

January 12, 2015

André Baugh, Chair
Planning and Sustainability Commission
City of Portland
1900 SW 4th Avenue, Suite 7100
Portland, OR 97201-5380

Re: Proposed Terminal 6 Environmental Overlay Zone Text and Map Amendment

Dear Chair Baugh and Commissioners:

Pembina Marine Terminals Inc. ("Pembina") looks forward to the opportunity to discuss the proposed Terminal 6 Environmental Overlay Zone ("E-zone") Text and Map Amendment with the Planning and Sustainability Commission ("PSC") on January 13, 2015 and provides this submittal in anticipation of the hearing.

We hope this submittal provides additional detail that is helpful to the PSC in its decision-making. As an overview, this submittal addresses the following:

- I. Portland and the Project
- II. Project Due Diligence and Schedule
- III. Project Permits and Studies
- IV. Pembina's Propane and Green Benefits of Propane
- V. Consistency with the 2009 Climate Action Plan
- VI. Importance of Safety During Facility Design and Operation
- VII. Environmental Benefits of the Map Amendment

In addition to this information, we providing a separate written response to questions we have received from members of the PSC.

I. PORTLAND AND THE PROJECT

Why Portland, Oregon?

Pembina has investigated a number of potential locations for a west coast marine export facility north and south of the United States and Canada border for over two years. Factors for selecting the Port of Portland Terminal 6 as the site for a liquid propane export terminal include Portland's readily available land (previously developed and zoned for heavy industrial use), an existing marine berth, deep-water access, rail access, Portland's local skilled labor force, and the geographic proximity to markets. Other locations did not offer all of these benefits. In addition, Pembina has been transporting liquid propane in Oregon for over 15 years. Pembina will continue to provide domestic propane service to Oregon. In 2014, Pembina shipped 7.5 million gallons of liquid propane to Oregon; 3.1 million gallons were delivered to the City of Portland.

What is the Project?

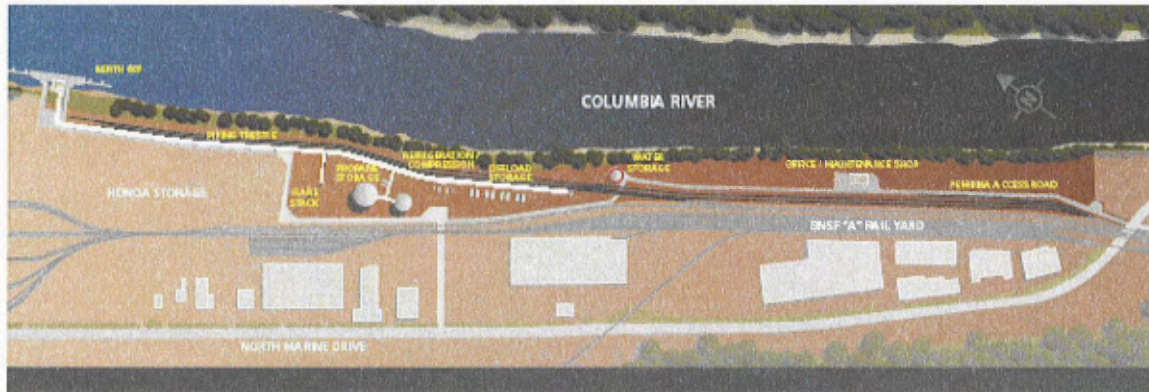
The project is a rail-served, marine terminal and liquid propane export facility with an average capacity of 1.6 million gallons per day:

- Liquid propane will be shipped by rail from Pembina's Redwater facility north of Edmonton, Alberta, Canada.
- One unit train is expected at the facility every two days. A unit train carries a single commodity (in this case, liquid propane) and is approximately 100 cars in length.
- Liquid propane will be unloaded from rail cars at the facility into above-ground tanks and then transferred via above-ground piping to refrigeration compressors where the liquid propane is refrigerated to -44F.
- Refrigerated liquid propane will then be transferred via above-ground piping to two large double-walled above-ground refrigerated storage tanks, which have a total capacity of approximately 33.6 million gallons.
- From the storage tanks, the liquid propane will then be transported via above-ground piping to the existing berth and onto ships for export. Only a portion of this piping will cross the E-zone. The ships are referred to in the industry as very large gas carriers (or VLGCs). Pembina estimates there will be two-to-three ships per month at the facility, each with the capacity to carry up to approximately 23.1 million gallons of liquid propane.

The facility will also have a control center, warehouse, office and maintenance facilities. There will be an on-site back-up diesel generator and a flare system to safely combust product from the facility during maintenance and emergency situations. The entrance to the facility will be gated

and the boundaries fenced. Access to the site will be restricted and continuously monitored as well as being subject to the security procedures of the Port of Portland and Homeland Security.

Project Layout



Propane arrives at the facility in liquid form and leaves the facility in liquid form. The liquid propane arrives in pressurized rail cars at about 120 to 150 psia and 60 to 80 degrees F. It is then refrigerated to -44 degrees F for storage and export, and once refrigerated is stored at 20 psia. There will be no processing of the liquid propane at the facility or addition of any substance to the liquid propane.

The liquid propane will be shipped to the Asia-Pacific market where it will be used to manufacture plastics or as a fuel to displace, oil, coal and wood fuel sources.

