

Oregon Physicians for Social Responsibility

Please accept these comments submitted on behalf of Oregon PSR.

We request that you deny this permit to protect the health and safety of our communities and our climate.

Submitted via DOE webform JULY 27, 2017

Washington Department of Ecology
Attn: Federal Permit Coordinator
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RE: Millennium Bulk Terminals—Longview, LLC; NWS-2010-1225; Second Public Comment on Clean Water Act 401 Certification

Dear Director Bellon, Ms. Toteff, and Washington Department of Ecology,

We urge you to deny the Clean Water Act § 401 certification for Millennium. The nation’s largest coal export terminal, proposed over and along the Columbia River by Millennium Bulk Terminals—Longview, LLC (MBT), would harm human health, threaten tribal treaty rights, undermine environmental justice, violate state water quality standards (including the state’s Antidegradation Policy), and threaten an expensive multi-decade effort to restore endangered and threatened salmonids. We hereby incorporate by reference the comments of Earthjustice on behalf of Columbia Riverkeeper et al. and the comments of Washington Physicians for Social Responsibility. Additionally, we incorporate by reference the comments of Michael Riordan and this document: [An Assessment of the Health and Safety Implications of Coal Transport through Oakland by the Public Health Advisory Panel on Coal in Oakland, California June 14, 2016](#) submitted today via DOE’s webform.

The Final Environmental Impact Statement (FEIS) found “unavoidable and significant adverse environmental impacts” for nine environmental resource areas: social and community resources; cultural resources; tribal resources; rail transportation; rail safety; vehicle transportation; vessel transportation; noise and vibration; and air quality. In addition, the FEIS describes impacts to water quality from project construction and operations, including coal dust discharges from 75 acres of uncovered coal piles and mile-and-a-half long coal trains, that would violate the state’s narrative and numeric water quality standards, harm designated uses, and violate the state’s Antidegradation Policy. Based on the sweeping impacts of what would be the nation’s largest coal export terminal located along our precious

Columbia River, Ecology must deny this dirty and dangerous proposal and permit application from Millennium Bulk Terminals-Longview (MBT).

Ecology must deny this permit because deposition of coal dust from transport, spills and storage at the MBT-Longview terminal will lead to contamination of fresh water and the marine environment.

The Health Department of Multnomah County, Oregon analyzed potential health impacts to County residents from coal train transportation only. The analysis drew upon the available literature to estimate that coal dust may travel approximately 500 m to 2 km (1/3 to 1 1/4 miles) from the train tracks, depending on weather conditions and train speed.

Australia has had a long history of large coal-export terminals with open coal stockpiles. One analysis for a relatively new terminal in Newcastle, performed as part of the project's license, showed that it would discharge over 300,000 kg/year of coal dust at operations of 66 million ton/year. The largest source of emissions is from wind erosion of stockpiles.

Recent research conducted by Dr. Dan Jaffe underscores the fact that a significant amount of coal dust blows off trains and "superduster" trains, contaminating the environment. Coal dust has been collected in the Columbia River along train tracks.

With coal dust blowing off trains and off uncovered stockpiles, we know that coal will be deposited in the water at and near the proposed terminal. Coal contains arsenic and heavy metals such as lead, boron, chromium, cadmium, and mercury. Resulting contamination of fisheries will harm human health and the interests of sovereign tribal nations, low-income communities, communities of color, as well as recreational, commercial and sportfishing economies.

Arsenic

Arsenic is one of the pollutants that will be introduced in Longview, along the tracks and into the Columbia River, as a result of the proposed project. Studies published in journals such as Environmental Health Perspectives suggest that arsenic is harmful to human health at lower levels than previously thought (Carlin et al., 2016; Naujokas et al., 2013), including increased risks for skin and lung cancer. (Bailey et al., 2016)

Government standards for allowable levels of **arsenic in water** have already been lowered by 80% in the last 16 years as evidence has grown demonstrating toxicity at lower levels of exposure. (USEPA Chemical Contaminant Rules) This evidence will likely continue to grow. Changing standards remind us that, though certain current standards may be met, these standards may not and, at times, do not adequately protect human health.

