RUNAWAY RISKS

Oil Trains and the Government's Failure to Protect People, Wildlife and the Environment

By Jared Margolis • Center for Biological Diversity • February 2015

Executive Summary

Since 2008 the United States has experienced an unprecedented boom in the transport of oil on the nation's railways, rising from fewer than 10,000 rail cars per year to more than 400,000 in 2014. The increased transport of oil-by-rail has resulted in several catastrophic and deadly rail accidents, with hundreds of thousands of gallons of crude oil being spilled into our nation's waterways. This report analyzes how the dramatic increase in transport of large volumes of highly volatile oil poses a significant risk to life, property and the environment; it identifies crucial gaps in regulation as well as important recommendations for improving safety.

In particular we found that oil trains pass directly through some of the country's most pristine wildlife habitats and important waterways, as well as many heavily populated areas, putting people, wildlife and special places at risk.

Key findings include:

- An estimated 25 million Americans live within the one-mile evacuation zone recommended by the U.S. Department of Transportation in the event of an oil train derailment;
- Oil trains pass within a quarter-mile of protected critical habitat for 57 threatened or endangered species, including the California tiger salamander, California red-legged frog, piping plover, bull trout and several imperiled species of salmon, steelhead and sturgeon;
- Oil trains pass through 34 national wildlife refuges, which are some of the nation's most important landscapes for preserving wildlife;
- Within just a quarter-mile of existing and planned oil-train routes there are 3,600 stream miles and 73,468 square miles of lakes, reservoirs and wetlands, including iconic waterbodies such as the Puget Sound, Lake Michigan, Lake Erie, and the Columbia, Hudson and Mississippi rivers.

Federal regulatory agencies have allowed this dangerous increase in oil-train traffic with little to no environmental review and a complete lack of adequate response plans. The U.S. Department of Transportation (DOT) has failed to take any immediate action to keep the unsafe, puncture-prone DOT-111 tank cars from continuing to move millions of gallons of explosive oil through communities daily. Not only have federal regulators at DOT declined to use their authority to issue an emergency order banning the use of the unsafe rail cars for oil transport, but DOT has also failed to take immediate action to require updated, comprehensive oil-spill response plans to ensure that communities are prepared should an explosive derailment and spill occur. The agency's failure in these areas puts the public and the environment at risk.

In response to this ongoing lack of regulatory oversight we make the following recommendations to protect public safety and the environment:

- An immediate ban on the transport of oil in outdated DOT-111 tank cars involved in several fiery oil-train derailments in recent years.
- A ban on crude-by-rail shipments to areas lacking a comprehensive oil-spill response plan and adequate training, personnel and equipment necessary to respond to a worst-case spill scenario.
- An amendment to federal law to require DOT to protect the public and environment from harm, including a mechanism to allow the public to force agency action when the government fails to take steps to ensure the safety and health of citizens, waterways and wildlife.
- Require permits for rail shipments of all hazardous materials in order to provide regulators with the basic information they need to ensure the public and the environment are protected from the escalating amounts of hazardous cargoes being shipped by rail.

- Limit the length and weight of oil trains to 30 cars per train / 4,000 total tons (the American Association of Railroads "no problem" train), since DOT has acknowledged that the excessive length and weight of these trains has contributed to the increased derailments and spills in recent years, and compounds the potential significance of an oil train disaster.

- Establish speed limit zones below the puncture rating of oil tank cars (typically less than 20 mph) in all population centers, and within a quarter mile of any body of water, critical habitat of endangered species, national wildlife refuges, national parks or other recognized special areas.

The increase in dangerous oil train accidents and spills makes clear federal regulators have failed to protect the public and environment. Federal regulators should enact an immediate moratorium on crude-by-rail shipments until they can update spill-response plans and get safer tanker cars on the tracks.

I. Introduction

Since 2008 the transport of oil on the nation's railways has increased 40-fold to more than 400,000 rail cars annually. This dramatic increase in transport of large volumes of highly volatile crude oil poses a significant risk to life, property and the environment. Nothing demonstrates this fact more than several recent derailments, including one in Lac-Mégantic, Quebec that destroyed part of the town and killed 47 people.

To date the Department of Transportation (DOT) and its agencies have failed to use their authority to protect public health and the environment from the massive increase in the use of our railways to transport crude, and there are few mechanisms to force them to do so. Indeed DOT has not conducted a formal environmental review of the potential harms or risk to public safety from the drastic increase in use of oil trains to move flammable crude across the country — mostly in aging tank cars that lack vital safety features — nor has the public had any opportunity to provide comments on the increased shipments.

The potential harm from oil-train derailments cannot be easily ignored. An estimated 25 million Americans live within the one-mile evacuation zone that DOT recommends in the event of an oil train derailment. Within just a quarter-mile of existing and planned oil train routes there are 3,600 stream miles and 73,468 square miles of lake, reservoir and wetlands where a spill would devastate sensitive wildlife habitat, including species protected under the Endangered Species Act. Further, existing and planned oil-train routes cross more than 30 national wildlife refuges and the critical habitats of at least 57 endangered species, and numerous studies have shown that spilled oil can have devastating impacts on both terrestrial and aquatic species from exposure to toxic chemicals. (See Appendix 1 for a list of the national wildlife refuges and critical habitats within the "blast zone.")

It is also clear that the existing regulations are insufficient to protect the public and environment from harm. The regulations allow crude oil to be transported in tank cars that often breach in the event of a derailment. DOT has failed to take any immediate action to keep these unsafe tank cars from continuing to move millions of gallons of explosive oil through our communities daily, even though the federal agency has the authority to issue an emergency order banning their use. In the wake of several oil train disasters, DOT is now considering new safety rules; however, rather than taking immediate action to protect the public and environment, the proposed rules allow continued use of these outdated and unsafe tank cars, and DOT has failed to take immediate action to require comprehensive oil-spill response plans to ensure that communities are prepared should a spill occur. The agency's lack of immediate, concrete action puts the public and the environment at risk.

In this report we detail the increase in oil trains and the places and habitats these trains threaten, discuss the dangers posed by oil-train spills, describe the current regulatory and legislative landscape governing oil trains, and provide recommendations for protecting the public and environment from these dangerous trains. There is an immediate need for a moratorium on the use of oil trains until safer rail cars can be put into use and public safety can be ensured.

Pipeline on rails, Trempealeau, Wisc. Photo by Roy Luck.