II. PROJECT DUE DILIGENCE AND THE SCHEDULE

Due Diligence and Partnering with the Port of Portland

In July 2014, Pembina and the Port of Portland began actively evaluating the Terminal 6 location for the proposed liquid propane export terminal. This work involved identifying permits and approvals that would be required to construct and operate the project, including identifying the prohibition in Portland City Code ("PCC") that prevents Pembina from transporting liquid propane through the E-zone by facility piping. Pembina and the Port have had numerous meetings with City staff and the City attorney's office about the issue. The project was officially announced on September 2, 2014.

In addition to addressing the e-zone code issue, Pembina and the Port have reached out to numerous stakeholders and community groups. See Attachment 1 for a summary of the public outreach to date. As the project progresses through engineering and permitting, Pembina will continue this outreach process.

Project Schedule and Drivers

Increased propane production from natural resources in Canada's Western Canadian Sedimentary Basin and the market demand for propane drive Pembina's schedule to have the project online by first quarter 2018. To meet this timeline, Pembina must undertake significant engineering, design, and permitting work over the next two years.

PROPOSED SCHEDULE

Proposed* Schedule – Portland Propane Export Terminal Project	
Project Development and Due Diligence	Q3 2014 – Q1 2016
Engineering and Design	Q3 2014 – Q2 2017
Environmental and Regulatory Processes	Q3 2014 – Q1 2016
Procurement	Q4 2014 – Q1 2017
Construction	Q1 2016 – Q1 2018
Facility Start-Up	Q1 2018
*Date ranges are based on a best-case scenario and are subject to change	

However, before making substantial financial commitments for equipment, design work, and permitting, Pembina needs certainty that the e-zone prohibition will be resolved to allow the facility's construction and operation at Terminal 6.

III. PROJECT PERMITS AND STUDIES

Project Permits

The e-zone amendment is the first step in what will be a rigorous design and permitting process. The project is subject to multiple local, state and federal permitting requirements. Some of the reviewing agencies include:

- U.S. Army Corps of Engineers ("USACE");
- U.S. Fish and Wildlife, National Marine Fisheries Services ("NMFS");
- U.S. Coast Guard ("USCG");
- Federal Aviation Administration ("FAA");
- Oregon Department of Environmental Quality ("DEQ");
- Oregon Department of State Lands ("DSL");
- Oregon Department of Fish and Wildlife ("ODFW");
- City of Portland Bureau of Development Services ("BDS");
- City of Portland Bureau of Environmental Services ("BES"); and
- City of Portland Fire and Safety ("PF&R").

There are opportunities for public involvement in many facets of the project permitting. While the ESEE analysis addresses some potential project impacts, these impacts and others will be rigorously evaluated in project-specific administrative proceedings. For example:

- potential impacts to in-water habitat, water quality, and endangered species will be addressed by USACE, NFMS, DSL, DEQ, and ODFW;
- potential impacts to air quality will be addressed by DEQ;

- stormwater impacts will be addressed by DEQ and BES;
- potential impacts to riparian habitat, wildlife habitat, and the floodplain will be addressed by BDS and BES; and
- safety will be reviewed by USCG, FAA, BDS, and PF&R.

Project Studies

The process to design a safe facility is lengthy.

First, engineers prepare a preliminary design based on the type of facility to be constructed, size of facility and geographic location. This preliminary work is used to develop a ballpark cost estimate to confirm whether further analysis of the project or a particular site should continue.

Next, specific work is undertaken to size equipment more accurately; confirm facility safety features; begin to confirm the standards, codes and specifications under which the facility will be built; obtain budgetary material quotations; and perform other studies such as initial onsite environmental or engineering (for example seismic) work. This work is used to confirm whether the project is still economically viable and may be used to initiate preliminary regulatory work.

Detailed studies and engineering work will then commence. Studies are conducted to create more detailed information for regulatory applications and engineering design. At this stage, engineering is used to refine the project design to avoid and minimize potential adverse impacts to resources, improve safety measures, minimize risks, set operating procedures, and provide mitigation. Firm quotations for equipment are requested to confirm cost and delivery, and the suppliers complete engineering design for their equipment. Engineering work is used to obtain improved cost estimates for the installation.

In the last stage of planning, final engineering is completed, equipment is fabricated, other construction materials and services obtained and construction of the facility is undertaken. Hiring and training of staff, completion of final operating/maintenance procedures, completion of emergency response plans and training, developing detailed plans to commence safe operation of the site would occur – all leading to a successful startup of the site.

Pembina is just initiating the detailed engineering and permitting phase for the facility. Pembina and its consultant team are conducting studies to address safety and project impacts, to inform design, support permit application requirements, and assist with construction planning as well as operation and emergency response planning. Specifically, the following types of studies are being completed or will be undertaken:

- Topographic survey of the site including the river bank and bed of Oregon Slough in proximity to Berth 607.

