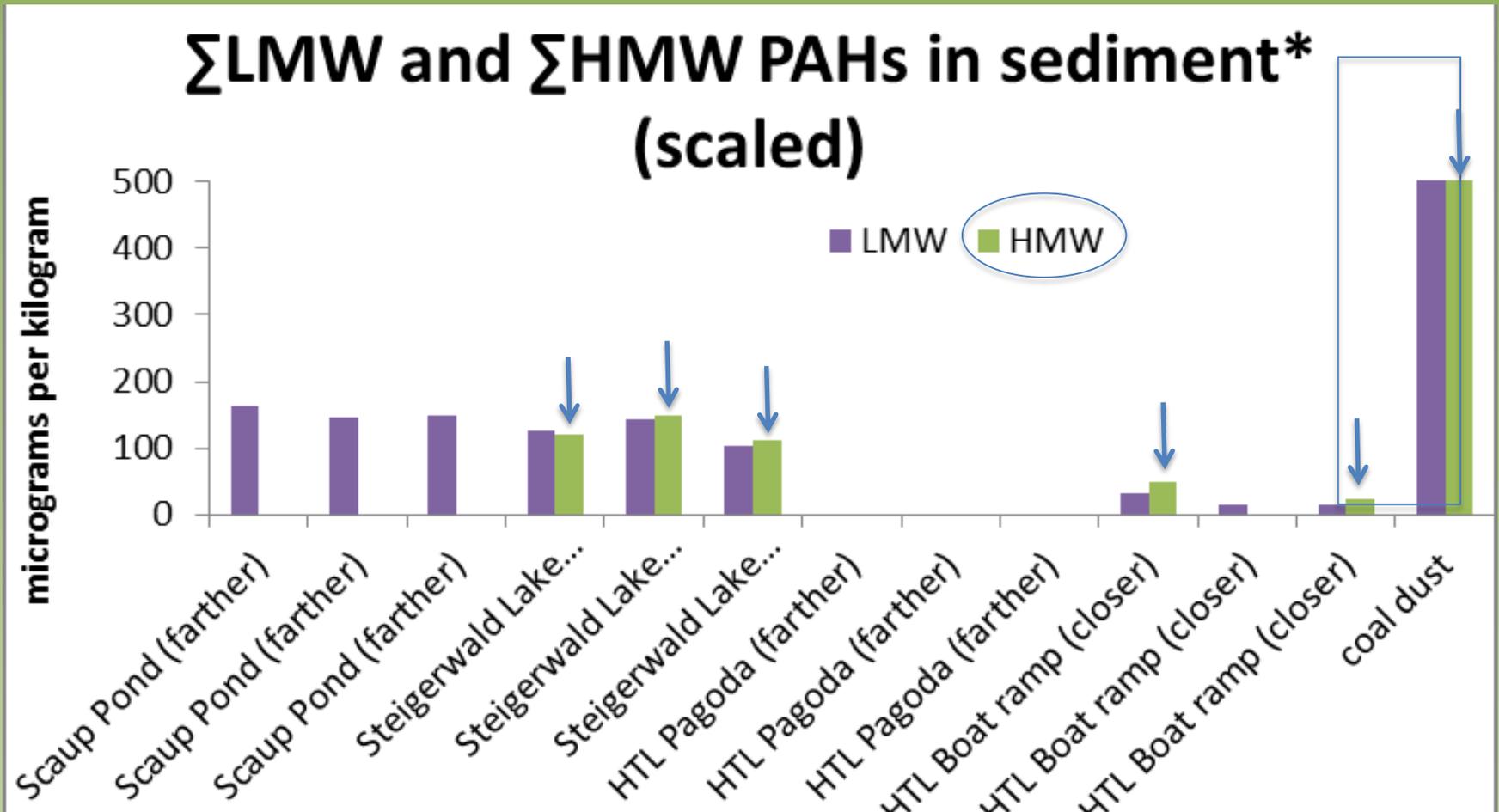
- PAHs higher in sediments closer to the rail lines vs. sites farther away

Results



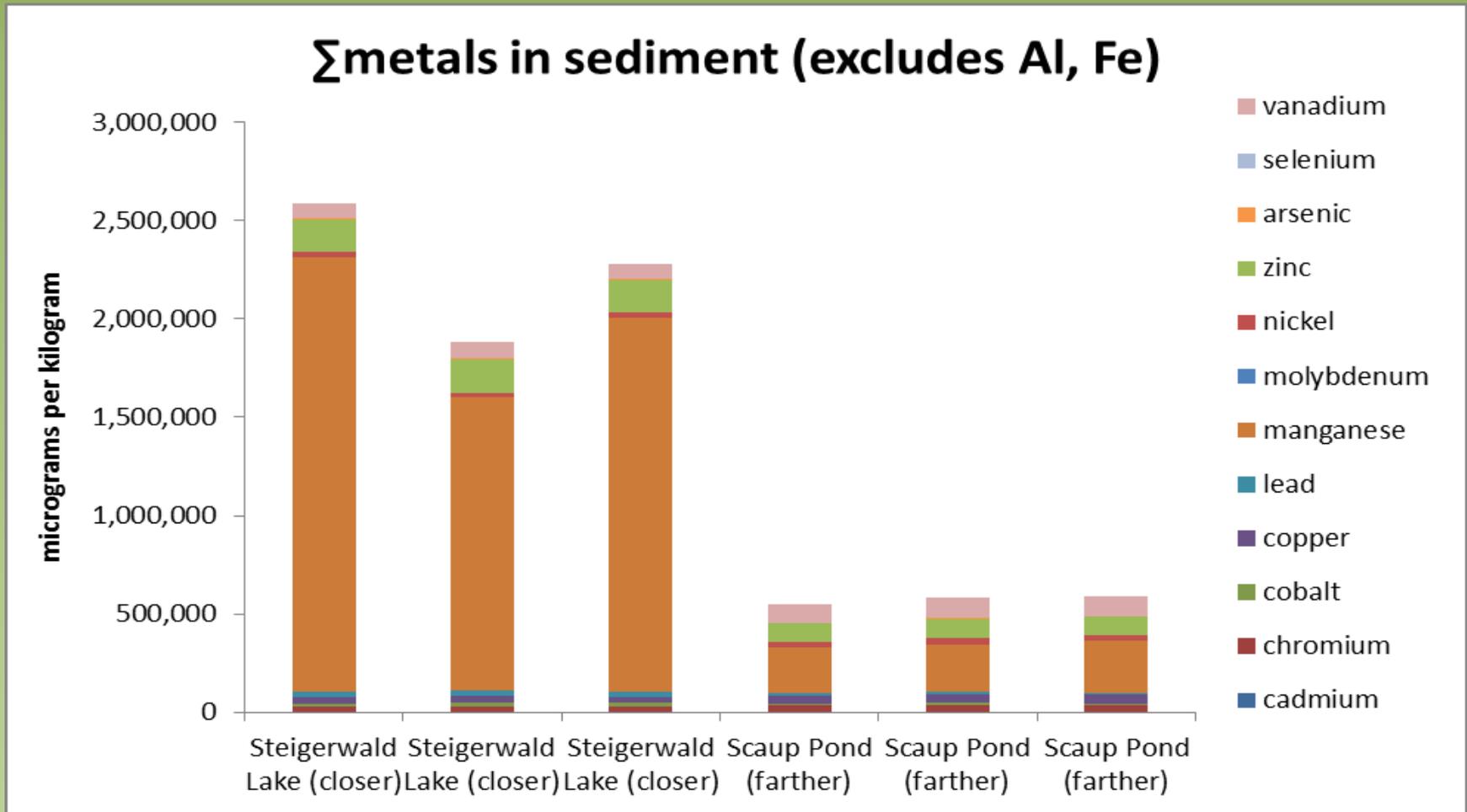
- And very high in the pure coal dust sample