Low levels of exposure to arsenic are particularly worrisome for pregnant women and children. Recent studies show that exposure to arsenic in the womb and in early childhood may cause decreased fetal growth and adverse epigenetic effects. (Naujokas et al., 2013; Flora, 2011; Bailey et al., 2016)

The risk of exposure to arsenic and its toxicity is further supported by the CDC's Agency for Toxic Substances and Disease Registry: arsenic has been ranked Number 1 on that agency's Substance Priority List since 1997, and before that it was second only to lead. (ATSDR 2007)

Cadmium

Cadmium is a highly toxic metal present in coal. It has a very long half-life of 20-30 years in humans and accumulates in soft tissues, kidneys, and the liver. Specific mechanisms of cadmium toxicity are not well understood; however, evidence suggests that cadmium affects DNA repair, and cell signaling and control. These effects lead to kidney damage, cancer, mutations, damage to hormone regulating mechanisms, reproductive disorders, and problems with cellular differentiation (Rani et al., 2014). Evidence also points to harmful long-term and heritable effects of cadmium (Ray et al., 2014). In humans, cadmium disrupts biologic pathways involving calcium, leading to bone and muscle issues (Choong et al., 2014).

Cadmium was implicated in Itai Itai disease due to **industrially contaminated water** in people exposed (especially women). They suffered osteomalacia and osteopenia, decreased bone mineral content, and decreased bone density (Kobayashi, 1971; Kasuya, 2000; Inaba et al., 2005).

The International Agency for Research on Cancer (IARC) classifies cadmium and cadmium compounds as carcinogenic to humans (Group 1) (IARC, 2012). Group 1 classification is the strongest assertion of carcinogenicity.

Recent studies have linked cadmium with bladder cancer (Feki-Tounsi et al., 2014). Evidence also exists for associations with breast cancer (Dematteo et al., 2013) and pancreatic cancer (Wei Qu et al., 2012; Garcia-Esquinas et al., 2014). A recent review found that "exposure to low concentrations of Cd is associated with effects on bone, including increased risk of osteoporosis and fractures..." (Akesson et al., 2014).

In a retrospective study of over 2,000 children, the authors concluded that children who have higher urinary cadmium concentrations may have increased risk of both [acquiring] LD [learning disability] and [being more likely to receive] special education. These associations were found at exposure levels that were previously considered to be without adverse effects, and these levels are common among U.S. children (Ciesielski et al., 2012).

In a prospective study of 270 children, the authors "noted in boys a 1.53 times higher risk for emotional problems with a twofold increase in cord blood cadmium" (Sioen et al., 2013).

In a prospective study of over 1000 children, the authors concluded: "Early-life low-level cadmium exposure was associated with lower child intelligence scores in our study cohort" (Kippler et al., 2012).

Cadmium mimics estrogen (Johnson, MD, 2003) so it is an endocrine disrupting chemical. It also affects male reproduction in animal studies, and has recently been implicated in human epidemiological studies as causing decreased birth weight. (Johnston et al., 2014; Kippler et al., 2012).

A recent study showed that cadmium exposure was related to leukocyte telomere length (a marker of cellular aging). The authors concluded: “These findings provide further evidence of physiological impacts of cadmium at environmental levels and might provide insight into biological pathways underlying cadmium toxicity and chronic disease risk” (Zota et al., 2014).

Lead

Lead is present in coal dust. There is no safe level of lead. Exposure to lead can occur through ingestion and inhalation. **Ingestion can come through eating fish contaminated by the operations of MBT**, as well as through other routes.

Chronic, long term health effects may include: muscle and joint soreness, fine tremors, numbness, hypertension, anemia, infertility, and kidney damage.

Lead can stay in the body for years and is stored in bone or soft tissue including the liver and kidneys. During periods of high calcium demand such as pregnancy, menopause and aging, lead stored in bone tissue can be released back into the bloodstream. Lead is also able to cross the placenta and blood/brain barrier.

There is no good treatment for lead poisoning. Chelation therapy is difficult and does not reverse cognitive impairment. As in Flint, Michigan, lead poisoning is usually identified after the fact, when the harm has already been done.

What will be the cumulative levels of lead deposited in air, soil and water in Longview and along the train tracks? We must answer questions like this now, before 44 million tons of coal, with its associated burden of lead, is brought in uncovered rail cars through Washington, Oregon and the region each year and is stored, in huge uncovered piles, in Longview near the Highlands neighborhood.

Mercury

According to the City of Portland’s June 9, 2016 MBT DEIS comments: “...In the Columbia River Basin more than 80 percent of the mercury pollution is from overseas sources.” A peer-reviewed 2008 study found that coal-fired power plants in Asia contribute 18% of springtime mercury concentrations at Mount Bachelor.

Snowpack melts into our rivers and lakes where **mercury contaminates the fish we eat**. Pregnant women and children are particularly vulnerable to the toxic effects of mercury. Mercury is a potent neurotoxin that can damage developing brains in fetuses and children.