- Air emission calculations of the facility's operational emissions to support permit application with the Oregon DEQ.
- Modeling of thermal (combustion) plume from the flare to confirm that the heat generated does not present a concern for airplanes. This will be reviewed and confirmed by the FAA.
- Geotechnical and seismic hazard investigation of the upland site and in-water for Berth 607. These investigations have included to date, over 40 explorations with some to over 150 feet in depth. When complete, these investigations will provide recommendations to address the seismic hazards and other geotechnical considerations in the design of the facilities on land as well as for any new in-water structures at Berth 607.
- Infiltration studies to assess capability of soils to absorb storm water. These studies will inform the design for storm water management on the site and be relied on for related permitting applications.
- Studies of the ship's transit within the territorial waters of the United States to Berth 607 will evaluate safety and security risks. These studies will consider volume of vessel traffic, navigational hazards along the route, security risks to the vessel, incident history along the waterway and with the types of ships proposed, potential frequency and consequence of an incident associated with Pembina's project and measures, design and operational considerations to address risks identified. This information will be used by Pembina to assist with design and operational planning and by the USCG to complete their review and recommendations for the project, including their recommendations with respect to a safety and security zone.
- A risk assessment will be completed for the facility that will consider historical incidents at similar facilities, potential frequency and consequence of an incident associated with Pembina's project and will identify measures, design and operational considerations to address risks identified. The outcomes of this study will also be used by Pembina to assist with design and operational planning and to inform the development of the facility's ERP.
- Historical and cultural resource assessment on the land and in the water in proximity to Berth 607 will be completed to identify cultural resources, assess the significance of any identified cultural resources, assess the potential for project impacts to any identified resources and identify possible mitigation strategies. This information will be used to support the application to the USACE and to assist with construction planning at the site.
- Studies that evaluate the potential impacts to endangered species in the Columbia River and Pembina's planned mitigations are being completed. This information will be used to guide construction planning as well as be used to support the application to the USACE and DSL.

The studies will inform the project design along with the requirements of the applicable building and safety regulations. See Attachment 2 for a summary list of codes currently being considered in the design. Some of the key codes include:

- The 2012 International Building Code (“IBC”) which “addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety in regards to new and existing buildings, facilities and systems”. The 2014 Oregon Structural Specialty Code is “based on the 2012 edition of the [IBC] with Oregon amendments, and the 2010 Oregon Energy Efficiency Specialty Code (“OEEESC”) with additional Oregon amendments.” Both of these codes (IBC and Oregon Structural Specialty Code) stipulate seismic design requirements.
- The National Fire Protection Association (“NFPA”) is the “world’s leading advocate of fire prevention and an authoritative source on public safety” by “providing and advocating consensus codes and standards, research, training, and education.” There are several NFPA standards applicable to the design of the facility which address design considerations such as equipment or building requirements to reduce the chance of fire, required fire systems, egress, etc.
- Department of Homeland Security, City of Portland and other local state or federal codes that govern facility design
- Engineering codes such as the American Society of Mechanical Engineers (“ASME”) provide boiler and pressure vessel standards and the American Society of Civil Engineers (“ASCE”) provides additional standards for seismic, foundation, water design, piers and wharves, etc.).
- The American National Standards Institute (“ANSI”) is the “voice of the U.S. standards and conformity assessment system.”
- Permanent International Association of Navigation Congresses (“PIANC”) provides “top-ranked Technical Reports in the field of inland, maritime and recreational navigation including environmental issues.”
- American Petroleum Institute (API) develops, approves, and revises standards and other technical publication by use of industry and government experts.

The information that will be developed from Pembina’s studies, while essential for the project design and permitting, is not required to evaluate whether to approve the proposed e-zone amendment. As discussed below, the e-zone amendment is a legislative process focused on updating the City’s natural resource inventory, protecting additional wildlife resources, and allowing a new mode of transportation through the e-zone.

IV. PEMBINA'S PROPANE AND GREEN BENEFITS OF PROPANE

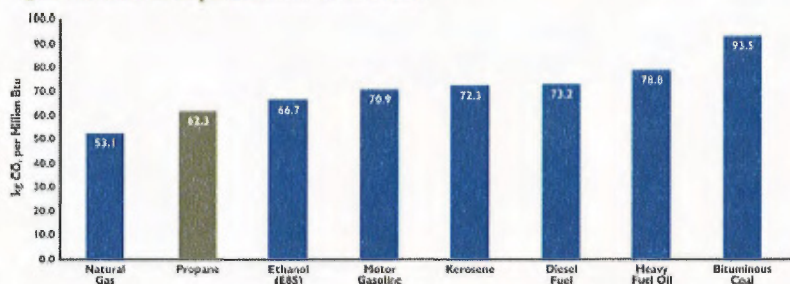
More About Pembina's Liquid Propane

The liquid propane Pembina would handle comes from natural gas, not oil. Pembina receives natural gas liquids from the Western Canadian Sedimentary Basin ("WCSB"), located mainly in northeastern British Columbia and northwest/ central Alberta. The natural gas liquids are processed at Pembina's Redwater facility in Alberta. There, Pembina separates and extracts the propane from the other liquids. The propane is a by-product of the natural gas stream – it does not come from the oil sands (heavy crude/bitumen) deposits in northeast Alberta.