II. Increased Oil-by-Rail Transport

The amount of crude oil being transported by rail throughout North America has increased dramatically in recent years. In 2008 only 9,500 rail cars of oil were transported on America's Class I railways; in 2013 more than 400,000 rail cars of oil traveled the nation's railways, representing a more than 40-fold increase.[1]

Recent reports indicate that the crude-oil transport by rail is continuing its dramatic escalation. The amount of crude oil products moved by rail increased by 9 percent during the first seven months of 2014 compared with the same period in 2013. In July nearly 16,000 carloads of oil and petroleum products were moved per week, according to the Association of American Railroads (AAR).[2] According to the U.S. Energy Information Administration (EIA), around 759,000 barrels of crude oil per day were moved by rail during the first seven months of 2014.[3] While final numbers have yet to be released, according to industry estimates some 500,000 carloads of crude oil moved by rail in 2014.[4]

And there is yet room for further expansion of crude-by-rail. Data shows that at the end of 2013, North American rail terminals had the capacity to load at least 3.5 million barrels per day (5,000 carloads per day, more than 1.5 million per year), with even more capacity planned in the near future.[5] Forty times more oil is expected to be hauled along U.S. rail lines in 2015 than in 2005.[6]

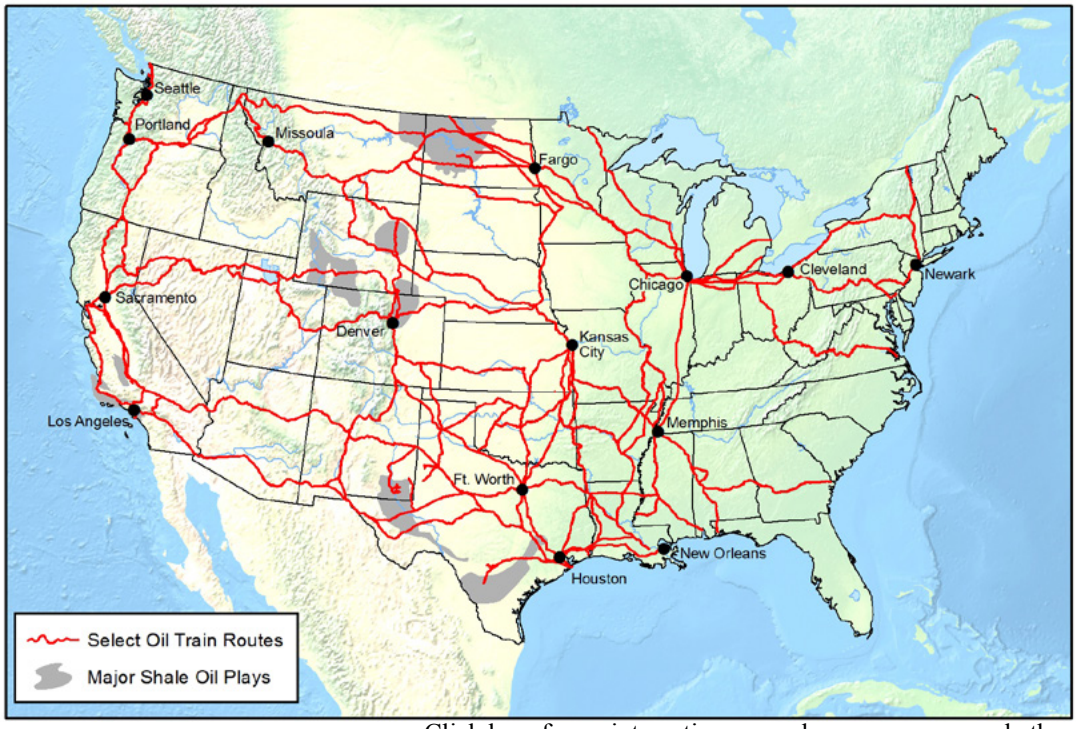
A Government Accountability Office report concurs that there is a tremendous potential for increased rail transport of oil. The GAO report states that, "according to EIA, increased production in 2012 and 2013 was the largest annual increase since the beginning of U.S. commercial crude oil production in 1859," and adds that "according to EIA officials, U.S. production of crude oil is expected to continue to increase — by 48 percent from 2012 to 2019 — and will remain above the 2012 level through 2040."[7]

Lac-Mégantic rail disaster, June 6, 2013.

III. The Dangers of Shipping Oil-by-Rail

The increased transport of oil-by-rail

has resulted in several catastrophic and deadly rail accidents throughout North America, with hundreds of thousands of gallons of crude oil being spilled into our nation's waterways.



Click here for an interactive map where you can see whether your home and the places and species you love are at risk.

The potential harm from oil-train derailments cannot be easily ignored. Oil trains are currently moving millions of gallons of toxic, explosive crude through heavily populated areas such as Chicago, Houston and Albany, N.Y., putting both people and property at risk. An estimated 25 million Americans live within the one-mile evacuation zone that DOT recommends in the event of an oil train-derailment.[8]

Within just a quarter-mile of existing and planned oil-train routes there are 3,600 stream miles and 73,468 square miles of lakes, reservoirs and wetlands, including iconic water bodies such as the Puget Sound, Lake Michigan, Lake Erie, and the Columbia, Hudson and Mississippi rivers, where a spill would devastate sensitive wildlife habitat, including species protected under the Endangered Species Act.

a. Increased Accidents and Spills

With the dramatic rise in oil-train traffic has come an equally dramatic rise in oil spills from trains. In 2013 there were 117 crude-by-rail spills in the United States, a near-tenfold rise since 2008.[9] These resulted in more than 1.1 million gallons of crude oil spilled in the country, more in one year than the total amount spilled from 1975-2012.[10]

This startling upsurge in oil-train spills continued to increase in 2014. There were more such spills in 2014 than in any year since the federal government began collecting data on spill incidents in 1975.[11] More than 140 "unintentional releases" of crude oil occurred in 2014, according to data from the federal Pipeline and Hazardous Materials Safety Administration (PHMSA). By comparison, between 1975 and 2012, U.S. railroads averaged just 25 spills a year. Oil-train spills in 2014 included three major derailments and seven incidents classified as "serious" because they involved a fire, a spill of more than 120 gallons or an evacuation. That's up from five serious incidents in 2013, although the overall volume of oil spilled in 2013 was much greater.[12]

Fiery derailments of oil trains have recently occurred in West Virginia, North Dakota, New Brunswick, Alabama and Quebec, the latter causing the death of 47 people, the evacuation of approximately 2,000 people from the surrounding area, and the incineration of the downtown core of a popular tourist town. Just last year, on April 30, 2014, an eastbound CSX train consisting of 105 tank cars loaded with Bakken crude oil from North Dakota derailed in downtown Lynchburg, Va. Seventeen of the train's cars derailed, and one of the tank cars was breached. A petroleum crude oil fire ensued, shooting flames and black smoke into the air. Emergency

responders evacuated approximately 350 people from the immediate area. Three of the derailed tank cars containing petroleum crude oil came to rest in the adjacent James River, spilling up to 30,000 gallons of petroleum crude oil into the river, threatening habitat and human health.