Results



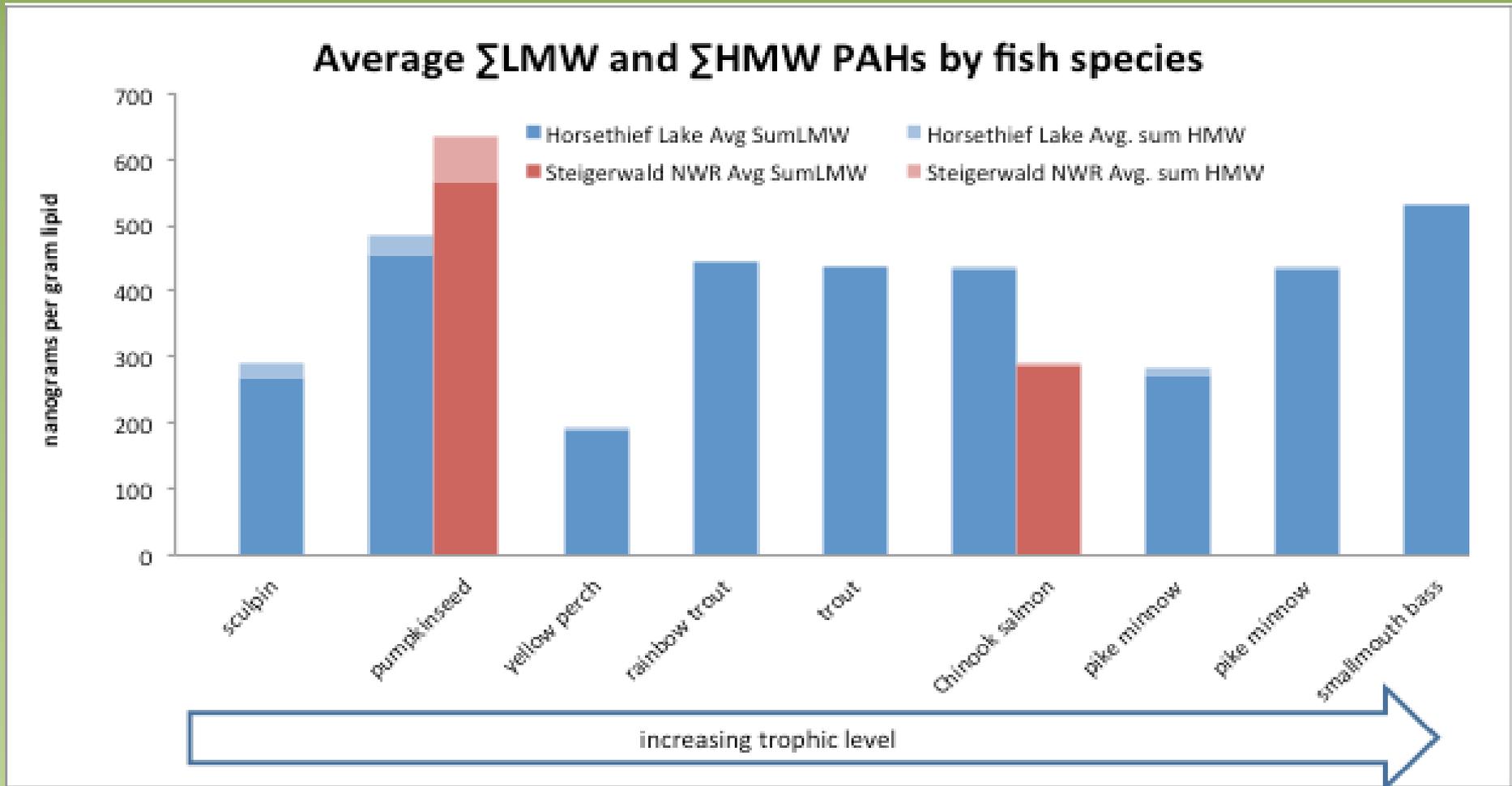
- High molecular weight (HMW) PAHs were only detected at closer sites and in coal dust

Results



- Trace metals higher in sediments closer to the rail lines vs. sites farther away

Results



- Tissue concentrations did not consistently follow the pattern of higher concentrations closer to the rail lines

Observations

- Most source tracking PAH ratios could not be calculated because many of the compounds used for those calculations were not detected
- Ratio of LMW/HMW PAHs was consistent with a petrogenic (un-combusted) source as opposed to pyrogenic
- Concentrations of PAHs and trace metals similar to other non-urban wetland sites and provide baseline for future collection and investigation
- Tissue benchmarks were exceeded for lead, arsenic and selenium

Questions?

