

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

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### **5.1 SUMMARY OF THE STAFF'S ENVIRONMENTAL ANALYSIS**

The conclusions presented are those of the environmental staff of the FERC. The Coast Guard will present, in its LOR and LNG Operations Plan, its own conclusions and recommendations, prior to construction and operation. The LOR will address the suitability of the Chesapeake Bay for LNG ship transportation, and the Coast Guard's LNG Operations Plan will address issues related to the public impact of safety or security zones for LNG vessels. Likewise, the COE will present its own conclusions and recommendations in the dredging and wetland permits it may issue pursuant to section 10 of the River and Harbors Act and section 404 of the CWA. The EPA has the authority to review and veto the COE decisions on the section 404 permits.

We (the Commission's staff) have determined that, with the use of Dominion's proposed mitigation and the addition of our recommended mitigation measures, construction and operation of the Cove Point Expansion Project would result in limited adverse environmental impacts. Our conclusions are based on information provided by Dominion, and data developed from data requests; field investigations by Commission staff; literature search; alternative analyses; comments from federal, state, and local agencies; and input from public groups and individual citizens. The impacts discussed in section 4 and summarized below would be most significant during the construction period. As part of our review, we developed mitigation measures we believe would appropriately and reasonably avoid or minimize environmental impacts resulting from construction and operation of the proposed project. We are, therefore, recommending that our mitigation measures be attached as conditions to any authorization issued by the Commission.

If the Coast Guard issues a LOR finding the waterway suitable for LNG marine traffic; the arrival, transit, cargo transfer, and departure of LNG ships in Chesapeake Bay would be required to adhere to the procedures of a *LNG Vessel Transit Management Plan* to be developed by the Coast Guard Sectors Baltimore and Hampton Roads. In addition, Dominion updates its Operations and Emergency Manuals in consultation with the Coast Guard. These updated procedures would be developed to ensure the safety and security of all operations associated with LNG ship transit and unloading.

The discussion below summarizes the environmental impacts and the proposed or recommended mitigation for each resource analyzed in this final EIS.

#### **5.1.1 Geology**

Construction and operation of the project would have minimal impact on geologic resources in the project area, and the potential for geologic hazards or other natural events to significantly impact the project is low. An estimated 54 miles of the proposed pipeline routes in Pennsylvania may require mechanical excavation or blasting for excavation of the pipeline trench because of the potential to encounter bedrock within the depth of the trench. Dominion would minimize the potential impact of blasting by adhering to applicable federal, state and local blasting regulations, and Dominion has also prepared a blasting plan that it would follow where blasting would be required. Dominion identified karst features underlying the site of one compressor station and has modified the station layout to avoid those features. The LNG storage tanks and other critical

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structures included in the proposed terminal expansion would be designed to address predicted ground shaking associated with a seismic event.

### **5.1.2 Soils**

Construction of the project facilities would increase the potential for soil erosion within areas affected by construction and sedimentation in adjacent waterbodies and wetlands. Soils within the Cove Point Terminal site and other aboveground facility sites would be permanently affected by new facilities, and soils along the pipeline routes would be subject to various impacts, including compaction and erosion. Dominion would minimize impact on soils through its implementation of the erosion and sedimentation control measures contained in our Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures). Dominion would also prepare Erosion and Sediment Control Plans as required for different states, and would submit the state- or county-specific plans to the respective offices of the U.S. Department of Agriculture, Natural Resources Conservation Service. We have recommended that Dominion incorporate additional measures into its easement negotiations for agricultural properties that have easement agreements with the Maryland Agricultural Land Preservation Foundation.

### **5.1.3 Water Resources**

Construction and operation of the project would not have a significant impact on groundwater resources. Dominion has identified 27 public groundwater wells within 1 mile of its proposed facilities, and numerous private water supply wells within 150 feet of proposed construction areas, the majority of which are along the PL-1 EXT2 Pipeline. The greatest potential for impact on groundwater would be from spills, leaks, or other releases of hazardous substances during construction or operation. Dominion has agreed to implement our Procedures, which would include use of a Spill Prevention, Control, and Countermeasure Plan for construction activities. To further minimize potential impact on groundwater supply wells, Dominion would seek written permission from affected landowners to conduct pre- and post-construction well water quality testing and water system yield evaluations for wells within 150 feet of construction areas. In the event that any well is damaged by construction, Dominion would provide a temporary source of drinking water and would restore the well to its original capacity.

Construction of the proposed pipeline facilities would cross 97 perennial waterbodies. Three perennial waterbodies would be crossed by the permanent access road to the new Perulack Compressor Station. Numerous intermittent or ephemeral waterbodies would also be affected, including four within the site of the Cove Point Terminal expansion facilities. We have recommended that Dominion conduct additional agency consultation to determine if site-specific mitigation plans are appropriate to avoid or minimize the potential impacts from acid rock drainage along the PL-1 EXT2 Pipeline in Pennsylvania. Dominion proposes to cross six major waterbodies, including the Patuxent River and St. Leonard's Creek, using the horizontal directional drilling (HDD) technique. We have recommended that Dominion revise its HDD Contingency Plans to include specific agency contacts. Other waterbody crossings would be by the open-cut technique. To minimize impact on surface waterbodies, Dominion would implement the protective measures in the FERC's Procedures, which were developed to avoid or minimize impacts. Operation of the LNG terminal expansion facilities would have minor

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impacts on several ponds within the existing Cove Point Terminal; however, these impacts would be in accordance with Dominion's permit for existing operation of the terminal.