Most recently, two oil train disasters within two days highlighted the dangers posed by these bomb trains. On February 15, 2014, a train carrying 100 tank cars of crude oil derailed in Northern Ontario, igniting a fire that was still burning more than 24 hours after the accident. And, on February 16, 2014, an oil train transporting highly volatile Bakken crude oil derailed in Fayette County, W.V., causing a massive fire and explosions, spewing burning oil into the Kanawha River and setting a house ablaze, prompting the West Virginia Governor to declare a state of emergency. The accident forced the evacuation of two nearby communities and threatened municipal drinking water supplies and habitat for several rare and vulnerable aquatic species that inhabit this biologically important river.

Local responders are ill prepared to handle the increased oil-train traffic and accidents. At an National Transportation and Safety Board rail safety panel, Gregory Noll, a chairman for the hazardous materials committee of the National Fire Protection Association, said "there's very little that we as a responder are going to do, other than ... to isolate the area, remove people from the problem, and allow the incident to go its natural course until it essentially burns down to a level where we can extinguish it."[13] That approach would result in tremendous damage in the many densely populated areas through which crude is now moving by rail. This echoes the state of Washington's determination that 62 percent of local fire districts near oil train routes are not sufficiently trained or do not have the resources to respond to a train derailment accompanied by fire.[14]

b. Oil Spill Impacts on Species and Habitats

All types of organisms are susceptible to the deadly effects of spilled oil, including mammals, aquatic birds, fish, insects, microorganisms and vegetation. In addition, the effects of spilled oil on freshwater microorganisms, invertebrates and algae tend to move up the food chain and affect other species. Oil spilled into rivers often collects along the banks, where the oil clings to plants and grasses. The animals that ingest these contaminated plants may also be affected. Rocks found in and around flowing water serve as homes for mosses, which are an important basic element in a freshwater habitat's food chain. Spilled oil can cover these rocks, killing the mosses and disrupting the local ecology.

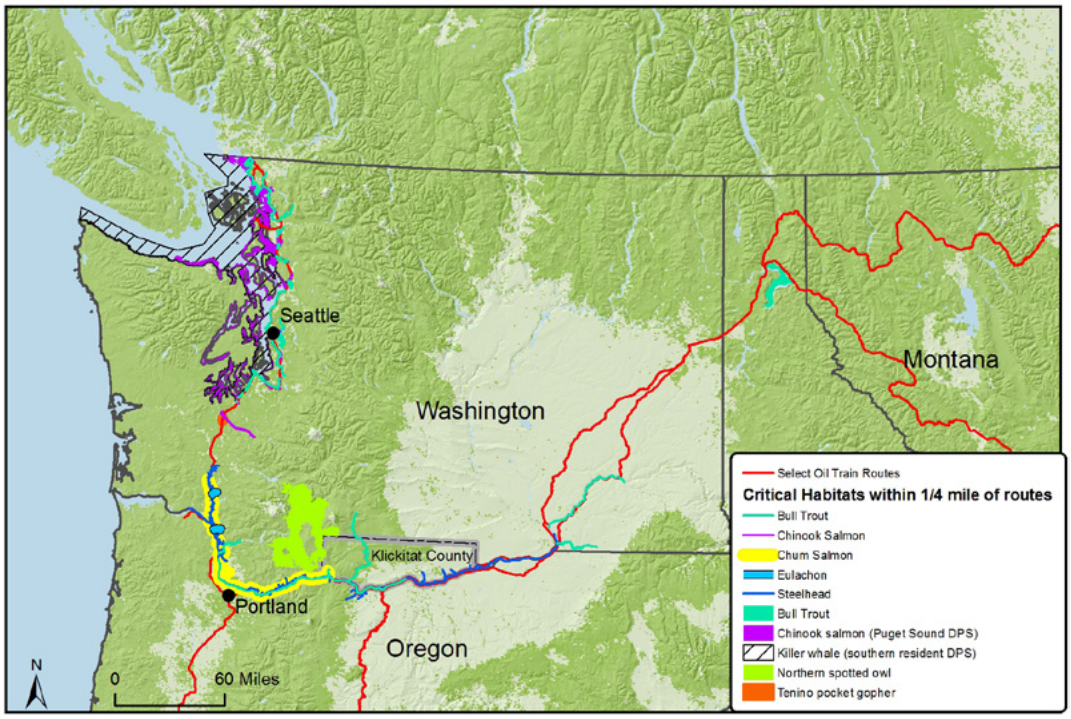
Spilled oil can also be toxic to the frogs, reptiles, fish, waterfowl and other animals that live in waterways adjacent to oil train routes. "Oiling" of animals, plants and grasses that are rooted or float in the water can occur, harming both the plants and the animals that depend on them for food and shelter. Fisheries located in fresh water also are subject to the toxic effects of oil. In the shoreline habitats of lakes and other bodies of standing water and marshes, cattails and other weeds and grasses provide many important functions for life in and around the water. They serve as food sources, nesting grounds for many types of animals, and shelter for small animals. Oil spills can coat these areas, affecting the plants and the organisms that depend on them, and have a widespread impact on a host of interconnected species.

Existing and planned routes cross the critical habitats of at least 57 endangered species, including iconic predators such as the Canada lynx and gray wolf, birds like the piping plover and spotted owl, and marine species such as coho salmon and steelhead. Numerous studies have shown that spilled oil and the various chemicals contained in crude products (such as aromatic hydrocarbons, benzene and toluene) can have devastating impacts on these terrestrial and aquatic species.[15]

Oil spills can have a direct impact on both aquatic and terrestrial species from inhalation of toxic fumes, which can lead to brain lesions, stress and disorientation. Further, chronic biological exposure can lead to long-term impacts at the population level, and therefore oil spills can cause a trophic cascade radically modifying affected communities.

Putting these beautiful places and endangered wildlife species at risk is unacceptable, yet every day oil trains travel through places like Glacier National Park, across rivers like the Columbia, Missouri and Mississippi that serve as habitat for endangered fish, and through cities across America. In the following sections, we detail some of the regions that are experiencing the biggest growth in oil-train traffic and some of what's at risk in these regions.

Pacific Northwest



The Pacific Northwest is experiencing an unprecedented boom in the transport of oil through the region by rail. Between 2008 and 2013, the region went from having zero facilities capable of receiving massive oil trains to *four* functional terminals with a daily potential throughput of 183,600 barrels. About 19,000 tank cars of crude oil passed through Oregon in 2013, a 250 percent increase from the year before. The Columbia River Gorge, which is a designated National Scenic Area, has become the key route for moving oil in the Pacific Northwest, with as many as 19 oil trains per week now passing through Klickitat County on the Washington side of the Columbia River Gorge.[16] These trains cross hundreds of streams that serve as habitat for endangered salmon and other fish species.