Dr. Martha Neuringer, a renowned biomedical researcher at Oregon Health & Science University, stated in testimony she presented to the Portland City Council in September 2012,

“The effects of coal-derived mercury on infant brain development are well known. Coal-derived mercury has significant negative impacts on the visual system, on motor development, and on cognitive development. It insidiously

limits human potential. A massive increase in coal traffic through our region would greatly increase the mercury burden in our environment and therefore the damage to our children. This is a moral issue, but can also be reduced to its economic impacts.

The effects of mercury from coal on reduced intellectual development - on this one health effect - are estimated to cost \$3 billion per year in the U.S. This is just one part of the overall health costs of \$10-30 billion, which in turn is just part of the estimated total externalities – environmental, economic and health effects of coal -- which total half a trillion dollars per year.

Coal export projects would have a reverberating impact in our region, as coal dust increases mercury and many other toxins in our air **and our water**; and then, when it is burned in China, as the prevailing winds bring air-borne toxins back to us...

To preserve the health and human potential of our children, I urge you to oppose Northwest coal export projects in any way possible.”

- Mercury is one of four primary contaminants found in the broader Columbia River basin.
- Trace elements of environmental concern (TEEC) in Powder River and Uinta Basin coal include mercury.
- When burned. MBT coal will increase the mercury load in the Columbia River.

Ecology must deny this permit due to risks to human health and safety from a vessel oil spill.

There will be significant impacts from MBT’s unprecedented proposal to increase vessel traffic in the Columbia estuary.

Increased vessel traffic associated with the proposed MBT terminal has the potential to result in an increased risk of oil spills during bunkering activities. Causes of oil spills during bunkering transfers include overflow of the tank, parting the hose due to mooring fault, operator error in connecting the hose, failure of the hose or pipework, and failure of bunker tanks (HSE 2012). Experience from insurance claims (Gard 2002) is that most bunker spills result from an overflow of the bunker tank due to carelessness or negligence, either on the part of those supplying the bunkers, or those on board the vessel receiving them.

Bunker fuel is a combustible liquid associated with acute and chronic health hazards. A Material Safety Data document shows potential health impacts of acute exposure:

- *Ingestion*: May cause irritation of mouth, throat, and stomach. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects.
- *Skin*: May cause mild to moderate skin irritation. Prolonged contact, such as when

trapped against the skin under clothing or jewelry, may be more irritating. Can be absorbed through skin. Exposure to hot material may cause thermal burns. Prolonged skin contact may cause dermatitis (rash), characterized by red, dry, itching skin.

- *Inhalation*: May cause irritation to the nose, throat and upper respiratory tract. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. Irritating or noxious gases may be released during thermal decomposition.
- *Releases*: Hydrogen sulfide. Severe respiratory irritation (from vapors or mists) is possible. Could also cause convulsions, coma, respiratory arrest and death.
- *Eyes*: May cause moderate eye irritation.
- *Fire hazards/conditions of flammability*: Combustible liquid and vapor. Will ignite when exposed to heat, flame and other sources of ignition. Vapors are heavier than air and collect in confined and low-lying areas. Vapor can travel to ignition source and flash back. Product may float, and be re-ignited at the water's surface.

Potential health impacts of chronic exposure:

- *Carcinogenic status*: Possible cancer hazard
- *Prolonged overexposure* may cause liver and kidney effects.

Also, chronic leaks and spills from associated barges, tugs, Panamax-class, and Handymax-class vessels can contaminate the water that recharges the drinking water aquifer that sustains residents of Longview and Rainier.

Ecology must deny this permit due to threats to clean and safe drinking water.

We know that day-to-day operations could release contaminants to water resources immediately adjacent to the rail lines throughout the region and the Longview terminal, resulting in water quality impairment. That means multiple sources of precious drinking water could be impaired. Who will pay for monitoring and cleanup when and if municipal drinking water sources are fouled in Washington, Oregon, Idaho, Utah, Colorado and/or Montana?

The MBT project area contains a critical aquifer recharge area. The Mint Farm Regional Water Treatment Plant is approximately 6,000 feet east of the eastern boundary of the project area and supplies drinking water to about 45,000 residents of Longview and the surrounding area. While the study area does not extend to the Mint Farm Regional Water Treatment Plant, the project area lies within the Wellhead Protection Area (i.e., the 5-year Wellhead Protection Plan Source Area).

An important document (DEIS Table 5-3 at p. 5-5, February 2012) demonstrates the flow of water in the Source Delineation Area.