#### **5.1.4 Wetlands**

No wetlands would be affected by the addition of the two new tanks and other facilities at the Cove Point terminal. Construction of the proposed pipeline facilities would disturb about 83.3 acres of wetlands. Approximately 38.7 acres (46 percent) of the wetlands that would be affected by construction are classified as non-forested wetlands, and about 42.5 acres (54 percent) are classified as forested or mixed wetland type with a forest component. About 63 acres would be restored and allowed to revert to previous conditions following construction. About 20 acres of wetlands would be within the permanent operational right-of-way of the proposed facilities, of which about 8.6 acres are classified as forested wetland and would be affected by periodic right-of-way vegetation maintenance activities.

Dominion would minimize impacts on wetlands by implementing our Procedures and any additional mitigation required in appropriate state and federal wetland and waterbody permits. The TL-532 Pipeline would cross portions of the Chesapeake Bay Critical Area in Calvert County, Maryland. To minimize impacts to vegetation within the Critical Area Buffers, Dominion would cross these areas by HDD. We have included recommendations that would further minimize the need for vegetation clearing in areas crossed by HDD, and would require Dominion to consult with the Chesapeake Bay Critical Area Commission regarding additional mitigation to further reduce or minimize impacts within the Critical Area.

#### **5.1.5 Vegetation**

Construction of the LNG terminal expansion facilities would disturb about 18 acres of forestland, of which 14 acres would be permanently affected by operation of the facilities. The remaining area affected at the LNG terminal would be existing industrial lands. Construction of the remaining facilities would disturb about 1,666 acres of vegetation consisting of 964 acres of agricultural and open lands, 21 acres of range and scrub lands, and 681 acres of forests. Impacts on most of these vegetation communities would be temporary and short term. About 460 acres of forestland on the permanent right-of-way would be permanently cleared and maintained in an herbaceous state. All disturbed areas would be restored and revegetated in accordance with our Plan and Procedures.

#### **5.1.6 Wildlife**

The primary impact on terrestrial wildlife associated with the project would be due to the clearing of vegetation and the temporary displacement of wildlife from the construction work areas into surrounding areas. The removal of forestland would result in a long-term loss of habitat. Dominion would minimize permanent impacts on forest habitat by constructing about 88 percent of the proposed pipelines adjacent to other existing rights-of way. The primary impact on fisheries would be temporary, occurring during the short-term pipeline crossings of streams. Dominion would minimize impacts on fisheries by following our Procedures during waterbody crossings. We have included recommendations that would further minimize potential impacts on fisheries that could result from instream blasting and from withdrawal of hydrostatic test water from sensitive fisheries.

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### **5.1.7 Endangered and Threatened Species**

The U.S. Fish and Wildlife Services (FWS) reported that four federally listed endangered or threatened species potentially occur within the project area. These include the Indiana bat, bald eagle, and the northeastern bulrush that potentially occur within the vicinity of the PL-1 EXT2 Pipeline, and the bog turtle that potentially occurs within the vicinity of the PL-1 Pressure Restoration Sites. Dominion also identified the bald eagle as occurring near the proposed TL-532 Pipeline. Dominion has filed results of additional surveys and correspondence for these species and based on these results we believe the project would not affect the bog turtle and northeastern bulrush, and would not likely adversely affect the Indiana bat and bald eagle. We have recommended additional mitigation measures for the bald eagle to prohibit disturbance from December 15 through June 15 within one quarter mile of a bald eagle nest near the TL-532 Pipeline if the nest is active. This EIS serves as a Biological Assessment which is necessary for compliance with section 7 of the Endangered Species Act.

NOAA Fisheries has reviewed and commented on federally listed species that could potentially be affected by the increased LNG tanker traffic calling on the Cove Point Terminal. NOAA Fisheries concurred that the proposed expansion project is not likely to adversely affect shortnose sturgeon or listed sea turtles that could occur within Chesapeake Bay. However, NOAA Fisheries requested that the final EIS address the potential for the increased number of LNG ships to affect marine mammals, in particular the northern right whale. Section 4.7.1 of this final EIS includes a discussion of marine mammals.

Thirty nine state-listed endangered, threatened, or rare species could potentially occur within the project area. Dominion has conducted field surveys for most of these species and received concurrence and recommendations from the respective state agencies regarding the potential for species to be affected by specific project facilities. We have included recommendations to ensure that Dominion completes necessary consultations and additional surveys, as appropriate.