At least six additional terminals have been proposed in Oregon and Washington. If all of the proposed oil-by-rail projects are built, they would be capable of moving more than 850,000 barrels per day — more oil capacity than the proposed Keystone XL pipeline. Trains carrying oil through Washington state may surge to seven times the 2014 volume, reaching 137 trains a week by 2035 if proposed facilities are built, according to a report from Washington state's Department of Ecology.[17]

On Puget Sound, three of the region's five refineries already receive oil-by-rail shipments, and the other two are planning new facilities. Three proposals for Grays Harbor would move oil along the Washington coast. On the Columbia River, one port terminal is already receiving oil-by-rail shipments, and a proposed terminal in Vancouver, Wash., would be by far the region's largest facility.[18]

Until recently, oil trains in the region were only moving light crude from the Bakken oil fields of North Dakota; however, in November 2014 trains carrying mass loads of heavy crude oil from Canada's tar sands began moving through the Northwest, creating the potential for an oil spill in parts of Oregon and Washington where environmental agencies lack response plans and equipment to respond.[19] This viscous type of oil, once spilled into aquatic environments, creates a nightmarish cleanup scenario, with lasting and perhaps irreversible impacts to water quality and aquatic ecosystems.

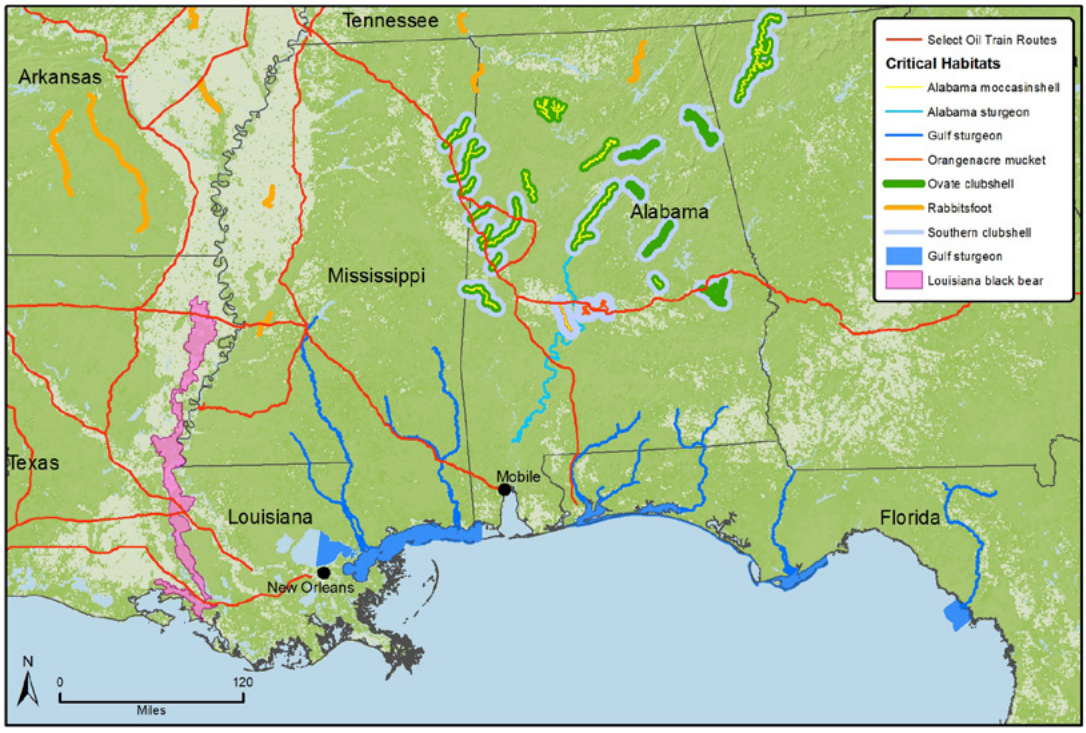
Rail lines carrying this crude touch more than 100 watersheds in Oregon and cross more than 1,000 water

bodies in Washington. Bruce Gilles, emergency response program manager at Oregon's Department of Environmental Quality, has said that should a train full of tar sands oil spill today, response teams will be "going in somewhat blind," and that means they won't be able to work as quickly as they should.[20] Unlike plans for existing marine transports and storage facilities, plans for who responds, how and with what equipment are lacking in Oregon and Washington when it comes to rivers and lakes. "You're going to lose time, and that time translates into increased environmental damage and costs to clean up," Gilles said. "That's the bottom line."[21]

An oil-train derailment and spill along rail routes in the Pacific Northwest has the potential to wreak devastating harm not just to drinking water supplies and recreation areas relied on by hundreds of thousands of people, but also to critical habitat for endangered animals, including salmon and steelhead populations in the Columbia River. There is ample literature on the chronic and acute toxicity of petroleum compounds on fish, including salmonids. Crude-oil products are highly toxic to all species of salmon, particularly for the egg and alevin stages. There can be little doubt that exposure to these contaminants would have a severely detrimental impact on salmon populations.[22]

Oil spills also pose a severe risk to endangered green sturgeon and several imperiled marine mammals and turtles. These species may be directly harmed by the short-term impacts of toxic oil, as well as long-term impacts associated with exposure to oil and dispersants used to break up oil in the event of a spill. Spilled oil can settle to the bottom of rivers, making it impossible for salmon and sturgeon to breed and feed. Furthermore, toxic oil could cause a trophic cascade radically modifying the community by harming the plants and animals that these protected species depend on for survival.