The plant draws from the deep aquifer, recharged by the Columbia River. Kennedy/Jenks Consultants (2010) completed a water quality and environmental risk assessment as part of

the preliminary design report for the Mint Farm Regional Water Treatment Plant. The risk assessment included sampling and water quality analysis of the groundwater from the deeper aquifer of six wells. This study found no chemicals in the groundwater above their respective human health screening levels.

However, in November 2012, Kennedy/Jenks Consultants repeated the water quality analysis from the same wells and found manganese and iron at levels above the Washington State Department of Health secondary water quality standards.

They also found that **arsenic** was present in one of the city's drinking water wells, though at levels below thresholds established by the U.S. Environmental Protection Agency (EPA) for drinking water quality standards.

Arsenic is present in PRB coal and Uinta coal. Arsenic is present in the Columbia River. There is a proposed 303(d) listing for impairment for Columbia River in Oregon near River Mile 64 for arsenic.

With repeated exposure to arsenic-tainted DPM and arsenic-laden coal dust and with 1.5 million metric tons of coal sitting on site at full operation, it is possible that contamination of this drinking water source by arsenic and other pollutants could become a bigger problem than it currently is.

Dredging and construction of the docks could impact drinking water. Groundwater in the study area is confirmed to have benzene, a known carcinogen, and petroleum/gasoline contamination above cleanup levels. MBT dredging would increase water depth in the dredge prism by up to 16 feet. How will this impact the quality and quantity of drinking water and the movement of water in the city's wellhead protection area?

What will be the impacts of pre-operation wicking and compression on the movement of surface water or on the movement of legacy pollutants like benzene and arsenic, which could degrade drinking water?

And consider the contaminants and pollutants which will flow into the Columbia River as treated wastewater, untreated surface water or as overflow from storms. That water could include diesel pollution, toxic coal dust, fuel spills, asbestos, lead, and arsenic from demolition projects.

Rainier's drinking water wells are located just upstream. Given tidal influences, that water source could be subject to contamination by the above pollutants as well. Rainier's designated well-head protection area is located near the project site and appears to overlap the project area.

There are multiple potential individual and cumulative impacts from spill or spills of bunker oil, coal dust, and diesel PM 365 days each year for 30-50 years at and near the terminal. These impacts can degrade the quality of drinking water.

Again, who will pay damages if the drinking water sources for the City of Longview and the City of Rainier are contaminated with pollutants as a result of this project?

Ecology must deny this permit to prevent direct, indirect, and cumulative negative health impacts to vulnerable individuals and communities.

The DOE must deny this permit because this massive project would disproportionately burden minority, low-income populations, and tribal communities in and around Longview and all along transportation corridors. Any further degradation of tribal fishing rights by huge, new industrial projects should not be permitted. Also, degraded water quality will lead to negative, cumulative health impacts for vulnerable populations, including pediatric asthmatics, those with COPD, heart disease, diabetes, exposed workers, the elderly and those living in poverty.

These same communities and individuals will disproportionately suffer negative health impacts associated with the greenhouse gas emissions and climate change generated by the entire project.

Ecology must deny this permit to protect Washington residents by preventing negative health impacts of climate change.

1,700 national and international health associations representing 13 million doctors, nurses, and public health professionals have called for an end to dirty energy and a rapid transition to a healthier world. They include the American Medical Association, American Nurses Association, American Public Health Association, American Academy of Pediatrics, American Academy of Family Practitioners, American Academy of Allergy, Asthma, and Immunology, American College of Physicians, American College of Preventive Medicine, American College of Chest Physicians, American College of Sports Medicine, American Psychological Association, American Thoracic Society, American Lung Association, National Association of County and City Health Officials, Association of State and Territorial Health Officials, National Academy of Sciences, National Medical Association, and U.S. Centers for Disease Control and Prevention.

By facilitating the mining, transport, and burning of coal, the MBT project will contribute to climate change-induced injury and disease, including:

- Increased heat related illness and health care costs; (Jackson et al., 2010; Knowlton et al., 2011; McCoy & Hoskins, 2014)
- Increased extreme weather events with associated injuries and deaths; (Ashley & Ashley, 2008; IPCC, 2012; Jackson et al., 2010; NOAA, 2012)
- Food supply disruption; (Luber et al., 2014)
- Spread of infectious diseases; (Luber et al., 2014) and
- Disproportionate adverse effects on low income and communities of color. (IPCC, 2012)

The coal carried by trains into Longview, when eventually burned, will significantly add to an already dangerous burden of greenhouse gases being emitted into the atmosphere.