### **5.1.8 Land Use, Recreation, and Visual Resources**

The nearest residence to the proposed LNG terminal expansion facilities is 0.4 mile southwest of the Cove Point Terminal. Fifty-eight residences, one camp, and one local business would be within 50 feet of the proposed pipeline construction rights-of-way and work areas, all of which would be along the TL-532 and PL-1 EXT2 Pipelines. Dominion has also identified two residential developments that are currently under construction and six residential developments planned for future development that would be within 50 feet of the TL-532 Pipeline. Dominion has attempted to minimize impact on residential areas by deviating away from the existing pipelines at several locations where there is dense residential development along the existing rights-of-way.

Dominion would implement a number of mitigation measures to minimize construction-related impact on residences within 50 feet of work areas and would prepare site-specific mitigation plans for all residential areas within 25 feet of construction work areas. Because construction of the pipelines is not scheduled to begin until 2007, and new residences may be constructed or identified before then, we have recommended that Dominion file with the Commission an updated listing of all residences within 50 feet of the construction work areas and the site-specific residential plans before the start of construction.

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Development of the land surrounding the existing Cove Point Terminal has been restricted by certain past conservation easements agreed to by the previous owners of the terminal and various conservation organizations. In March 2005, Dominion, the Sierra Club, and the Maryland Conservation Council entered into a new agreement that replaces all previous agreements and easements. Among other items, the March 2005 agreement allows for construction and operation of the proposed expansion facilities, but states that the proposed project is to be the final expansion of the fenced area for the duration of LNG operations. It also indicates that Dominion shall maintain all of the Cove Point site that is not included in the LNG terminal as open space in its natural state.

Portions of the proposed project in Maryland would be within the designated coastal zone. We have recommended that Dominion file with the Commission a copy of the Maryland Department of the Environment's determination of consistency with the Coastal Zone Management Program.

Operation of the project facilities would impact recreational boating and fishing during the arrival, unloading, and departure of the LNG ships. If the Coast Guard issues a LOR finding the waterway suitable for LNG marine traffic, the Coast Guard would impose a moving safety zone around LNG ships during transit up the Chesapeake Bay and a moored security zone while berthed at the LNG terminal. If moving safety zones or security zones at the terminal were implemented, they would affect other commercial, ferry, and recreational traffic using the bay and river. The moving safety zones, if implemented, may have the effect of temporarily limiting some commercial shipping route in the Chesapeake Bay. This presently occurs with existing LNG vessels. This could cause impacts on recreational boating and fishing but the impacts would be temporary while the boat is in transit or moored at the ship unloading facility. Because the safety zone would be a moving zone around the ship, the impacts would be of short duration at any given point along the shipping route.

A number of state-owned lands or other special use lands would be crossed by the proposed pipelines. For the majority of the crossings, the new pipelines would be immediately adjacent to existing pipeline rights-of-way which would minimize impact on these areas. Dominion would continue to conduct consultations with each of the respective landowner or management agencies. We have recommended that Dominion develop, in consultation with the affected landowners or land managing agencies, site-specific construction and restoration plans for each of these areas as necessary.

The most prominent visual features of the proposed LNG terminal expansion would be two new LNG storage tanks, each 161 feet high, and located closer to Cove Point Road, therefore potentially visible from areas surrounding the terminal. We evaluated simulated views of the storage tanks from four land-based observation points south and west of the terminal and one offshore point east of the terminal using visual simulations prepared by Dominion. Based on these simulations, the view of the proposed LNG storage tanks from areas surrounding the existing terminal would be very minimal, and limited to just the tops of the tanks. The views would be consistent with the existing terminal facilities and would not be a significant change from current views..

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### **5.1.9 Socioeconomics**

Construction of the Cove Point Expansion Project would result in a temporary increase in population, traffic, and the demand for temporary housing and public services in the area of the Cove Point Terminal and in communities located along the proposed pipelines. These effects would be temporary and limited to the period of construction. Construction and operation of the project would have a beneficial impact on local tax revenues and economies.

During operation of the LNG terminal, there would be safety zones around transiting LNG ships. The moving safety zone enforced around each LNG ship and moored vessel security zone around the ship unloading facility while a ship is docked would be restricted to other commercial traffic unless permission to enter the zone is obtained from the Captain of the Port. Since the existing facility's original commissioning in 1978, a regulated navigation area (RNA) has been posted in 33 CFR Section 165.502. As a result of the reactivation of the terminal in 2001, the RNA was altered to its current configuration of 500 yards in all directions from the Cove Point LNG terminal structure. Entry into or movement within this safety and security zone is prohibited unless authorized by the Coast Guard.

### **5.1.10 Cultural Resources**

Dominion has conducted cultural resource surveys and filed reports with the FERC and the various State Historic Preservation Offices (SHPO) documenting investigations covering the LNG terminal expansion facilities and the proposed pipeline routes. The Pennsylvania, Virginia, West Virginia, and New York SHPOs have provided comments indicating the proposed facilities in those states would not affect cultural resources, and we agree. Two historic properties on the TL-532 Pipeline cannot be avoided and would be adversely affected. These two historic properties would be mitigated through data recovery. We sent a Notification of Adverse Effect for the project to the ACHP and the ACHP has decided not to participate. Dominion has provided data recovery plans for these sites and on March 15, 2006, the Maryland SHPO approved the plans and so do we. We have initiated a Memorandum of Agreement (MOA) to resolve the project's adverse effects, and the MOA is currently under review by the Maryland SHPO and Dominion. Because we have not completed the process of complying with section 106 of the NHPA we have recommended that Dominion defer construction until we authorize Dominion to proceed with data recovery or construction to ensure the Commission's responsibility under the NHPA and its implementing regulations are met.