Green Benefits of Propane

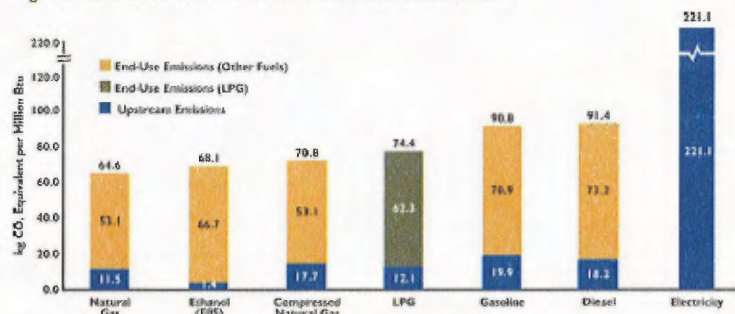
The environmental profile of liquid propane makes it a more attractive product than many other energy sources. Propane is not a direct greenhouse gas ("GHG") because when it is emitted directly to the atmosphere, it does not release carbon dioxide or methane. When used as a fuel, propane does emit carbon dioxide, but when compared to conventional fuel supplies, propane generates fewer GHG emissions in almost every application. At the point of use, propane has a lower carbon content than gasoline, diesel, heavy fuel oil or ethanol.

Figure 2.1. End-Use CO₂ Emissions for Various Fuels



Source: EIA 2007
End-use emissions estimates based on chemical composition of the fuel with 100 percent combustion.

Figure 2.2. Total Greenhouse Gas Emissions for Various Fuels



Sources: EPA 2009, GREET 1.8c
End-use emissions estimates based on chemical composition of the fuel with 100 percent combustion.
Actual life-cycle emissions vary by application; in many cases, electricity provides more useful energy on a per-Btu basis.

Table 2.2. CO₂ Released per Btu

Fuel Type	kg CO ₂ per million Btu
Natural Gas	53.06
Propane	62.30
Ethanol (E85)	66.70
Motor Gasoline	70.68
Kerosene	72.31
Diesel Fuel	73.15
Heavy Fuel Oil	78.80
Bituminous Coal	93.46

Estimates based on chemical composition of the fuel with 100 percent combustion, and based on average specification of transportation fuels, except kerosene, heavy fuel oil, and bituminous coal, which are based on average specification for stationary combustion use.

Source: EIA 2007

Source: *Propane Reduces Greenhouse Gas Emissions: A Comparative Analysis 2009*, Propane Education & Research Council and Energetics Incorporated. Available at <http://www.energetics.com/resourcecenter/products/studies/samples/Pages/prop-greenhouse-report.aspx> (last visited January 8, 2015).

In addition to having low GHG emissions, propane is an approved, clean fuel listed in the 1990 amendments to the U.S. Clean Air Act (“CAA”) and in the Canadian National Energy Policy Act of 1992. It is also recognized as a clean fuel in the Oregon Clean Fuels Program. Propane meets the standards established in the CAA for reducing acid rain and controlling air pollution in urban areas. According to the U.S. Environmental Protection Agency, much of the acid rain-inducing sulfur dioxide in the atmosphere is attributable to coal-fired electricity-generating facilities. By comparison, neither the process by which propane is produced nor the combustion of propane gas produces significant acid rain contaminants.

V. CONSISTENCY WITH THE 2009 CLIMATE ACTION PLAN

City’s Climate Action Plan

The 2009 Climate Action Plan (“CAP”) is focused on eight goals¹ to reduce carbon emissions in Multnomah County by 80 percent by 20150 (from 1990 levels) (see CAP, p 10). In Portland and Multnomah County, most emissions result from energy consumption in homes and buildings, transportation and waste disposal (see CAP, p 20). The CAP was developed to respond to climate change by reducing these emissions “but it will only be successful if [it] does so in ways

¹ These goals are (1) Buildings and Energy, (2) Urban Form and Mobility, (3) Consumption and Solid Waste, (4) Urban Forestry and Natural Systems, (5) Food and Agriculture, (6) Community Engagement, (7) Climate Change Preparation, and (8) Local Government Operations.

that create jobs, improve social equity, strengthen natural systems, and enhance quality of life” (see CAP, p 24). Specifically, the CAP recognizes that

“[t]o respond to [the] intertwined problems -- climate change, social inequity, rising energy prices, and degraded natural resources -- requires an integrated response that goes far beyond reducing carbon emissions. Climate protection must be inextricably linked with actions to create and maintain jobs, improve community livability and public health, address social equity and foster strong, resilient natural systems.”

See CAP, p 8.

The plan’s framework reflects a goal to address carbon emissions locally while balancing other community objectives. In other words, the CAP is a policy document that responds locally to global climate change while incentivizing a vibrant community. Pembina believes that the c-zone amendment and the project are consistent with the CAP:

- The amendment is specifically tailored to only allow the transportation of propane, not other fossil fuels.
- The project will not process any propane and air emissions from the facility will be minimal and subject to DEQ’s air contaminant discharge permit.
- Energy consumption at the facility will be approximately 8,000 MWh of electricity per month but power will be purchased from Portland General Electric (“PGE”). Further, Pembina is currently investigating options to purchase some form of green energy or carbon credits to offset the facility’s energy consumption.
- Pembina is exploring operations to help reduce carbon emissions, including a “green” on-site train engine and “hoteling” for ships when at the berth (this would allow ships to plug into on-shore electricity thus avoiding having to use diesel- or bunker fuel-powered generators while berthed)

The project also provides an expected capital investment of approximately \$500 million and 30-40 permanent operational jobs with average base annual salaries ranging from \$70,000 to \$120,000. The facility is expected to generate approximately \$12 million in annual property tax revenue including an estimated \$3.3 million to the City of Portland, \$2.4 million to Multnomah County and \$3.1 million to Portland Public Schools annually. For comparison purposes, the estimated property tax collected by the City equate to 33 police officers or fire fighters. The Portland Public Schools would see annual revenue that is equivalent to 31 teachers. Multnomah County could fund 24 deputy sheriff positions. In addition, the project is expected to spend \$25 to 30 million dollars locally in annual operating expenses.