Contacts:

Bob Black rwblack@usgs.gov (253) 552-1687

Elena Nilsen enilsen@usgs.gov (503) 251-3277

Collin Eagles-Smith ceagles-smith@usgs.gov (541) 750-0949

Non-Interim Tideflats and Industrial Land Use Regulations

Planning Commission
1.20.2021



STEPHEN ATKINSON
PRINCIPAL PLANNER

MEETING PURPOSE

Requested Action: Select code concept for development for Issue 4: Mining and Quarrying, Smelting, Coal Export, and Chemical Manufacturing.

General Approach:

- **Alternative:** This option reflects a proposed alternative that balances City policy directions.
- **Baseline:** This option reflects the base code pre-interim regulation. The Baseline Option was determined to be inconsistent with City policy.
- **Current Ordinance:** This option reflects the adopted interim regulation. The Current Ordinance was not reviewed for consistency with City policy as it constituted a broad pause while new policy and code was developed.

LISTENING SESSION - DEBRIEF

Environment and Health:

- Annette Bryan – Councilmember, Puyallup Tribe of Indians
- Lexi Brewer – Chair of the Sustainable Tacoma Commission
- Melissa Mallott – Executive Director for Citizens for a Healthy Bay

Neighborhoods:

- Venus Dergan – South Tacoma Neighborhood Council
- Yvonne McCarty – North East Tacoma Neighborhood Council
- Tom Ebenhoh - New Tacoma Neighborhood Council representative

Port/Labor/Industry:

- Andrew Troske – Refinery Manager and V.P. of Manufacturing, U.S. Oil and Refining
- Eric Johnson – CEO, Port of Tacoma
- Jared Faker – President, ILWU Local 23
- Karen Zima – Vice President, RoadOne IntermodaLogistics