Gulf Coast



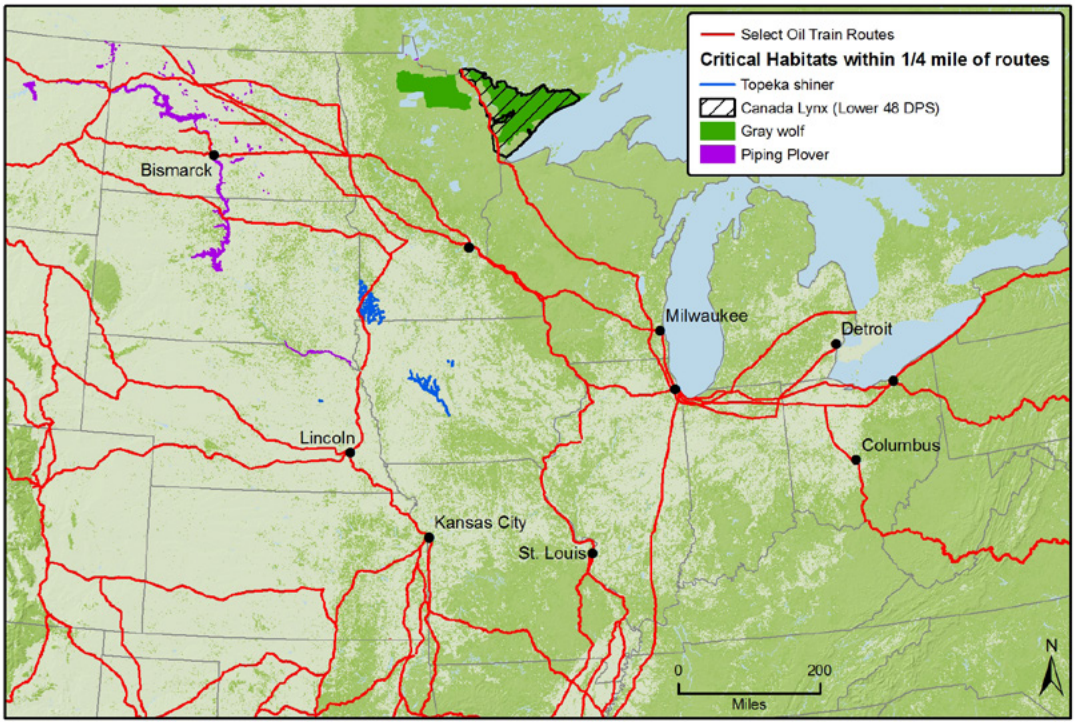
Gulf Coast refineries are being targeted for a rapid expansion of crude-by-rail activity because they are already configured to process grades of crude oil from Mexico and Venezuela similar to the western Canadian heavy crude being extracted from the Alberta tar sands. Heavy oils, including diluted bitumen produced from strip-mined Alberta tar sands, persist longer and can smother shorelines and the biota that live there. Tar sands oil is not only dangerous for its inherent corrosive and acidic properties and for its tendency to sink in water bodies, but since it is generally only transported when blended with toxic gas condensates, tar sands present a one-two punch to the environment in the event of a spill.

A number of rail offloading terminals on the Gulf Coast are being built to handle raw bitumen to improve the economics of crude-by-rail shipments to the U.S. Gulf versus pipeline alternatives. The biggest player in rail terminal building on the Gulf Coast for heavy Canadian crude is the Canadian National (CN) railroad. CN is the only railroad that has access into the heart of the oil sands production region in Northern Alberta. The CN

network also extends directly south and east from western Canada through the Midwest and down to New Orleans and Mobile, Ala.

These heavy tar sands, if spilled in a train derailment, or while being offloaded to tankers to be shipped to Asia, could destroy hundreds of miles of streams and marshlands that act as nurseries for the fish and shellfish central to local diets as well as the region's economy, from the fishing industry to recreation and tourism..
Oil spills could also smother critical habitat for the threatened Gulf sturgeon, and affect development and survival of its eggs. Several characteristics of this fish (i.e., long lifespan, extended residence in riverine and estuarine habitats, benthic predator) predispose the species to long-term and repeated exposure to environmental contamination and potential bioaccumulation of toxicants. Heavy oils that settle to the river bottom are later incorporated into the food web as they are consumed by benthic feeders like sturgeon or the macroinvertebrates they feed on. Some of these compounds may affect physiological processes and impede the ability of a fish to withstand stress, while simultaneously increasing the stress of the surrounding environment through oil-recovery efforts (i.e. dredging) and by reducing dissolved oxygen (from microbes using oxygen to consume the oil), altering pH, and altering other water-quality properties.

Midwest



Rail shipments of oil have rapidly increased in the Midwest, fueled by the oil boom in the North Dakota Bakken fields, with trains transporting roughly 72 percent of the approximately 1 million barrels of Bakken produced per day.[23] Data disclosed by railroads underscores the fact that many of those shipments pass through highly urbanized areas where an accident would potentially be catastrophic. BNSF railway, for example, reported moving as many as 27 oil trains in a week through Chicago's Cook County.[24] Light crude oils like those from the Bakken region of North Dakota are generally more explosive, more toxic, and can penetrate soils more quickly and deeply than traditional crude, increasing the risk of harm in these populated areas.

In Minnesota at least 50 oil trains per week, each carrying more than 1 million gallons of crude oil, pass through the Twin Cities area, with recent reports showing up to 15 trains a day moving across the state.[25] The volume of oil trains is expected to increase, as BNSF Railway Company has stated it will invest an estimated $326 million for key rail capacity improvement projects in Minnesota in 2015.[26]

Almost all of these oil trains pass through Minnesota into Wisconsin, traveling along the Mississippi River before turning east, often to East Coast oil refineries. Data show that 30 to 48 dedicated oil trains per week carry Bakken crude into Wisconsin from Minnesota. Three to five of those cross southern Wisconsin on the Canadian Pacific railroad, passing through downtown Milwaukee and turning south along the heavily populated Lake Michigan coast. The rest travel on the Burlington Northern Santa Fe (BNSF) railroad along the east bank

of the Mississippi River, through the Upper Mississippi National Wildlife Refuge.[27] Canadian Pacific also runs dedicated oil trains on the west bank of the Mississippi.

These trains pass through heavily populated areas, putting people, homes and businesses at great risk. Moreover, state and local officials have stated that fire crews are unprepared for an emergency, and if one of these trains derails, state and local emergency responders don't have the equipment needed to put out a catastrophic fire.[28] The Minnesota Department of Transportation lacks a response team for rail petroleum accidents.

Oil trains moving through this region also pose a risk to several endangered species, including the piping plover and Topeka shiner, whose habitats could be decimated by an oil spill. The 2003 Recovery Plan for the Great Lakes piping plover states: "Oil spills represent an important concern for Great Lakes piping plovers .... Oiling [] poses a potential threat to piping plovers migrating and breeding along Great Lakes waterways."[29] Those threats have now increased exponentially due to the recent rapid expansion of oil-train traffic in the region.

Eastern Seaboard

The eastern seaboard has seen a rapid growth in crude-by-rail over the past few years. Areas such as the Hudson River near Albany and the Port of New York have gone from virtually no crude or refined product being transported downstream in 2000, to the more than 1 billion gallons of Bakken crude oil that passed through the Port of Albany by rail last year — with plans for further increases in the works all along the coast.

Oil trains from the Bakken oil fields of North Dakota and tar sand operations in Alberta, Canada move through the Northeast to the mid-Atlantic, endangering large population centers such as Albany, New York City, Philadelphia and Richmond, where millions of people are at risk of having their water supplies contaminated, and homes along the train routes are in danger of being set ablaze.