While Pembina recognizes there are concerns and questions, we believe that our project is the “right type” of development for the Terminal 6 site and Portland in general. Portland can say “yes” to this project without jeopardizing its reputation as a national leader on climate change:

- The project allows increased global access to propane, which is a low emission transition fuel intending to replace higher emission fossil fuels.
- The project is limited to liquid propane, it will not involve the transporting, processing, or exporting of crude, oil or coal.
- Pembina is committed to offset its energy consumption with renewable power sources.
- Pembina will use the most current energy-efficient equipment and technology.
- The project provides family wage jobs.
- The investment results in significant property tax revenue.
- Pembina is committed to working with neighboring communities in terms of continued and enhanced consultation, information exchange/sharing, being a good neighbor, and associated community investment initiatives.

On balance, the project represents the type of development Portland should encourage and support. It facilitates the “integrated response” that is encouraged by the CAP.

VI. IMPORTANCE OF SAFETY DURING FACILITY DESIGN AND OPERATION

Safety Considerations

Pembina is known as a safe, reliable operator. We promote a culture of “Safety First” and “Zero by Choice”. We have been serving North America’s energy industry safely for 60 years, we have been safely transporting propane across Canada and the United States for 40 years, and we have been shipping propane to Oregon, without incident, for 15 years. We have been recognized with numerous safety awards, from many major rail carriers. During the current period of record performance and company growth, we recorded zero lost time injuries in 2014 while working 2.4 million person hours. Pembina continues to be a top performing company with respect to overall safety within its industry and has safety statistics that are near the top within the Canadian Energy Pipeline Association (“CEPA”) group of 12 companies. Pembina also is proud of the fact that it has not experienced a major explosion event at its facilities to date but continues to be prepared by way of its ERPs, training of staff and association with local emergency responders for any potential event.

Pembina has a Safety, Environment and Security Management System (“SESMS”) as well as a combination of programs and procedures, including ERPs, and facility and integrity management

programs that provide a framework and outline expectations for Pembina employees and contractors.

Pembina's SESMS already identifies and manages the types of risks or hazards that need to be considered for the project because Pembina currently manages the same type of activities (rail unloading, storage, piping) and product handling (for propane) at its other facilities. At Pembina's Redwater facility outside of Edmonton, Alberta, there is rail loading and unloading, processing, piping, and storage of both natural gas liquids and propane. Similarly, at Pembina's propane facility in Lynchburg, Virginia, United States, there is rail unloading, propane storage, and truck loading activities.

Emergency Response Planning and Preparedness

As discussed above, ERPs are one component of Pembina's SESMS and are in place to manage potential risks associated with the company's activities and operations. They are designed to minimize potential impacts and reduce service interruptions across all piping systems and related facilities.

Pembina's corporate ERP and the site-specific ERPs for the Redwater and Lynchburg facilities contain emergency response measures and protocols, which given the overlapping nature of the activities and product handling, are similar to those types of measures and protocols that would be developed to respond to incidents that could occur at the proposed facility in Portland.

These ERPs include specific procedures and responsibilities to ensure safe and rapid incident response. The ERPs are reviewed and updated regularly with landowner, resident and stakeholder data and up-to-date maps of the related systems and facilities. The ERPs identify the types of incidents that could occur such as a fire, a gas leak, a security incident, etc. and outline the appropriate steps to take in response to each type of incident. The ERPs also identify resources that can assist in the case of an incident. The types of resources identified include Pembina equipment and personnel, area first responders, as well as equipment and other resources that would be available through third parties such as contractors or cooperatives.

Pembina trains its employees to have the skills and knowledge needed to respond rapidly and safely to incidents. Pembina achieves this through tabletop and full-scale exercises as well as incident command training. Pembina also works with local and area first responders to educate responders regarding facility-specific issues and exercises.

Before operations, a facility-specific ERP will be developed for the project that meets Pembina's corporate emergency response planning requirements and accounts for facility-specific incidents, potential impacts and resources. Some of the studies that Pembina has initiated for the project will assist in the preparation of the facility ERP, and the ERP will be reviewed by the USCG, Portland Fire and Rescue, and the Port of Portland.

Release Detection

The facility will have sensors around the site and on equipment that will be monitored and when needed, activate alarms and be used to identify any potential releases. These sensors are a proven technology and various designs have been in use for decades; the sensors are regularly tested for correct operation. Pressure and temperature sensors will be placed at strategic points within the facility and equipment. Fire and gas sensors will be placed inside buildings where equipment handling propane will be located, in areas where there are many pipe connections, at the ship load berth and around the perimeters of the site. These sensors are connected to computer monitoring systems to alarm and warn staff of smaller concentrations of propane, or in event of fire detection or larger amounts of propane to automatically shut down equipment and / or the facility and isolate it by use of emergency shutdown valves. Propane may be routed to flare for safe combustion. During vessel loading and rail unloading operations, personnel will also be present to manage and visually monitor the operations. Various design features will be installed, such as emergency shutdown valves that would be activated automatically by sensors or manually by onsite personnel or by a control room operator in the event of a release to minimize the volume of propane that could be released.