### **5.1.11 Air Quality and Noise**

Construction and operation of the proposed LNG terminal expansion facilities and pipelines and associated aboveground facilities would result in emissions or air pollutants. Emissions from construction activities, such as fugitive dust and tailpipe emissions would be temporary, intermittent, and would not result in a long-term impact on air quality. Proposed modifications for this expansion at the Cove Point LNG Terminal include natural gas-fired combustion turbines equipped to reduce emissions during operation, installation of additional vaporization capacity, and additional miscellaneous emission generating equipment. These modifications would constitute a significant modification to a major source, and a non-attainment review is required for the terminal facilities. In addition, there would be an increase in emissions from LNG ships and associated support vessels. We have analyzed the modeling results from both marine-based

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and land based air emissions and determined that the project, with required mitigations, would not result a significant deterioration of local air quality. In addition, we are required to prepare a Draft General Conformity Determination (DGCD) to determine whether the project would conform to the Maryland State Implementation Plan, and not result in a violation of the National Ambient Air Quality Standards or delay the timely attainment of air quality standards. We have included the DGCD as appendix H.

Dominion has filed a permit application with the Maryland Department of the Environment Air and Radiation Management Administration that is currently under review by that agency. Based on the estimated annual emissions from operation, none of the other proposed new or modified compressor stations would constitute a significant modification for air emissions.

Noise receptors in the immediate vicinity of construction activities would experience an increase in noise levels. Noise associated with construction activities would be the most noticeable with a potential noise impact of 89 decibels (dBA) under peak conditions for short periods of time (when construction equipment is close to a residence). In most areas the increase in noise would be temporary, localized, and limited primary to daylight hours. We asked Dominion to conduct a noise analysis for each HDD site and prepare mitigation plans to reduce impact on residences that are located near HDD drilling activities. Dominion has filed these plans and in most cases the proposed mitigation would result in acceptable noise levels. We have recommended additional mitigation to reduce construction related noise at the proposed HDD crossings of Hunting Creek and the Patuxent River on the TL-532 Pipeline in Maryland.

With our recommended noise mitigation measures, the operational noise from the LNG terminal expansion facilities and from the proposed new or modified equipment at each of the new or modified compressor stations would be less than the FERC's limit of 55 dBA  $L_{dn}$ .

#### **5.1.12 Reliability and Safety**

We evaluated the safety of both the proposed facilities and the related LNG vessel transit through the Chesapeake Bay. With respect to the onshore facility, we performed a cryogenic design and technical review of the proposed terminal expansion facilities design and safety systems. Several areas of concern were noted and we have made specific recommendations that Dominion would be required to address prior to construction or operation of the new facilities at the LNG terminal site.

Thermal radiation and flammable vapor hazard distances were calculated for an accident or an attack on an LNG vessel. For 1.0, 2.5, 3.0, and 3.9-meter-diameter holes in an LNG cargo tank, we estimated distances to range from 2,200 to 5,360 feet for a thermal radiation level of 1,600 British thermal units per hour per foot squared, the level which is hazardous to unprotected persons located outdoors. However, the evaluation of safety is more than an exercise in calculating the consequences of worst case scenarios. Rather, it is a determination of the acceptability of risk which considers: the probability of events, the effect of mitigation, and the consequences of events. Based on the extensive operational experience of LNG shipping, the structural design of an LNG vessel, and the operational controls imposed by the Coast Guard and the local pilots, the likelihood of a cargo containment failure and subsequent LNG spill from a vessel casualty – collision, grounding, or allision<sup>5</sup> – is highly unlikely. For similar reasons, an

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accident involving the onshore LNG import terminal is unlikely to affect the public. As a result, the risk to the public from accidental causes should be considered negligible.

As part of our marine safety analysis, we considered how vessel security requirements for increased LNG ships calling on the Cove Point LNG Terminal might affect other ship and boat traffic in the Chesapeake Bay. Based on the Coast Guard's longstanding experience in controlling the movements of dangerous cargo vessels in the Chesapeake Bay and in other ports, potential impacts can be evaluated for several general security requirements: 1) moving safety zone for inbound and outbound LNG vessels; 2) one-way vessel traffic during LNG vessel transit; 3) security zone around a moored LNG vessel; and 4) other measures as deemed appropriate. The moving safety zone or the moored vessel security zone at the terminal would affect other commercial and recreational traffic using the bay.

The extent of the impact on recreational boaters would depend on the number of boats in the project area during the additional two to three LNG vessel transits per week when LNG ships would call on the LNG terminal, and on several other variables such as the size of the Coast Guard-imposed safety and security zones and the width of the channel at the point where a boat encounters the LNG ship. To minimize potential impacts on other marine traffic, the Coast Guard is expected to use a program of announcements to give advance notice of each moving safety and moored vessel security zones schedule and could schedule the transit of LNG ships for times of day less likely to affect recreational boaters.