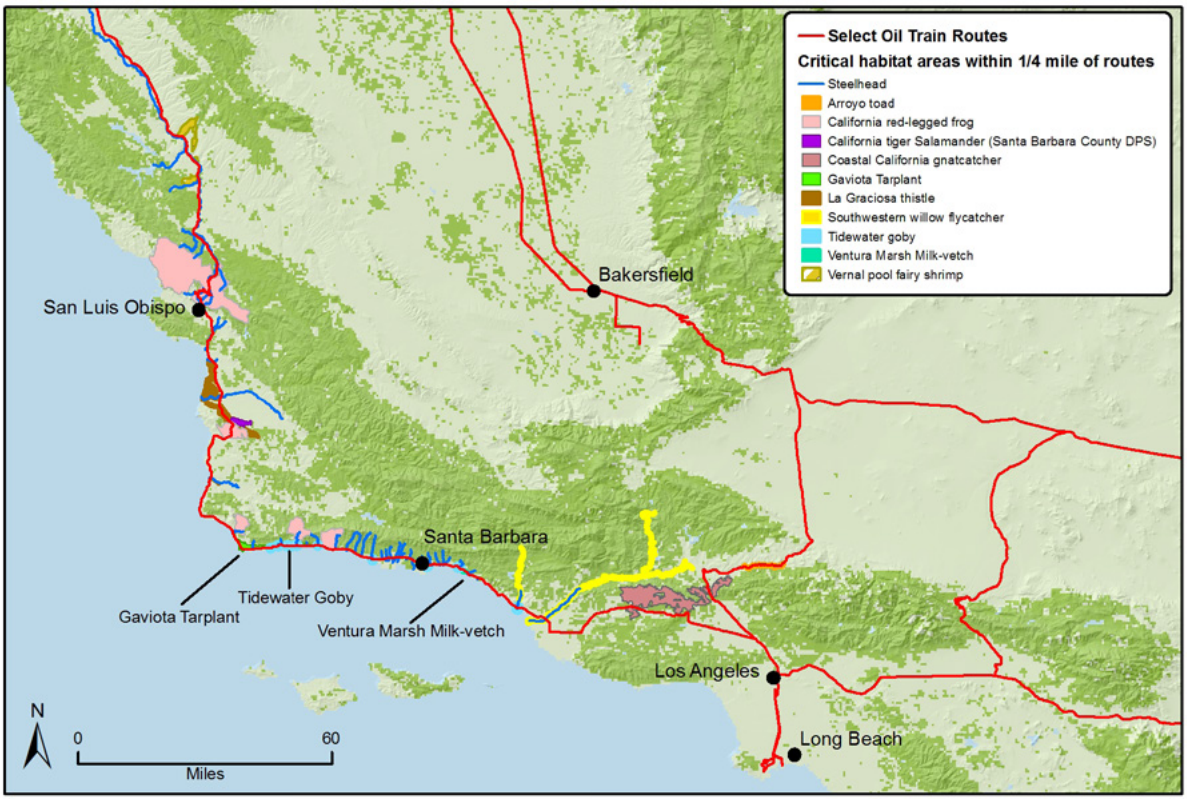
An oil-train derailment in this area could also threaten the habitat of endangered whales and turtles if currents draw oil offshore. Marine mammals and turtles require routine contact with the sea surface, so these species experience high risk from floating oil. An oil spill could also jeopardize endangered Atlantic sturgeon, which rely on a clean river-bottom for feeding and breeding. If a spill were to occur in the Hudson River, for example, the oil could suffocate imperiled Atlantic and shortnose sturgeon, while efforts to remove the oil could cause further harm through dredging of the sturgeon's habitat, making it impossible for them to survive.

Southern California

Southern California is another area in the country experiencing a rapid increase in oil-by-rail activity. It has several crude rail receipt facilities, with more in the works. In Taft, the Bakersfield Crude Terminal is already receiving around 100 tank cars per day, and may become one of the largest crude-by-rail terminals in the state. The terminal is slated ultimately to receive two one-hundred-car "unit" trains of crude oil per day, carrying as much as 61 million barrels a year, including the type of crude involved in the explosion in Lac-Mégantic. The crude slated to arrive at the Bakersfield Crude Terminal alone represents a 1,000% increase over the total amount imported by rail into California in 2013, substantially increasing the risk that California will experience accidents and derailments with catastrophic human and environmental consequences.

A recently approved terminal in Bakersfield, the Alon Crude Flexibility Project, entails a five-fold increase

in the Alon Bakersfield Refinery's capacity to import crude oil, from 40 tank cars per day to 200 tank cars per day, or up to 63.1 million barrels of crude per year. This influx of cheap, mid-continent crudes, including Canadian tar sands crude and Bakken crude from North Dakota, would allow the shuttered refinery to reopen and run at full capacity, processing 70,000 barrels of crude oil per day. The Plains All American facility, now under construction in Bakersfield, and a planned new rail crude handling facility for the Santa Maria refinery in San Luis Obispo, would substantially increase the amount of crude by rail moving through the region.



The expansion of crude-by-rail shipments in this region puts several imperiled species at great risk from spills. The oil-train rail routes pass through critical habitat for the threatened red-legged frog, endangered coast steelhead and California tiger salamander, as well as endangered plants, such as the La Graciosa thistle and Ventura marsh milk vetch. These species are at high risk of contamination following an oil-train spill.

Train routes pass over dozens of streams that are essential to the southern steelhead population, which is very susceptible to highly toxic crude oil products. Oil trains also pass through one of the last remaining islands of critical habitat for the California tiger salamander. The U.S. Fish and Wildlife Service's 5-year review for this species specifically states that "sources of chemical pollution that may adversely affect Central California tiger salamanders include hydrocarbon and other contaminants from oil production ..." and that spilled oil can "negatively affect the food chain, with effects to algae growth and less prey species available, resulting in smaller salamander larvae."[30] This species, and the habitat and food chain it depends on, could be decimated by an oil train accident, which becomes more likely as the number of trains moving through the area increases.

These oil trains further jeopardize the drinking water and homes, schools and business that millions of people rely on along the Pacific Coast of Southern California.

IV. Oil Train Regulation

Regulation of our nation's railroads is a convoluted mire of agency oversight.[31] With regard to oil trains, the secretary of the DOT has the authority to regulate the transportation of hazardous materials pursuant to the Hazardous Materials Transportation Act (HMTA),[32] and is authorized to issue regulations to control rail safety, which is overseen by the Federal Railroad Administration (FRA). The DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) has been delegated the responsibility to write the hazardous materials

regulations (HMR),[33] which specify packaging, labeling and handling requirements for hazardous materials.

a. Regulatory Action on Oil Trains

In the wake of several oil-train accidents that highlighted the dangers these trains pose to people and the environment, DOT has undertaken various efforts to reduce the risks of oil-by-rail traffic; however, these efforts have fallen well short of what is needed. DOT's actions have included:

- Issuing two safety advisories in 2013 stressing the importance of security planning and proper characterization and classification of crude oil;[34]
- Issuing a safety alert on Jan. 2, 2014, warning of potential crude-oil variability and emphasizing the proper and sufficient testing to ensure accurate characterization and classification;[35]
- Issuing an emergency order on May 7, 2014 requiring all railroads that operate trains containing at least 1 million gallons of Bakken crude oil to notify states about the operation of these trains;[36]
- Issuing a safety advisory on May 7, 2014, urging carriers transporting Bakken crude oil by rail to select and use tank cars of the highest integrity to transport crude oil;[37]
- Issuing recommendations on May 13, 2014, for tank cars used for the transportation of petroleum crude oil by rail;[38]
- Issuing proposed regulations in July 2014 for "high hazard flammable trains," which are currently under review;[39]
- Issuing an advanced notice of proposed rulemaking regarding comprehensive oil-spill response plans for oil trains.[40]

As is apparent, actions from the regulatory agencies charged with protecting safety have, to date, focused on issuing nonbinding advisories. These safety advisories and alerts merely urge the use of safer tank cars and stress the importance of testing and proper classification of crude oil products. These nonbinding advisories have been uniformly ignored by an industry focused on moving crude, not protecting public health and the environment.