Response to a Release

In the unlikely event of a release at the facility, installed fire and gas sensors will alarm and activate emergency shutdown valves and other shutdown procedures. A Pembina employee may also manually activate shutdowns of the facility or equipment as required. A Pembina employee would activate the facility's ERP. Response measures include (taken from Pembina's corporate ERP):

- Assess the situation to determine the problem, extent and action required
- Evacuate all unnecessary personnel from the site, and eliminate any possible sources of ignition
- Initiate air monitoring for oxygen deficiency or explosive gas mixture
- Shut in the equipment that is the source of the leak when safe to do so.
- Initiate leak control procedures and shut down and/or de-pressurize facilities, as required.
- Allow liquids to evaporate and disperse

Depending on the size of the release and weather conditions, additional steps may include establishing roadblocks, notifying adjacent neighbors, or implementing shelter-in-place and/or evacuations of potentially affected areas. These additional requirements would only be required in the event of a significant release from the facility.

Asset Integrity

Pembina maintains the integrity of its energy infrastructure – piping systems, storage tanks, gas processing plants, fractionators and associated facilities. It is integral to the health and safety of the communities in which Pembina operates. A strict focus on safe and reliable operations

minimizes the likelihood of incidents and reduces the cost of operations over the long term. Pembina dedicates a significant portion of its annual operating budget to integrity management activities. The integrity management program includes the systems, processes, analysis and documentation designed to ensure proactive and transparent management of its energy infrastructure. It incorporates industry best practices and is designed to meet or exceed regulatory requirements with the goal of achieving enhanced safety, reliability and longevity through the entire lifecycle.

Integrity management begins at the engineering and design phase. To mitigate the risk and potential impact of an incident, facilities and piping systems are designed to be safely shut down and isolated by installing block valves at strategic locations within the system. Pembina uses pipe and other products that have been manufactured to meet the highest-quality standards and specifications specific to each particular project.

Pembina hires highly qualified and experienced inspectors to oversee all phases of construction. Each weld is assessed using appropriate technology to ensure it is sound, and prior to installation, the entire external surface of the pipe is coated with materials specially designed to safeguard against environmental damage and corrosion. For piping systems within the propane terminal, a very low-voltage electrical current (cathodic protection) will be applied to the external surface of any below-grade structures that would potentially be subject to corrosion (such as steel piles) supporting the piping. This process uses a sacrificial anode that will corrode preferentially to protect these below-grade structures from external corrosion, and the anode will be replaced on a periodic basis to ensure protection remains in place. Once construction is complete, piping systems will be marked to clearly identify the product contained within the piping and facilities.

Safety in Rail

Pembina has a proven record of safety while shipping propane by rail, having consecutively earned recognition by Class 1 Rail Carriers for commitment to safe transportation through ongoing training, prevention programs and tank car equipment handling, and achieving zero non-accident releases during rail shipment. A non-accident release is the unintentional release of hazardous material during transportation, not caused by an accident or train derailment. Pembina is committed to shipping its products safely and securely, to protect communities and the environment. Pembina's Redwater facility, located near Edmonton, Alberta, has been awarded the Gold Level CN Rail Safe Handling Award. This award, which is among the most coveted and respected in the industry, recognizes companies that make safety a top priority by handling chemicals and hazardous products carefully and judiciously, and operating under the highest safety standards. Pembina's safe rail handling achievements include:

- Burlington Northern Santa Fe (BNSF) – Stewardship Award - 14 years
- Canadian National (CN) – Rail Safe Handling Award - 9 years
- Canadian Pacific (CP) – Shipper Safety Award - 2014 Shipper Safety Award

- CSX – Chemical Safety Award - 13 years

Pembina has been safely shipping propane by rail to Oregon for over 15 years.

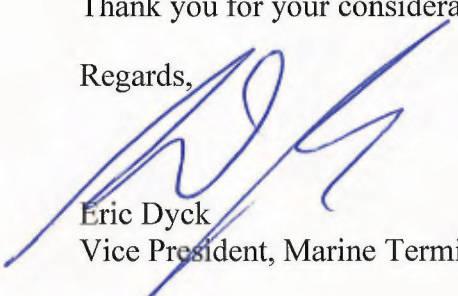
With respect to interstate rail safety, the interstate rail system is regulated by federal agencies that require the regulated carriers to operate a safe and efficient system, to meet customer and community needs, and to comply with federal law. Pembina understands that both BNSF and Union Pacific (the two Class 1 rail carriers serving Oregon) are making investments to comply with those obligations. As a customer, we expect that compliance.

VII. ENVIRONMENTAL BENEFITS OF THE MAP AMENDMENT

The text amendment required the City to perform an updated ESEE analysis under Goal 5 using the 2012 Updated Natural Resource Inventory. As a result, the protection program resulting from the ESEE analysis supported expanding the e-zone to include new inventoried resources. Without the proposed text amendment, there would be no new environmental protections available for the Terminal 6 site at this time.

Thank you for your consideration.

Regards,



Eric Dyck
Vice President, Marine Terminals

Enclosures

Stakeholder Engagement Overview

On September 2, 2014, Pembina Marine Terminals Inc. ("Pembina" or the "Company"), a subsidiary of Pembina Pipeline Corporation, announced that it had entered into an agreement (the "Terminal Agreement") with the Port of Portland, Oregon (the "Port"). The Terminal Agreement was for the purpose of developing a rail-served, propane export terminal (the "Project") on an underutilized, section of land at Terminal 6 within the Port's Rivergate Industrial District, with an existing berth and already zoned for heavy industrial use.