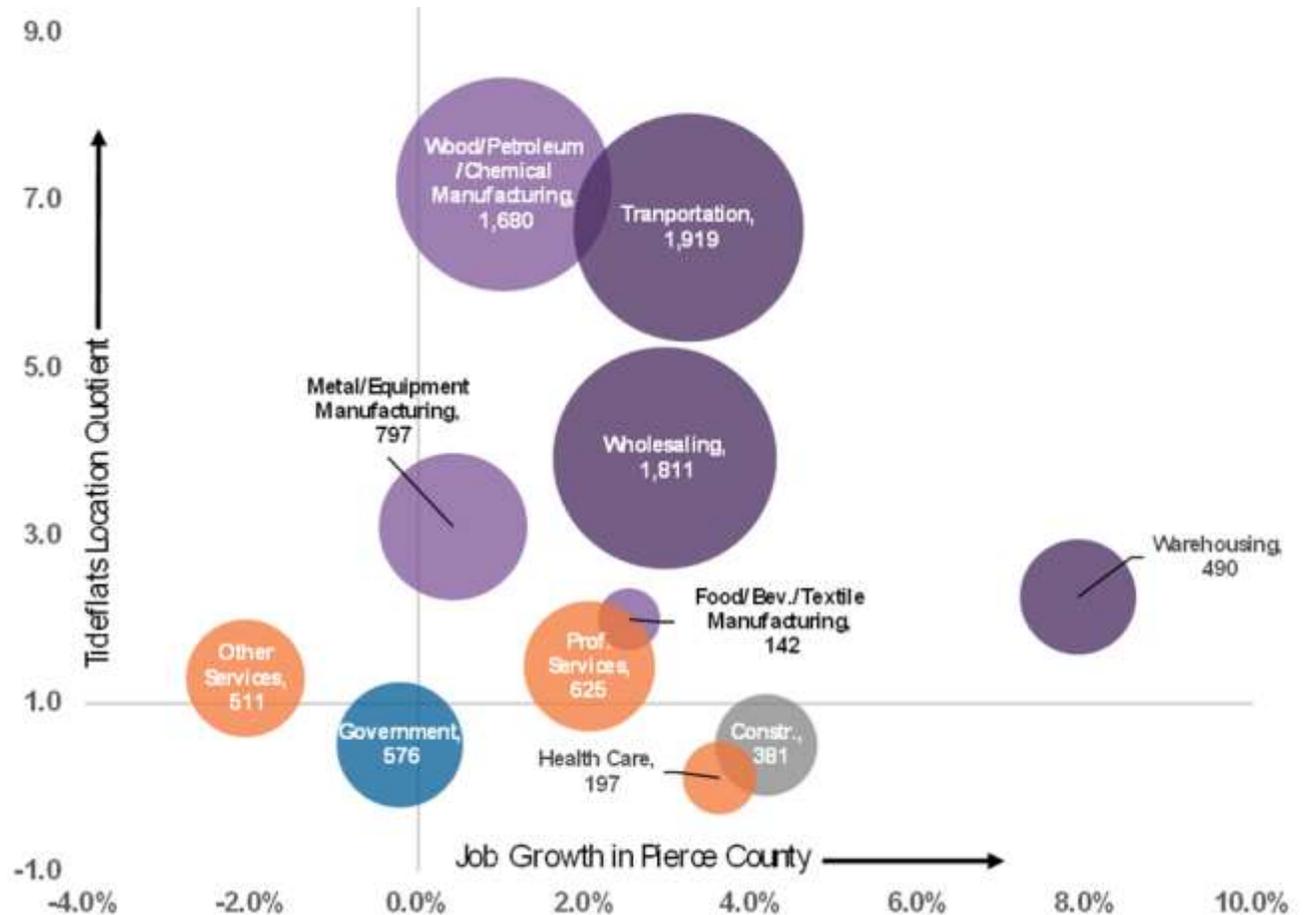
HEAVY INDUSTRY GENERAL CONTEXT

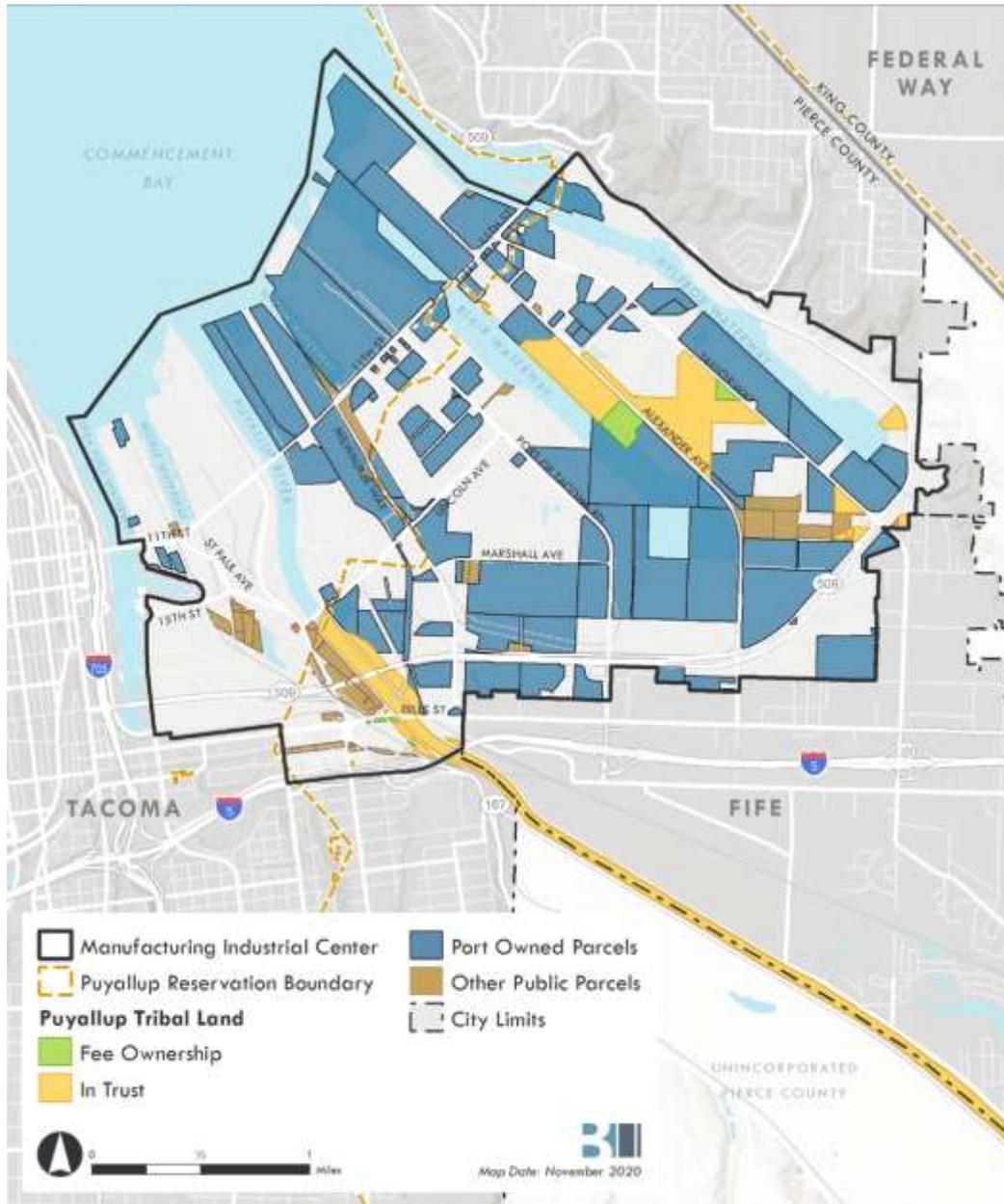
Siting of Potentially High-Risk/High-Impact Heavy Industrial Uses

- Single use category in code – inclusive of broad, varied uses
- Allowed outright in multiple zones
- No special use or development standards beyond SEPA review/critical areas/building codes
- Broad variation of context in how industrial zoning is applied and adjacent zoning and uses, environmental and built conditions
- Multiple policy initiatives adopted since regulations were put in place without regulatory updates