The only actions mandated by DOT have been state reporting requirements, which have highlighted the fact that states are entirely unprepared to respond to inevitable oil-train disasters.[41] This information is important for responding to oil spills; however, it does nothing to prevent the inevitable increase in the number and size of spills that can be expected from the skyrocketing use of dangerous tank cars for oil transport.

Moreover, it is clear that the existing regulations are insufficient to protect the public and environment from harm. For example, the Hazardous Materials Regulations (HMR), which regulate the type of tank cars that can be used, allow continued use of the puncture-prone DOT-111 cars for crude oil. These tank cars continue to be the most commonly used type for oil transport, even though the National Transportation Safety Board (NTSB) has found that they will almost always breach in the event of a train accident.[42] The U.S. Department of Transportation, Transport Canada and the Association of American Railroads (AAR) Tank Car Committee issue tank car regulations and standards, and while NTSB and AAR have been calling for safer tank cars for oil transport and Canada has taken steps to remove these dangerous cars from crude transport,[43] DOT has yet to alter the HMR to address the risks these tank cars pose.

Regulators have been aware of the hazards posed by DOT-111 tank cars for more than two decades yet have done little to protect the public from these "bomb trains."[44] In 1991 the NTSB issued a report that found several worrisome flaws with the DOT-111 tank car: Its steel shell is too thin to resist puncture in accidents, the ends are especially vulnerable to tears, and unloading valves and other exposed fittings on the tops of tankers can break during rollovers.[45] In testimony before the U.S. House of Representatives, one NTSB official declared

that these tank cars pose an "unacceptable public risk."[46] But the NTSB can only investigate accidents and make recommendations to DOT — NTSB has no regulatory authority to enforce the changes it recommends, such as a ban on the use of DOT-111 cars for transporting crude oil.

Thirteen DOT-111 tank cars derailed in Cherry Valley, Illinois.

Even with this knowledge, DOT has failed to take any immediate action to keep these dangerous tank cars from continuing to move millions of gallons of explosive oil through our communities daily, though the agency clearly has the authority to issue an emergency order banning their use.[47]

Furthermore, the existing regulations provide a loophole that allows oil shippers to avoid providing comprehensive oil-spill response plans, and thereby circumvent regulations that would otherwise require oil shippers to ensure adequate personnel and equipment are available to respond to a worst-case scenario spill event.[48]
While DOT has proposed new rules regarding oil trains (which they refer to as "high hazard flammable trains"), those rules will not become effective for many months, if not years, and the proposed changes to the HMR fall well short of the immediate regulatory changes needed to protect the public and environment from further fiery derailments.[49] The proposed rules would allow for the continued use of the dangerous DOT-111 tank cars over a five-year phase-out period.[50] The rules would also allow for oil trains to move at speeds (40-50 mph) well in excess of the design specifications of even the newer, safer tank cars, which are engineered to withstand impacts at only 18 mph without suffering punctures that would spill oil and cause water and soil contamination.

Very problematically, the proposed rules fail to include limitations on the length and weight of oil trains, even though PHMSA has acknowledged that the excessive weight and length of oil trains has contributed to the increased derailments and spills in recent years, and that, in all cases, the size of a train compounds the potential significance of a disaster.[51] The Center has petitioned PHMSA to limit the length and weight of oil trains; however, the agency has failed to respond to the petition.[52]

These proposed rules fail to protect people or wildlife from the continued increase in oil-by-rail traffic. More must be done to prevent fiery derailments and spills that will continue to endanger Americans in their homes and species and ecosystems along busy rail corridors.

In sum, DOT has failed to take immediate action necessary to prevent hazards posed by the rapid increase in oil-train traffic.

V. Federal Regulatory Agencies Are Not Using Key Environmental Laws to Protect the Public and Environment From Increased Oil Train Traffic

The federal government has been caught unprepared for the exponential increase in oil trains in large part because it has not required permits or conducted oversight of rail traffic.[53] There has effectively been no permit system or other regulatory measures in place to govern the volume of hazardous, flammable liquids being shipped by rail. Nor has there been an adequate assessment of the potential harm posed to people and the environment by the rapid increase in oil train traffic. Now DOT is struggling to catch up by issuing proposed rules that attempt to reduce the risk of oil spills, but by allowing dangerous DOT-111 tank cars to remain in service for several years, these rules do not provide sufficient protections.

As former NTSB Chair Deborah Hersman noted: "What we know is the regulators are behind the curve ... We're losing cars. We're losing millions of gallons of petroleum, and we aren't prepared."[54]Moreover, even when laws requiring an analysis of environmental harm — such as the National Environmental Policy Act (NEPA) — are triggered for federal actions regarding oil trains, the agencies' analyses are often insufficient. For example, the NEPA analysis for DOT's proposed oil-train rules fails to consider an immediate ban on the use of DOT-111s, even though NEPA requires an analysis of all reasonable alternatives.[55]

The slow, piecemeal process that regulators are currently undertaking has left the public and environment at risk. The rapid increase in use of this nation's railways for oil transport, which has created "virtual pipelines" of oil trains across the country, should not have been allowed to occur without the thorough review of impacts and alternatives that are required in an environmental impact statement pursuant to NEPA, and in compliance with other environmental laws, including the Endangered Species Act and Clean Water Act.

Similarly, while federal agencies must ensure that their actions will not jeopardize the continued existence of endangered species pursuant to the Endangered Species Act (ESA), and consult with expert agencies if harm to listed species is likely to occur, federal agencies to date have not consulted over the increase in oil train traffic and the concurrent risk to endangered species across the country. As discussed above, species are at risk of direct harm from spills of toxic, flammable liquids, and also potential spill-response measures, such as the use of toxic dispersants and burning or dredging of oil. If a permit system or other regulatory mechanism had been put in place that would require interaction with a federal agency prior to drastically increasing oil-train traffic, then consultation with the National Marine Fisheries Service and U.S. Fish and Wildlife Service would have been initiated. This process would have allowed these expert agencies to review the potential for harm, and to suggest and even require prudent actions to prevent such harm.