Unlike accidental causes, historical experience provides little guidance in estimating the probability of a terrorist attack on an LNG vessel or onshore storage facility. For an LNG import terminal proposal that would involve having a large volume of energy transported and stored near populated areas, the perceived threat of a terrorist attack is a primary concern of the local population and requires that resources be directed to mitigate possible attack paths. While the risks associated with the transportation of any hazardous cargo can never be entirely eliminated, they can be managed.

The Coast Guard, in consultation with both the Hampton Roads and Baltimore Area Maritime Security Committees, recently completed a review of Dominion's Water Suitability Assessment (WSA). Following the guidance provided in NVIC 05-05, the Coast Guard's review focused on the navigation safety and maritime security risks posed by the additional LNG marine traffic associated with the proposed project and the measures needed to responsibly manage these risks. Based on this review, the Coast Guard has preliminarily determined that the Chesapeake Bay, from Cape Henry, VA, to Cove Point, MD, may be suitable for accommodating the type and frequency of LNG vessel traffic referred to in the WSA. This determination is merely a preliminary assessment and does not constitute agency action because the NEPA analysis has not been completed.

Furthermore, the WSA indicates that currently employed risk management strategies developed for each MARSEC level appear to offer the necessary protection for the safety and security risks associated with increased LNG tanker traffic in the Chesapeake Bay.

An issue that has developed for several LNG terminal projects is a concern that local communities would have to bear some of the costs of ensuring the security/emergency management of the LNG facility and the LNG vessel while in transit and unloading at the dock.

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While the LOR would address the suitability of the Chesapeake Bay for increased LNG ship transportation, it would not constitute a final authority to commence these additional LNG operations. Issues related to the public impact of safety and security zones would be addressed later in the updated version of the Coast Guard's existing *LNG Operating Management Plan*. This plan would be developed in conjunction with state and local law enforcement and emergency response communities. In addition, the Coast Guard would establish a moving safety zone and moored vessel security zone under 33 CFR 165 for LNG vessels in transit and while docked. Only personnel or vessels authorized by the Captain of the Port are permitted within these zones.

Section 311 of the Energy Policy Act of 2005 stipulates that the FERC must require the LNG operator to develop an Emergency Response Plan that includes a Cost-Sharing Plan before any final approval to begin construction. The Cost-Sharing Plan shall include a description of any direct cost reimbursements to any state and local agencies with responsibility for security and safety at the LNG terminal and near vessels that serve the facility.

### **5.1.13 Alternatives**

This EIS addresses alternatives to the proposed actions before the FERC, Coast Guard, and Corps. The proposed action before the FERC is to consider issuing to Dominion a Section 3 authorization for expansion of the LNG facility and for Section 7 Certificate of Public Convenience and Necessity for the new pipeline and above-ground facilities. The proposed action before the Coast Guard is issuance of a LOR finding the waterway suitable for increased LNG marine traffic, with certain conditions. The proposed action before the Corps is to consider issuing Dominion permits pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Section 3 of this EIS clearly describes the criteria for alternative selection.

We evaluated the alternatives of no action or postponed action, system alternatives, alternative LNG terminal projects, and pipeline route alternatives. While the no action or postponed action alternative would eliminate the environmental impacts identified in this EIS, the project objectives of providing additional volumes of natural gas to the Mid-Atlantic and Northeast markets would not be met. This in turn could lead to higher natural gas prices, conservation, use of alternative sources of energy, or alternative proposals to develop natural gas delivery and storage infrastructure. Conservation and the development of other sources of energy are anticipated to play a part in meeting the future energy needs of the country but are not expected to significantly reduce the long-term requirement for additional natural gas supply.

For the Coast Guard's proposed action, the no action alternative would be issuance of a LOR finding the waterway not suitable for increased LNG marine traffic. Similar to the no action alternative to the FERC proposed action, the no action alternative for the Coast Guard would avoid any project related environmental effects; however, it would also prevent additional LNG vessels from delivering LNG to an import terminal and the project objectives would not be met. Reasonable alternatives to the Coast Guard action of issuing a LOR include: 1) issuance of a LOR finding the waterway suitable for additional LNG marine traffic without any conditions, and 2) postponing the issuance of a LOR pending further analysis and study.

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Similarly, the Corps has three courses of action. It may: 1) deny the project; or 2) issue a permit with or without conditions; or 3) postpone the issuance of the permit pending further analysis or study.

Our analysis included an evaluation of existing LNG facilities and pipelines as alternative systems that could be used to meet the objectives of the Cove Point Expansion Project. We considered most of these facilities to be either too far from the project area to effectively serve the Mid-Atlantic market without substantial expansions or modifications that would likely result in as much if not more environmental impacts, than the proposed project. We also examined the potential for recently approved, proposed, or planned projects to meet the objectives of the proposed project. Similar to the existing terminal facilities, we considered the majority of the recently approved, proposed, or planned projects too far away to effectively serve the Mid-Atlantic market. Additionally, most of these projects would require substantial expansion or modification, which could result in significant environmental impacts.