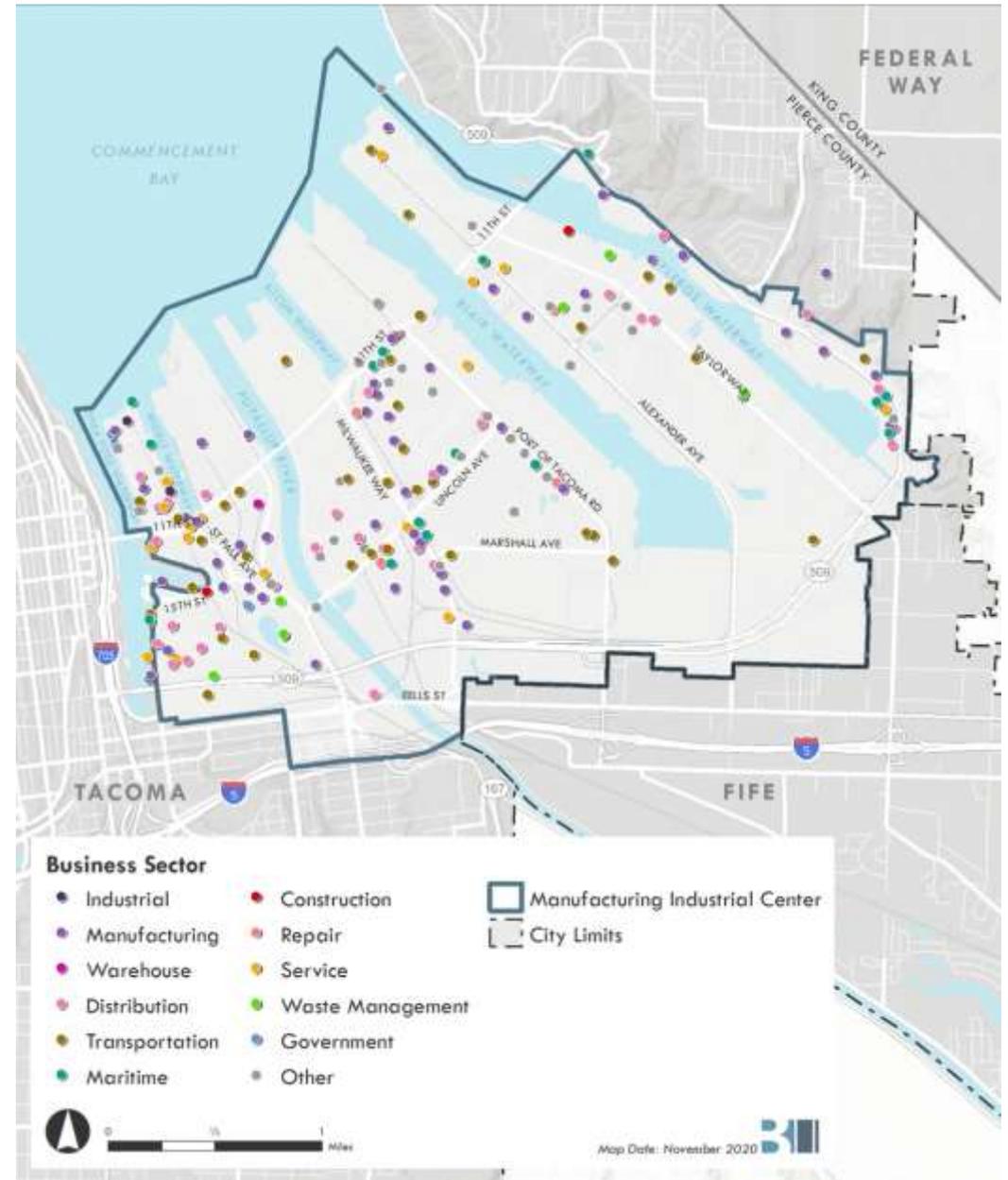
GENERAL CONTEXT – TIDEFLATS ECONOMY

- Existing employment: 9500
- Growth target: 7500
- Equity: Provides pathway to employment without college education
- Strong wages
- Significant developable land
- Deepwater access
- Multimodal infrastructure





Non-Interim Industrial Regulations



Stephen Atkinson, Principal Planner

GENERAL CONTEXT – TIDEFLATS ECONOMY

Policy Review:

- Prioritize long-term, statewide interests over short term, local interest
- Use priority: Container shipping and supportive uses/water-dependent industrial uses
- Heightened off site impacts in port are assumed by policy
- Expand and diversify employment and access to living wages
- Ensure adequate developable land to support employment growth targets