If NEPA or ESA processes had been required for the increased oil-train traffic, they would have revealed the broad lack of preparation for responding to the escalating dangers now posed by oil trains. For example, the Northwest Area Contingency Plan, which governs federal response to oil spills in the Pacific Northwest, states that "should a catastrophic oil spill occur, it is likely that there will not be adequate response resources in the Northwest Area to manage and clean up the spill."[56] These sentiments echo the findings of the Washington State Department of Ecology, which recently issued a report on rail oil transportation stating "of the 278 local fire districts through which crude-by-rail transportation occurs or is likely to occur, 62% believe that their departments are not sufficiently trained or do not have the resources to respond to a train derailment accompanied by fire. Local fire departments and fire protection districts across the rail transportation corridor do not have adequate funding necessary to plan, train and equip their communities for a crude oil incident." [57]

The unchecked increase in oil-train traffic only exacerbates these dangers. The NEPA and ESA processes that should have been triggered by the rapid increase in such traffic would require an analysis to identify such dangers, and result in changes that are just now being considered through agency rulemaking. The existing regulatory system failed to capture the systemic and severe threat posed by greatly increased traffic, and change is needed to protect the public and environment from further harm.

VI. Recommendations to Protect the Public and Environment From Oil Trains

As detailed above, federal regulatory agencies have allowed a dangerous increase in oil-train traffic with little to no environmental review or upgrade to emergency-response plans. The following steps should be taken to address this glaring lack of regulatory oversight and to protect public safety and the environment:

- An immediate ban on the use of dangerous DOT-111 tank cars to prevent further harm to life, property and the environment from fiery oil-train derailments.
- A ban on crude-by-rail shipments to areas without a comprehensive oil-spill response plan and adequate training,

personnel and equipment to respond to a worst-case spill scenario.

- Amend the HMTA to require DOT to protect the public and environment from harm, including a mechanism to allow the public to force agency action when the government proves unable or unwilling to step up and ensure our safety.

- Require permits for rail shipments of all hazardous materials, allowing regulators to ensure the public and the environment are protected from increases in shipping volumes.

- Limit the length and weight of oil trains to 30 cars per train / 4,000 total tons (the American Association of Railroads "no problem" train), since DOT has acknowledged that the excessive length and weight of these trains has contributed to the increased derailments and spills in recent years, and compounds the potential significance of an oil train disaster.

- Establish speed limit zones below the puncture rating of oil tank cars (typically less than 20 mph) in all population centers, and within a quarter mile of any body of water, critical habitat of endangered species, national wildlife refuges, national parks or other recognized special areas.

Given the ongoing increase in the number of trains carrying highly volatile crude oil across the country, and the corresponding increase in explosive train derailments, federal regulators must immediately require the use of safer tank cars traveling at lower speeds, and require a full assessment of the potential risks of the transport by rail of hazardous, flammable liquids such as crude oil. The public must have the ability to require that the government fulfill its responsibility to ensure that people, property and the environment are not exposed to harm from these trains.

The actions taken by agencies with regulatory authority over hazardous materials transportation in response to the growing number of oil-train accidents falls far short of what is needed to protect the public and environment. Non-mandatory safety recommendations and advisories, which urge and recommend that outdated and dangerous tank cars not be used for rail shipments of oil, have not prevented further fiery derailments.
The only reasonable way federal regulators can adequately protect the public and the environment from these ongoing and significant safety risks is to enforce an immediate moratorium on crude-by-rail shipments until they can update spill-response plans and get safer tanker cars on the tracks.

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Appendix 1 - Critical Habitat Areas Within "Blast Zone"

Alabama mocassinshell
Alabama pearlshell
Alabama sturgeon
Antioch Dunes evening primrose
Arkansas River shiner
Arroyo toad
Bull trout
California red-legged frog
California tiger salamander (Santa Barbara County DPS)
Canada lynx (Lower 48 DPS)
Chinook salmon (Lower Columbia River DPS)
Chinook salmon (Puget Sound DPS)
Chinook salmon (Puget Sound DPS)
Chinook salmon (Upper Coumbia River spring run DPS)
Chum salmon (Columbia River DPS)
Coastal California gnatcatcher
Contra Costa goldfields
Contra Costa wallflower
Delta smelt
Eulachon
Gaviota tarplant
Gray wolf
Gulf sturgeon
Killer whale (southern resident DPS)
La Graciosa thistle
Lost River sucker
Lost River sucker
Louisiana black bear
Neosho mucket
North American green sturgeon (southern DPS)
Northern spotted owl
Orangenacre mucket
Ovate clubshell
Piping plover
Preble's meadow jumping mouse
Rabbitsfoot
San Joaquin Orcutt grass
Shortnose sucker

Slender Orcutt grass
Southern clubshell
Southwestern willow flycatcher
Steelhead (Central Valley DPS)
Steelhead (Lower Columbia River DPS)
Steelhead (Middle Columbia River DPS)
Steelhead (Snake River Basin DPS)
Steelhead (South-central California Coast DPS)
Steelhead (Southern California DPS)
Steelhead (Upper Columbia River DPS)
Suisun thistle
Tenino pocket gopher
Tidewater goby
Topeka shiner
Ventura Marsh milk vetch
Vernal pool fairy shrimp
Vernal pool tadpole shrimp
White sturgeon (Kootenai River DPS)

U.S. Fish and Wildlife Service Lands Within "Blast Zone"

Arrowwood National Wildlife Refuge
Atchafalaya National Wildlife Refuge
Bald Knob National Wildlife Refuge
Big Stone National Wildlife Refuge
Bowdoin National Wildlife Refuge
Burleigh County Waterfowl Production Area
Des Lacs National Wildlife Refuge
Great River National Wildlife Refuge
Guadalupe-Nipomo Dunes National Wildlife Refuge
Hagerman National Wildlife Refuge
Hillside National Wildlife Refuge
Hobart Lake National Wildlife Refuge
Little White Salmon National Fish Hatchery
Lynch Lake Waterfowl Production Area
Marais des Cygnes Waterfowl Area
Middle Mississippi River National Wildlife Refuge
Morgan Brake National Wildlife Refuge
Mud Lake Waterfowl Production Area
Nisqually National Wildlife Refuge
Pixley National Wildlife Refuge
Pleasant Lake National Wildlife Refuge
Pond Creek National Wildlife Refuge
Ridgefield National Wildlife Refuge
Salt Creek Wilderness
Silver Lake National Wildlife Refuge
Steigerwald Lake National Wildlife Refuge
Stone Lakes National Wildlife Refuge
Tensas River National Wildlife Refuge
Trempealeau National Wildlife Refuge
Tule Lake National Wildlife Refuge
Turnbull National Wildlife Refuge
Umatilla National Wildlife Refuge
Upper Klamath National Wildlife Refuge
Upper Mississippi River Wildlife and Fish Refuge

Endnotes

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