An alternative to the Coast Guard action of issuing a favorable LOR with certain conditions is to issue a LOR without any conditions. This would avoid the environmental effects related to any safety and/or security zones, or other related LNG safety and security activities, which the Coast Guard will determine is necessary prior to the commencement of additional LNG vessels transiting the waterway. If the Coast Guard postpones issuance of a LOR pending further analysis or study, the effect is expected to be similar to the FERC postponing its action. That is, although it is speculative to predict the resulting effects, postponing issuance of a LOR may lead to Dominion deciding to delay its entire project.

We examined the five proposed or planned projects that are closest to the Mid-Atlantic area and are substantially developed enough to conduct an analysis but determined that none of these projects would provide the storage and sendout capacity proposed by Dominion. We also concluded that although it is possible that a combination of these projects could provide a sendout and storage capacity at least equal to the proposed project, it seems likely that much of the capacity of these projects would likely be used to satisfy the growing demand for natural gas in the New England and New York area and would be unavailable for the Mid-Atlantic region.

We evaluated an LNG delivery alternative that would include barging LNG to water-side delivery points on other pipelines systems, and that could potentially replace the need for the proposed TL-532 Pipeline. Although LNG delivery by barge may be implemented at some point in the future, we determined barging LNG at a scale that could replace the need for the TL-532 Pipeline is not a reasonable alternative. We also evaluated several alternative pipeline and compressor station configurations that Dominion identified in its application or that were suggested in comments received during scoping. We evaluated these alternatives to see if they could avoid or minimize the need for pipeline construction in Maryland. We found that none of these alternatives would reduce environmental impacts to such an extent that they would be environmentally preferable to the facilities as proposed.

Our alternatives analysis included the evaluation of major pipeline route alternatives and minor pipeline route variations. We evaluated seven major route alternatives and 10 minor route variations that were either identified in Dominion's application or were identified during the scoping process. All of these alternatives were on either the TL-532 or the PL-1 EXT2 Pipelines. We determined that none of the pipeline route alternatives or variations would reduce

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environmental impacts to such an extent that they would be environmentally preferable to the proposed route.

Our alternatives analysis also included evaluation of the need for alternative sites for the two new compressor stations proposed as part of the project. We identified no environmental issues with the proposed site of the Perulack Compressor Station that would warrant review of alternative sites. Dominion indicated that it evaluated a potential alternative site for the Centre Relay Compressor Station, but has not provided enough information on the site for us to complete our evaluation. We have recommended that Dominion provide additional information on that alternative site.

Dominion identified the Start Point Compression Alternative as a potential system alternative to its proposed PL-1 EXT2 Pipeline and Centre Relay Compressor Station. The alternative would eliminate the need for the Centre Relay Compressor Station, but would increase the size of the 81-mile PL-1 EXT2 Pipeline from 24 to 36 inches in diameter.

Construction of a pipeline, even at 36-inch diameter size, is considered a temporary, but long-term impact, compared to the permanent impact of constructing of new compressor station, which is a fixed, aboveground facility, permanently altering the use of the land. In general, the long-term impacts of forest clearing associated with the pipeline construction are preferred to the permanent impact of constructing and operating the Centre Relay Compressor Station. However, section 4 of this EIS fully discloses the environmental impacts of Dominion's PL-1 EXT2 pipeline and the Centre Relay Station. Dominion also selected the proposed compressor station site (which is currently farmed) in consultation with the Centre County planning officials. We conclude that construction of the facilities as proposed, with appropriate mitigation measures and our recommendations, would be an environmentally acceptable action.

Finally, in addition to environmental impacts, Dominion has indicated that use of 36-inch-diameter pipeline would significantly increase initial project cost. Dominion also stated some further benefits of the proposed facility design. After further consideration, we do not object to the construction and operation of the Centre Relay Compressor Station, as proposed in Dominion's application, and we do not recommend the use of the Start Point Compression Alternative.

In summary, we have determined that Dominion's proposed project, as modified by our recommended mitigation measures, is the preferred alternative that can meet the project objectives.

## **5.2 FERC STAFF'S RECOMMENDED MITIGATION**

If the Commission issues their authorization for the proposed Project, we recommend that the Commission's Order (Order) include measures 1 through 74 of the following section. We believe these measures would further mitigate the environmental impacts associated with the construction and operation of the proposed Project. Some of these measures direct Dominion to incorporate certain details in its final design. In its comments on the draft EIS, Dominion affirmed that it would incorporate these measures into its final design.