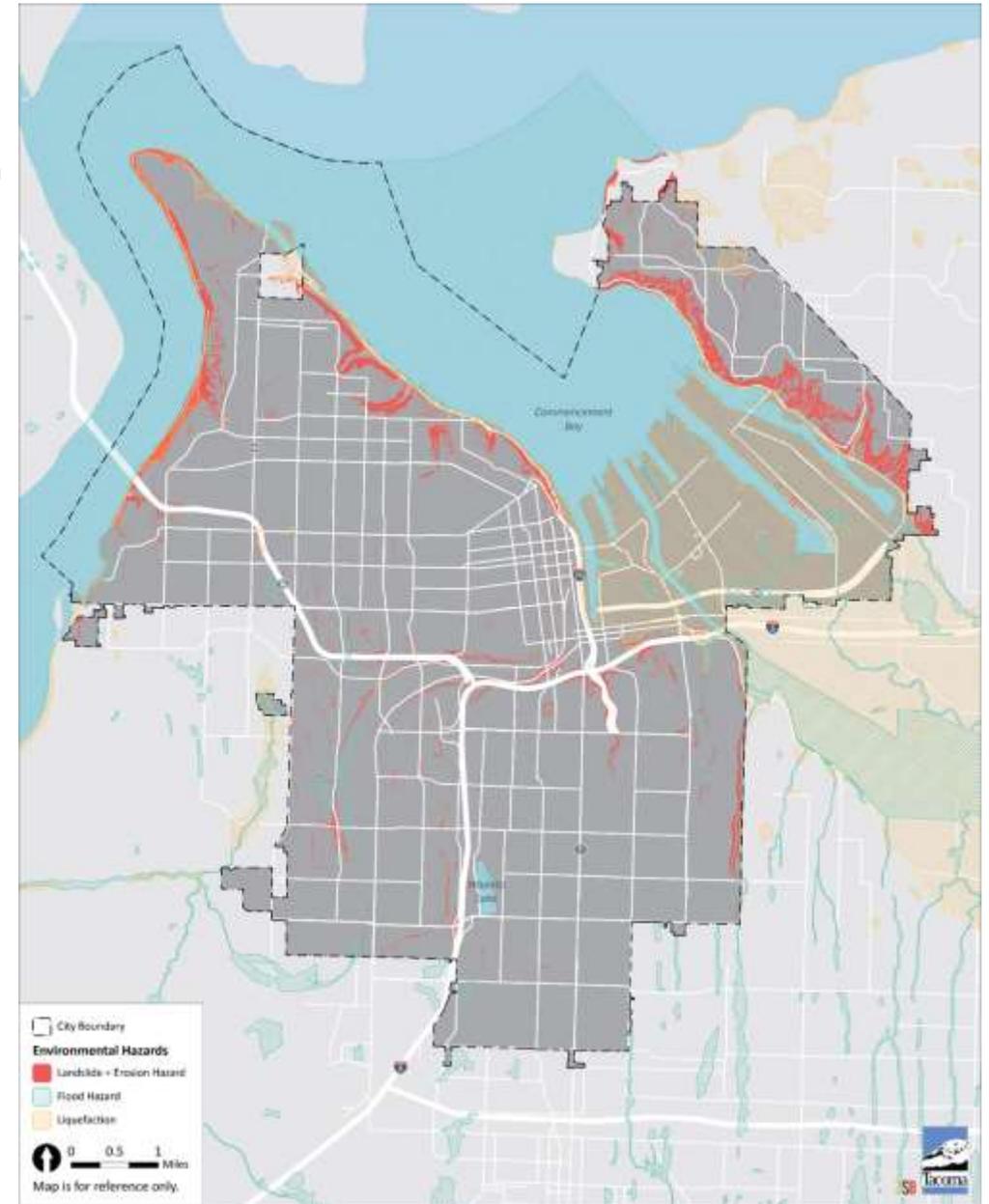
GENERAL CONTEXT – TIDEFLATS ENVIRONMENT

Assets:

- Fish and wildlife, streams, wetlands, tree canopy, endangered species, migration routes

Hazards:

- Flooding
- Geologic Hazards
- Tsunami
- Liquefaction
- Lahar
- Seismic



GENERAL CONTEXT – TIDEFLATS ENVIRONMENT

Policy Review:

- Apply development regulations in buffer areas to promote greater compatibility with adjacent areas.
- Avoid and mitigate risks and vulnerabilities, protect life and property
- Support reduction of greenhouse gases
- Improve air and water quality
- Ensure net gain of ecological functions over time
- Consider climate science in decision-making

GENERAL CONTEXT – EMERGENCY RESPONSE

Constraints

- Access is limited
- Roadway congestion
- Private hydrants with limited water

Sources

- Flammable/combustible liquids and gases
- Chemical releases
- Abundant ignition sources

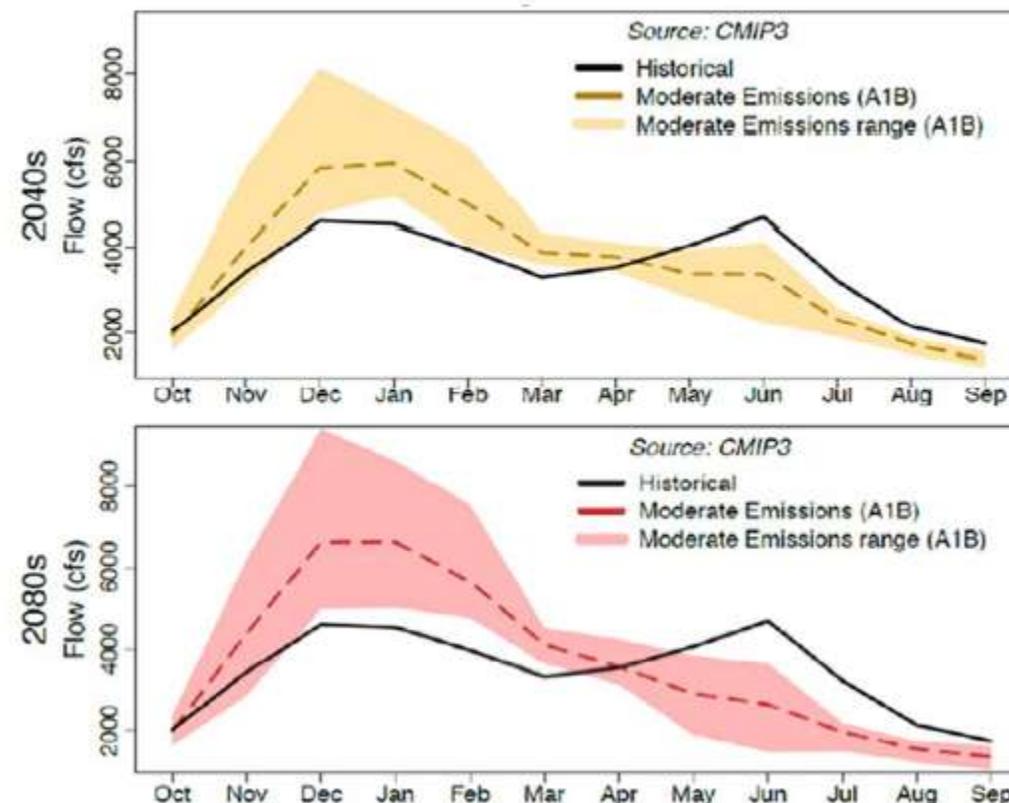
GENERAL CONTEXT – CLIMATE AND SLR

Exhibit 4-1: Potential Timing of 1ft to 5ft RSLR Scenarios

RSLR Scenario	50% Exceedance Chance	10% Exceedance Chance	5% Exceedance Chance	1% Exceedance Chance	0.1% Exceedance Chance
1ft	2050-2060	2040-2050	2040	2030-2040	2030
2ft	2080-2090	2070	2060-2070	2050-2060	2040-2050
3ft	2100+	2090	2080-2090	2070-2080	2050-2060
4ft	2100+	2100+	2100	2080-2090	2060-2070
5ft	2100+	2100+	2100+	2090-2100	2070-2080