Numerous studies, reported in leading scientific and medical journals, show that ongoing changes to our climate are correlated with: changes in rainfall patterns; worsening heat waves; an increased frequency and magnitude of extreme weather events, droughts, and fires; a rise in sea level; increased potency of allergens; and the spread of infectious diseases – all of which pose a real and serious threat to human health. Unless global carbon emissions start to fall within the next decade, we can expect to see further and more drastic changes in our climate, and related adverse health impacts all over the world. Populations that could be most vulnerable to health impacts of climate change include those with:

- Demographic vulnerability: People with existing illnesses, people with disabilities, older adults, mothers, infants, children, people with low socioeconomic status, linguistically or socially-isolated populations, immigrants and refugees, communities of color, and American Indians
- Occupational vulnerability: Wildland firefighters, outdoor workers, growers, ranchers and farmworkers, fishing industry workers, emergency responders and health care workers
- Geographic vulnerability: Urban and suburban areas, coasts, steep slopes, and private water systems (Haggerty et al., 2014) MBT's emissions will contribute to increased ground level ozone.

Additional considerations:

Ground level ozone increases with hot weather, vehicle and diesel exhaust, gasoline vapors, and other outdoor air pollutants. Ground level ozone is known to irritate the respiratory tract, cause premature aging of the lungs, and has been linked to the development of asthma and exacerbation of existing asthma cases. In fact, people who spend more time being active in the outdoors working or playing are at greater risk for adverse health effects from ozone exposure than those who spend more time inside or are sedentary (McConnell et al., 2002; Gent et al., 2003).

Asthma currently affects over 9% of Washington adults (ages 18 and older), and over 110,000 youth in Washington suffer from asthma. The Centers for Disease Control ranks asthma prevalence in Washington State residents as higher than the national average. In 2010, \$73 million was spent on hospitalization costs for asthma-related illness in Washington. Asthma is the primary cause of school- age absenteeism nationally and is associated with reduced quality of life, depression, and suicidal ideation (WA DOH, 2013).

In Oregon, an estimated 10.8% of adults and 7.8% of children have asthma. Oregon has a higher burden of asthma than the overall US and was among the top six states with the highest percentage of adults with asthma in 2011. Children 0-4 years and females have the highest rates of asthma hospitalizations. In 2011, the total cost of asthma hospitalizations was more than \$28 million, with an average of over \$14,000 per hospitalization (Garland-Forshee & Gedman, 2013).

The University of Washington's Climate Impacts Group has estimated that ozone levels will rise due to climate change and increases in train, auto, bus, and truck transportation in the state. Ozone levels are expected to increase by 16% in Spokane County and 28% in King County by midcentury (2045-2054) from 1997-2006, increasing the risk for deaths from cardiovascular disease, asthma, and lung cancer. They also estimate an increase in ozone-related deaths by 17% in Spokane County and 27% in King County during the same time period (Jackson et al., 2010).

Health related costs of current ozone air pollution nationally were an estimated \$6.5 billion in 2008 and will continue to rise without change in regulatory controls (Knowlton et al., 2011).

MBT will contribute to negative health impacts of increased extreme weather events and wildfires. Extreme weather events with associated injuries are already being witnessed globally. Precipitation extremes including heavy rainfall, flooding, and droughts are projected to increase in all regions of the US (IPCC, 2012).

Floods account for approximately 98 deaths per year in the US and are the second deadliest of all weather-related hazards (Ashley & Ashley, 2008; NOAA, 2012).

Steep slopes and intense rainfall can trigger landslides that result in injury and death.

Smoke from wildfires is associated with cardiopulmonary disease, ischemic heart disease, asthma, bronchitis, pneumonia, cancer and motor vehicle crash injury (Haggerty et al., 2014).

MBT will contribute to negative health impacts of shifting disease ranges.

- Climate change is associated with the spread of vector- and water-borne disease and illness. Vectors such as fleas, ticks, and mosquitoes transmit pathogens that cause diseases including Lyme, dengue fever, West Nile virus, and Rocky Mountain spotted fever.
- Large-scale weather shifts in temperature, precipitation, and humidity can result in vector adaptation or geographic expansion, increasing the number of people at risk for acquiring vector-borne diseases.
- Water-borne illnesses such as pediatric gastrointestinal infections have also been associated with extreme weather events, large-scale flooding, and water source contamination (Luber et al., 2014). MBT will contribute to loss of food and water security and increase risk to vulnerable populations.
- An anticipated decline in crop yields, livestock, and fish production from extreme weather, changes in rainfall patterns, and ocean acidification is predicted to raise food prices and result in food shortages.
- Elevated atmospheric carbon dioxide is also associated with decreased plant nitrogen