1. Dominion shall follow the construction procedures and mitigation measures described in its application, supplemental filings (including responses to staff data requests) and as

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identified in the Environmental Impact Statement (EIS), unless modified by this Order. Dominion must:

- a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
  - b. justify each modification relative to site-specific conditions;
  - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
  - d. receive approval in writing from the Director of FERC's Office of Energy Projects (OEP) **before using that modification**.
2. For LNG facilities, the Director of OEP has delegation authority to take whatever steps are necessary to ensure the protection of life, health, property and environment during construction and operation of the project. This authority shall allow:
- a. the stop-work authority and authority to cease operation; and
  - b. the design and implementation of any additional measures deemed necessary to assure continued compliance with the intent of the conditions of the Order.
3. For pipeline facilities, the Director of OEP has delegation authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the project. This authority shall allow:
- a. the modification of conditions of this Order; and
  - b. the design and implementation of any additional mitigation measures deemed necessary (including stop work authority) to assure continued compliance with the intent of environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.
4. **Prior to any construction**, Dominion shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors, and contractor personnel will be informed of the environmental inspector's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.
5. The authorized facility locations shall be as shown in the EIS, as supplemented by filed alignment sheets, and shall include all of the staff's recommended facility locations. **As soon as they are available, and before the start of construction**, Dominion shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by this Order. All requests for modifications of environmental conditions of this Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

Dominion's exercise of eminent domain authority granted under Section 7(h) of the Natural Gas Act (NGA) in any condemnation proceedings related to the Order for pipeline facilities must be consistent with the authorized facilities and locations.

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Dominion's right of eminent domain granted under Section 7(h) of the NGA does not authorize it to increase the size of its natural gas pipeline to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

6. Dominion shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, and documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area.**

This requirement does not apply to extra workspace allowed by the *Upland Erosion Control, Revegetation, and Maintenance Plan*, minor field realignments per landowner needs, and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

- a. implementation of cultural resources mitigation measures;
  - b. implementation of endangered, threatened, or special concern species mitigation measures;
  - c. recommendations by state regulatory authorities; and
  - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
7. **At least 60 days before the start of construction**, Dominion shall file an initial Implementation Plan with the Secretary for review and written approval by the Director of OEP describing how Dominion will implement the mitigation measures required by this Order. Dominion must file revisions to the plan as schedules change. The plan shall identify:
    - a. how Dominion will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
    - b. the number of environmental inspectors assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
    - c. company personnel, including environmental inspectors and contractors, who will receive copies of the appropriate material;

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- d. the training and instructions Dominion will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);
  - e. the company personnel (if known) and the specific portion of Dominion's organization having responsibility for compliance;
  - f. the procedures (including use of contract penalties) Dominion will follow if noncompliance occurs; and
  - g. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
    - (1) the completion of all required surveys and reports;
    - (2) the mitigation training of on-site personnel;
    - (3) the start of construction; and
    - (4) the start and completion of restoration.
8. Dominion shall develop and implement an environmental complaint resolution procedure. The procedure shall provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the Project and restoration of the right-of-way. **Prior to construction**, Dominion shall mail the complaint procedures to each landowner whose property would be crossed by the Project.
- a. In its letter to affected landowners, Dominion shall:
    - (1) provide a local contact that the landowners shall call first with their concerns; the letter shall indicate how soon a landowner shall expect a response;
    - (2) instruct the landowners that, if they are not satisfied with the response, they shall call Dominion's Hotline; the letter shall indicate how soon to expect a response; and
    - (3) instruct the landowners that, if they are still not satisfied with the response from Dominion's Hotline, they shall contact the Commission's Enforcement Hotline at (888) 889-8030.
  - b. In addition, Dominion shall include in its weekly status report a copy of a table that contains the following information for each problem/concern:
    - (1) the date of the call;
    - (2) the identification number from the certificated alignment sheets of the affected property;
    - (3) the description of the problem/concern; and
    - (4) an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.
9. Dominion shall employ a team of environmental inspectors (at least two per construction spread with one available at the LNG terminal, as appropriate, during site preparation). The environmental inspectors shall be:

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- a. responsible for monitoring and ensuring compliance with all mitigation measures required by this Order and other grants, permits, certificates, or other authorizing documents;
  - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
  - c. empowered to order correction of acts that violate the environmental conditions of this Order, and any other authorizing document;
  - d. a full-time position, separate from all other activity inspectors;
  - e. responsible for documenting compliance with the environmental conditions of this Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
  - f. responsible for maintaining status reports (see condition 10).
10. Dominion shall file updated status reports prepared by the head environmental inspector with the Secretary on a weekly basis **until all construction and restoration activities are complete**. On request, these status reports shall also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
- a. the current construction status of the project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
  - b. a listing of all problems encountered and each instance of noncompliance observed by the environmental inspector(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
  - c. corrective actions implemented in response to all instances of noncompliance, and their cost;
  - d. the effectiveness of all corrective actions implemented;
  - e. a description of any landowner/resident complaints which may relate to compliance with the requirements of this Order, and the measures taken to satisfy their concerns; and
  - f. copies of any correspondence received by Dominion from other federal, state or local permitting agencies concerning instances of noncompliance, and Dominion's response.
11. Dominion must receive written authorization from the Director of OEP **before commencing service** of the expansion facilities at the LNG terminal and each component of the pipeline facilities of the project. Such authorization will only be granted following a determination that the LNG expansion facilities have been constructed in accordance with FERC approval and applicable standards, and can be expected to operate safely as designed. For the pipeline components of the project, such authorization will only be granted if it is determined that rehabilitation and restoration of the pipeline right-of-way and other areas affected by the project are proceeding satisfactorily.