Source: Developed based on Miller et al. 2018

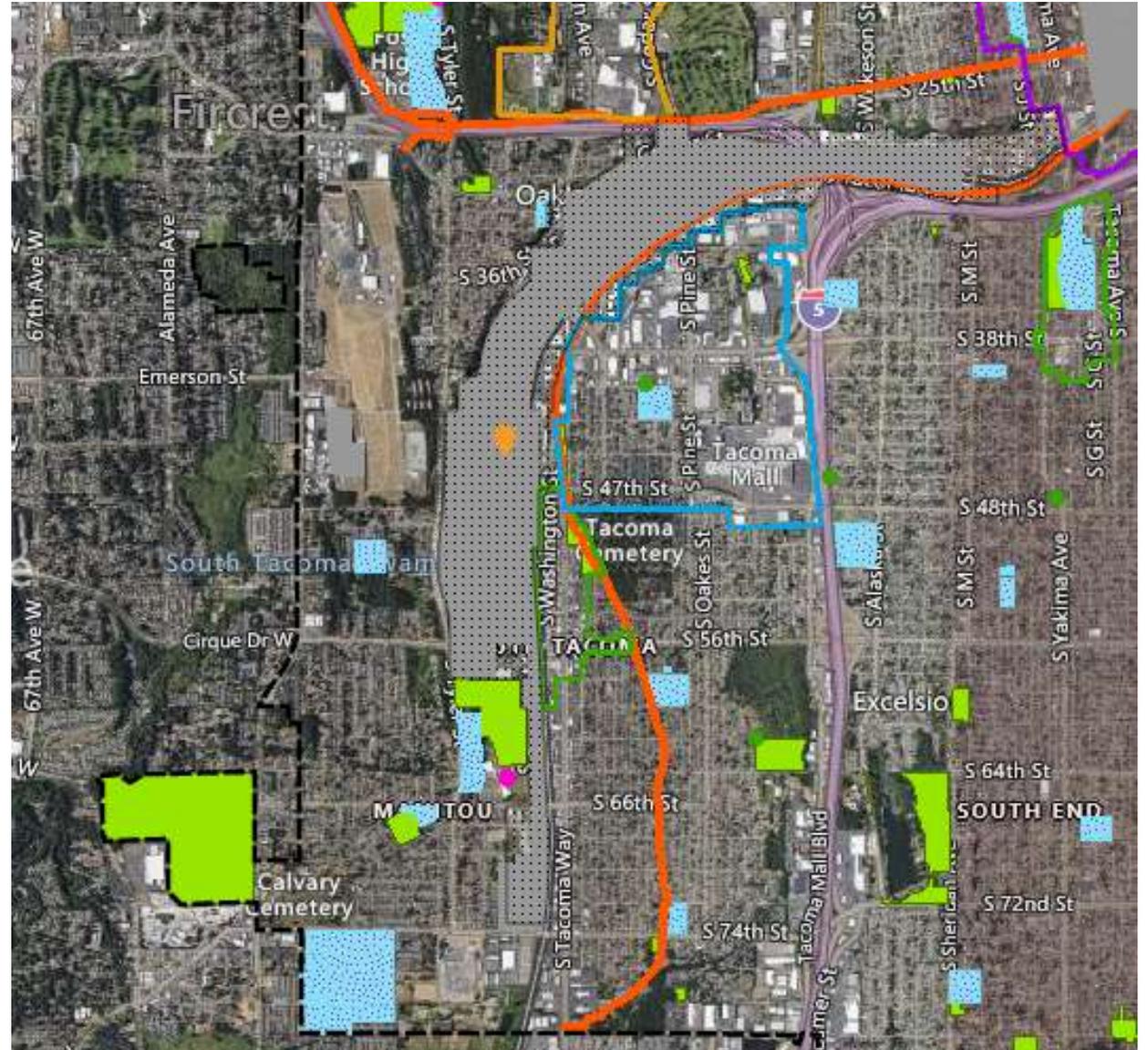
Exhibit 3-10 Projected Shifts in Monthly Streamflow for the Puyallup River



Source: (Pierce County Emergency Management, 2019a)

GENERAL CONTEXT – SOUTH TACOMA

- Adjacent lands include single family, multifamily, mixed-use districts
- Community center next to M-2 heavy industrial zoning
- Other gathering spaces such as trails, parks and schools
- Some buffers including topography and transportation systems



GENERAL CONTEXT – SOUTH TACOMA

Groundwater Protection – the following are prohibited:

- (1) Chemical manufacture and reprocessing.
- (2) Creosote/asphalt manufacture or treatment.
- (3) Electroplating activities.
- (4) Manufacture of Class 1A or 1B flammable liquids as defined in the Fire Code.
- (5) Petroleum and petroleum products refinery, including reprocessing.
- (6) Wood products preserving.
- (7) Hazardous waste treatment, storage, or disposal facilities.



USE 1: MINING AND QUARRYING

Use Definition:

The Mining, Quarrying, and Oil and Gas Extraction sector comprises establishments that extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas. The term mining is used in the broad sense to include quarrying, well operations, beneficiating (e.g., crushing, screening, washing, and flotation), and other preparation customarily performed at the mine site, or as a part of mining activity.



USE 1: MINING AND QUARRYING

Findings:

- **Typical impacts:** Clearing and grading, traffic, dust, noise, light, and odor
- **Policy Review:**
 - GMA provided for protection of mineral resource uses, until adoption of Comprehensive Plan
 - GMA requires consistency with Comprehensive Plan
 - Assumes some degree of incompatibility between resource use and residential use
 - Mixed-use Districts/Commercial: Residential/commercial focus, walkability, pedestrian focus, employment and services
 - Residential zones: allowable densities typically inconsistent with mining and quarrying
 - Areas designated parks and open space: Policy supports retention for recreation, habitat, stormwater, and aesthetic values

USE 1: MINING AND QUARRYING

Purpose: Ensure compatibility of uses and consistency between One Tacoma Plan policies and use allowance.

Applicability: Citywide

Options Comparison:

- A. Alternative:** Prohibit Citywide, allow for existing permits to continue
- B. Baseline:** Conditional Use Permit in most zoning districts
- C. Current Ordinance:** Prohibited (new uses only)

Use 2: SMELTING

Use Definition:

(1) Primary Smelting and Refining of Copper. This industry comprises establishments primarily engaged in (1) smelting copper ore and/or (2) the primary refining of copper by electrolytic methods or other processes. Establishments in this industry make primary copper and copper-based alloys, such as brass and bronze, from ore or concentrates. NAICS Code 331411.