More importantly, the Terminal Agreement enabled the Pembina and Port teams to begin the process of engaging and consulting with the neighbors of the Project and other stakeholders within the City of Portland, municipal, state and federal governments, and all applicable environmental and regulatory authorities.

At Pembina, building long-term relationships based on mutual trust with communities is a top priority. Part of building that trust is making sure regional issues are understood in order to anticipate and manage the social impacts of a proposed project, and eventual area operations, on local communities. Over the years, this strategy has served Pembina well; helping to develop a reputation for honesty, transparency and treating our stakeholders with respect.

Before a project begins, Pembina is in the field consulting with tribal and local communities, and other stakeholders affected by the proposed development. The Company's goal is to learn about their needs and expectations, and to address potential concerns. Rather than presenting what the Company is *going* to build, Pembina works with stakeholders beforehand to develop a project that *can* be built. Effective consultation requires two-way communication and Pembina employs a number of communication tools to support our stakeholder engagement.

Pembina and the Port initiated outreach immediately after announcing that the Terminal Agreement had been signed. Community associations and environmental groups were contacted within a few days in hopes of arranging introductory meetings and a briefing on the proposed Project. We engaged with local and state officials within the next two weeks to advise them of our intentions and to better understand the expectations and processes associated with applying for, and constructing, a marine export terminal in Portland, Oregon.

We will continue to complete outreach activities through-out the design, construction and operation of our project.

Since early September, we have met, or been in contact with:

Community Associations

Hayden Island Neighborhood Network (HiNoon)

St John's Community Association

North Portland Chairs Network

Cathedral Park Neighborhood Association

Tribal Communities

Confederated Tribes of Grande Ronde
Columbia Intertribal Fish Commission
Yakama Nation

Environmental Organizations

Audubon Society of Portland
Columbia Riverkeepers
Columbia Slough Watershed Council
Lower Columbia Estuary Partnership
Willamette Riverkeepers
Northwest Environmental Defense Council
Oregon Chapter of Sierra Club

Municipal Government

Office of the Mayor
Portland City Council
Portland City Bureaus

- Portland Development Commission
- Bureau of Development Services
- Bureau of Environmental Services
- Fire and Rescue
- Government Relations
- Portland Bureau of Transportation
- Planning and Sustainability Commission

Multnomah County Board
Metro Council

Local Businesses and Organizations

Portland Business Alliance
Columbia River Pilots
Columbia River Bar Pilots
Columbia Corridor Association
Oregon Business Association
Associated Oregon Industries
Oregon Business Council
Associated General Contractors
Hispanic Metropolitan Chamber
Oregon Association of Minority Entrepreneurs
Working Waterfront Coalition
Pacific Northwest International Trade Association
NAIOP, Commercial Real Estate Development Association
Merchants Exchange/FPAC
Pacific Northwest Waterways Association

State Government

Governor John Kitzhaber's Office

Representative Tina Kotek

Representative Lew Frederick

Senator Chip Shields

Senator Dembrow

Federal Government

U.S. Coast Guard

Staff from Senator Merkley and Representative Blumenauer

Labor

AFL-CIO

Columbia Pacific Building and Construction Trades Council

IBEW 48

Oregon State Building Trades Council

Plumbers and Steamfitters

Ironworkers

Pembina Propane Export Terminal

Design Code Summary

LOCAL OR NATIONAL REGULATIONS AND NORMS

NATIONAL ELECTRICAL CODE

ALL ENVIRONMENTAL RULES AND REGULATIONS

– OREGON STATE DEPARTMENT OF ENVIRONMENTAL QUALITY

– US EPA REGION 10

– SOUTHWEST CLEAN AIR AGENCY

– US ARMY CORP OF ENGINEERS

– US DEPARTMENT OF FISH AND WILDLIFE

– FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

– NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NATIONAL MARINE FISHERIES SERVICE)

– OREGON STATE DEPARTMENT OF FISH AND WILDLIFE

– OREGON STATE DEPARTMENT OF TRANSPORTATION

– CITY OF PORTLAND BUREAU OF DEVELOPMENT SERVICES, BUREAU OF ENVIRONMENTAL SERVICES, FIRE AND RESCUE, BUREAU OF PLANNING AND SUSTAINABILITY, WATER BUREAU, BUREAU OF TRANSPORTATION

ALL LABOR RULES AND REGULATIONS

– SEE OTHER SAFETY REGULATIONS

CIVIL, STRUCTURAL & ARCHITECTURAL REGULATIONS

– ASCE 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

– FEMA-P-750, NEHRP RECOMMENDED SEISMIC PROVISIONS FOR NEW BUILDINGS AND OTHER STRUCTURES

– ANSI/AISC 360-05: SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (ALLOWABLE STRESS DESIGN)

– IBC 2012, INTERNATIONAL BUILDING CODE AND OREGON STATE AMENDMENTS (2014 OREGON STRUCTURAL SPECIALTY CODE)

– LOCAL BUILDING CODES, WHERE APPLICABLE

SAFETY REGULATIONS

– 18 CFR PART 380, CONSERVATION OF POWER AND WATER RESOURCES:

REGULATIONS IMPLEMENTATING THE NATIONAL ENVIRONMENTAL POLICY ACT

– 33 CFR PART 127 – WATERFRONT FACILITIES HANDLING LIQUID NATURAL GAS AND LIQUEFIED HAZARDOUS GAS

– 29 CFR PART 1910.106, OSHA FLAMMABLE AND COMBUSTIBLE LIQUIDS

– 29 CFR PART 1910.165, OSHA EMPLOYEE ALARM SYSTEMS

– 29 CFR PART 1910.119, OSHA PROCESS SAFETY MANAGEMENT REGULATION

– 30 CFR PART 18.65, FIRE RESISTANCE OF CONVEYOR BELTING

– 33 CFR PART 160.101, PORTS AND WATERWAYS SAFETY: CONTROL OF VESSEL AND FACILITY OPERATIONS

– 33 CFR PART 165.20, REGULATED NAVIGATION AREAS AND LIMITED ACCESS AREAS: SAFETY

– 33 CFR PART 165.30, REGULATED NAVIGATION AREAS AND LIMITED ACCESS AREAS:

- ASSOCIATION (IPIECA)
- INTERNATIONAL SHIP AND PORT FACILITY SECURITY (ISPS)
- INTERNATIONAL SOCIETY OF AUTOMATION (ISA)
- UNITED STATES MILITARY STANDARDS (MIL)
- INTERNATIONAL SOCIETY OF AUTOMATION (ISA)
- JOINT INDUSTRY CONFERENCE (JIC)
- MECHANICAL POWER TRANSMISSION ASSOCIATION
- INTERNATIONAL TELECOMMUNICATIONS UNION
- INTERNET ENGINEERING TASK FORCE
- NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)
- NATIONAL ELECTRIC CODE (NEC)
- NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION (NEMA)
- NATIONAL ELECTRICAL SAFETY CODE (NESC)
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- NATIONAL FLUID POWER ASSOCIATION (NFPA)
- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA 18000, 18001/2007)
- OIL INSURANCE ASSOCIATION
- PERMANENT INTERNATIONAL ASSOCIATION OF NAVIGATION CONGRESSES (PIANC)
- PRESTRESSED CONCRETE INSTITUTE (PCI)
- SCIENTIFIC APPARATUS MANUFACTURERS ASSOCIATION (SAMA)
- SOCIETY FOR PROTECTIVE COATINGS (SSPC)
- TUBULAR EXCHANGER MANUFACTURER ASSOCIATION (TEMA)
- UNDERWRITERS LABORATORIES (UL)
- UNIFORM PLUMBING CODE (UPC)
- USA UNIFORM BUILDING
- USA ENVIRONMENTAL PROTECTION AGENCY (EPA)
- WORLD BANK GROUP ENVIRONMENTAL, HEALTH, AND SAFETY

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| 9) | MARINE LOADING ARMS | OCIMF : OIL COMPANIES INTERNATIONAL MARINE FORUM
(DESIGN & CONSTRUCTION SPECIFICATION FOR MARINE
LOADING ARMS) |
| 10) | GEAR UNITS | API 613 : SPECIAL PURPOSE GEAR UNITS FOR PETROLEUM,
CHEMICAL AND GAS INDUSTRY SERVICES,
AGMA : American Gear Manufacturers Association
API 611, API 612, API 613, API 614, API 673, API 677 |
| 11) | TURBINES & OTHER
ROTARY EQUIPMENT | |
| 12) | CIVIL, STRUCTURAL &
ARCHITECTURAL | UBC, AISC, ASCE (7-10, 8-02), ACI, AASHTO (HB-17),
API (SUCH AS API 620 : FOUNDATION FOR TANK), ASTM
(A615/1615M-09B/A1023/A1023M/A325/A307/A504) |
| 13) | ELECTRICAL | IEC, IEEE, NFPA, NEMA, NEC, API, ANSI |
| 14) | HAZARDOUS AREA
CLASSIFICATION | IEC, API
(CLASS I, GROUP D, DIVISION 1 AREA) |
| 15) | INSTRUMENTATION | ISA, IEC, API, NFPA, ANSI, FCI |
| 16) | FIRE FIGHTING | NFPA 15 : STANDARD FOR WATER SPRAY FIXED SYSTEMS FOR
FIRE PROTECTION
NFPA 30 : FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE
NFPA 58 : LIQUEFIED PETROLEUM GAS CODE
SIGTTO : SOCIETY OF INTERNATIONAL GAS TANKER &
TERMINAL OPERATORS
API 2510A : FIRE PROTECTION CONSIDERATIONS FOR DESIGN
AND OPERATION OF LIQUEFIED PETROLEUM GAS STORAGE
FACILITIES |
| 17) | SAFETY | OSHA, IRI, EHS GUIDELINES (WORLD BANK GUIDELINES), ISO
4773/4 (RECOMMENDATIONS FOR KEYS AND KEY SEATS),
NFPA 70/70E |
| 18) | SECURITY | ISPS : INTERNATIONAL SHIP & PORT FACILITY SECURITY CODE |
| 19) | SANITATION | EPA, IFC |
| 20) | ENVIRONMENT | ISO, IFC, IPIECA |
| 21) | VENTILATION, AIR
CONDITIONING | ASHRAE |
| 22) | STEAM BOILERS | ASME SECTION I, AISC, ASME |
| 23) | AIR DRYERS | ASME, ANSI,
AIR SUPPLY QUALITY AS PER ISA-S7.3. |