(2) Alumina Refining and Primary Aluminum Production. This industry comprises establishments primarily engaged in one or more of the following: (1) refining alumina (i.e., aluminum oxide) generally from bauxite; (2) making aluminum from alumina; and/or (3) making aluminum from alumina and rolling, drawing, extruding, or casting the aluminum they make into primary forms. Establishments in this industry may make primary aluminum or aluminum-based alloys from alumina. NAICS Code 331313

(3) Nonferrous Metal (except Aluminum) Smelting and Refining. This industry comprises establishments primarily engaged in (1) smelting ores into nonferrous metals and/or (2) the primary refining of nonferrous metals (except aluminum) by electrolytic methods or other processes. NAICS Code 331410.



USE 2: SMELTING

Purpose: Ensure compatibility of uses, protection of health, welfare and safety, and consistency between One Tacoma Plan policies zoning

Typical Associated Impacts: Air quality, storm and waste water, chemical spill and discharge, fire and explosion risks, land consumption, resource demands

Applicability: Citywide – Zoning Districts that allow heavy industry

Options Comparison:

- A. **Alternative:** Prohibit Citywide
- B. **Baseline:** Allowed in multiple zoning districts, part of Heavy Industrial Use Category
- C. **Current Ordinance:** Prohibited (new uses only)

USE 3: COAL FACILITIES AND EXPORT

Use Definition:

The bulk storage or wholesale distribution of coal and coal products or transfer of coal products via shipping terminal.



A open-top coal train thunders alongside Washington State Route 14 in the Columbia River Gorge. (photographer: Daniel Dancer)

USE 3: COAL FACILITIES AND EXPORT

Findings:

Typical impacts: Increased cancer risks to nearby communities, traffic congestion, increased vessel traffic, rail impacts, impacts to fish and wildlife (mercury and PAHs), air quality (emissions and particulate matter), impacts to Treaty fishing rights.

Policy Review:

- Reduce greenhouse gas emissions to meet established targets
- Improve air and water quality
- Prevent groundwater contamination

USE 3: COAL FACILITIES AND EXPORT

Purpose: Ensure compatibility of uses and consistency between One Tacoma Plan policies and use allowance.

Applicability: Citywide

Options Comparison:

- A. Alternative:** Prohibit Citywide
- B. Baseline:** Permitted as a heavy industrial use
- C. Current Ordinance:** Prohibited (new uses only)

USE 4: CHEMICAL MANUFACTURING

Use Definition:

The Chemical Manufacturing subsector is based on the transformation of organic and inorganic raw materials by a chemical process and the formulation of products. This subsector distinguishes the production of basic chemicals that comprise the first industry group from the production of intermediate and end products produced by further processing of basic chemicals that make up the remaining industry groups.



USE 4: CHEMICAL MANUFACTURING

Purpose: Ensure compatibility of uses; protect health, welfare and safety; promote consistency between One Tacoma Plan policies and use allowances; support context sensitive economic development activity.

Applicability: Citywide

Options Comparison:

- **Baseline:** Allowed in heavy industrial zones, except for South Tacoma Groundwater Protection District
- **Current Ordinance:** Prohibited (new uses only)

USE 4: CHEMICAL MANUFACTURING

Findings:

- Broad range of chemicals fall under this category
- Chemical manufacturing is integral to broader industrial and manufacturing processes, including renewable fuel development and renewable energy production
- While some chemicals may be benign, chemical manufacturing can pose toxicity risks, fire and explosion risks, air quality and water quality impacts.
- Potential impacts and risks depend on the types of chemicals and chemical processes, amount, and mode of transport, site location vulnerabilities, adjacent uses, and presence of other built or natural environments
- The location of higher risk facilities can potentially affect availability of federal housing funds
- These uses are often resource intensive – water, power

USE 4: CHEMICAL MANUFACTURING

Multi-Tier Alternative Code Proposal:

- **Tier 1: Citywide:**

- a) Prohibit petrochemical manufacturing, explosives manufacturing, and fertilizer manufacturing

- **Tier 2: Port Industrial Core Area (PMI):**

- a) Allow outright, except

- b) Hazardous materials manufacturing per Fire Code require Conditional Use

- **Tier 3: Port Buffer Area (M-2 and M-1)**

- a) All chemical manufacturing requires conditional use permit (M-2 only)

- b) Include other uses that store bulk hazardous chemicals on site (M-2 and M-1)

USE 4: CHEMICAL MANUFACTURING

Multi-Tier Alternative Code Proposal:

- **Tier 4: Warehouse Residential and S-1a Shoreline District**
 - a) Prohibit heavy industrial uses
 - b) Allow light industrial uses
 - c) Apply conditional use to storage of bulk chemicals
- **Tier 5: All other shoreline districts as applicable:**
 - a) Manufacturing and wholesale storage prohibited,
 - b) Water-dependent facilities allowed per Conditional Use Permit

Use 4: CHEMICAL MANUFACTURING

Conditional Use Criteria:

- Seek input from Fire, Health Dept., Puyallup Tribe of Indians, Port of Tacoma and others
- Consider impacts to existing populations as well as potential new housing plans
 - Integrate Acceptable Separation Distance into evaluation, require mitigation
- Avoid and minimize social, environmental, economic impacts
- Compensate for impacts to ensure no net loss of ecological functions
- Finished product for sale and distribution will not pose a significant public health risk
- May require management plan
- May require bonding
- May limit size of operations

REQUESTED ACTION

Staff requests direction from the Commission to proceed with the proposed code development for uses

1. Mining and quarrying – draft code to prohibit citywide
2. Smelting – draft code to prohibit citywide
3. Coal Facilities – draft code to prohibit citywide
4. Chemical Manufacturing – draft code to:
 - Rely on CUP and Fire Code hazardous materials designations
 - Prohibit petrochemical, explosives, fertilizers
 - Prohibit in Shoreline Zones
 - Allow light industrial in WR, S-1a

NEXT STEPS

February 3: Oil and Liquefied Fossil Fuel Industries + Permit Activity + Fossil Fuel Data and Trends; Requesting Release of a Public Review Draft