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12. **Within 30 days** before placing the authorized facilities in service, Dominion shall file an affirmative statement with the Secretary, certified by a senior company official:
    - a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
    - b. identifying which of the certificate conditions Dominion has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.
  13. Dominion shall incorporate the measures identified by the MALPF (see comment letter S9-25) into easement negotiations for any properties with MALPF preservation agreements or district designations that would be affected by the TL-532 Pipeline.
  14. Dominion shall consult with the PADEP and Texas Eastern prior to construction of its proposed tie-in to the Texas Eastern system at Perulack, and determine the need for special construction measures to address the potential for encountering PCB-contaminated soils.
  15. Dominion shall contact the Pennsylvania Geological Survey to identify specific areas along the PL-1 EXT2 Pipeline where the geologic conditions could result in acid rock drainage as a result of construction of the pipeline. Dominion shall also consult with the Pennsylvania Geological Survey and the PADEP to develop site-specific mitigation plans if necessary, and file these plans with the Secretary before construction.
  16. Dominion shall update site-specific construction drawings and plans for each HDD crossing to identify specific federal, state, and local agencies who may require to be consulted during the HDD activities in the event of a HDD failure or frac-out. Dominion shall file the updated plans and drawings with the Secretary for review and written approval by the Director of OEP, prior to construction.
  17. Dominion shall not use access road AR-1 for construction and operation of its TL-492 EXT3 Pipeline, unless it can provide justification as to why the construction of the new access road is necessary. In addition, if Dominion decides to provide justification for use of AR-1, Dominion shall also provide documentation of landowner approval for the use of the AR-1 access road.
  18. Dominion shall limit vegetation removal above HDD paths to the maximum extent practicable, except for clearing of brush and saplings using hand tools to facilitate the use of HDD tracking systems and installation of pipeline markers. No vegetation shall be removed with power tools or construction equipment without **prior written approval** by the Director of OEP.
  19. Dominion shall consult with the Chesapeake Bay Critical Area Commission regarding any additional mitigation measures to be implemented during the construction and operation of the TL-532 Pipeline across St. Leonard Creek, Hunting Creek, and the Patuxent River. Dominion shall file copies of correspondence and any resulting

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mitigation plan with the Secretary for review and written approval by the Director of OEP **prior to construction**.

20. Before construction, Dominion shall complete consultations with the Pennsylvania Department of Conservation and Natural Resources (PADCNR) to determine if any unique natural communities or other sensitive areas would be crossed by its pipeline facilities. Dominion shall file with the Secretary **before construction**, mitigation plans developed through these consultations. The mitigation plans shall include all correspondence, telephone logs, and locations of each area by milepost, crossing length, acreage of vegetative community affected, and any proposed mitigation.
21. Dominion shall file with the Secretary any wetland compensatory mitigation plan(s) it may develop in response to the U.S. Army Corps of Engineers (Corps) or other agency recommendations, **before implementation**.
22. In the event that Dominion cannot complete an HDD crossing of the Juniata River, Dominion shall file a site-specific alternative crossing plan. This plan shall be developed in coordination with the NOAA Fisheries, Corps, PADCNR, and Pennsylvania Fish and Boat Commission (PAFBC) as applicable. The plan shall include a description of the mitigation measures Dominion would implement to minimize the extent and duration of construction activity that could affect the American shad, and any essential fish habitat. In addition, Dominion shall not begin a crossing of the Juniata River **until**:
  - a. the FERC evaluates the potential impact of a non-HDD crossing of the Juniata River on the American shad;
  - b. the FERC, Corps, and NOAA Fisheries determine that the alternate crossing and mitigation plan are acceptable; and
  - c. the Director of OEP notifies Dominion in writing that it may proceed with an alternative river crossing.
23. Dominion shall not withdraw water for hydrostatic testing from the Patuxent River or Hunting Creek between February 15 and June 15 of any year.
24. Dominion shall not conduct the crossing of Hunting Creek between February 15 and June 1 of any year.
25. Dominion shall not withdraw water for hydrostatic testing from the Juniata River between March 15 and July 15 of any year.
26. Dominion shall consult with the Pennsylvania Game Commission to develop construction and restoration plans for those portions of state lands crossed by the PL-1 EXT2 Pipeline and TL-492 Pipeline (State Game Lands 92, 113, 215, and 179). The final plans shall be filed with the Secretary **before construction**.
27. Dominion shall prohibit project-related construction activities on the TL-532 Pipeline from December 15 through June 15 of any year within one quarter mile of the bald eagle nest site near S1MP22.9, unless there is clear evidence that the nest is inactive. In addition, Dominion shall not begin construction activities **until**:

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- a. the staff completes consultation with the FWS and NOAA Fisheries; and
  - b. Dominion has received written notification from the Director of OEP that construction may begin.
28. Dominion shall incorporate the following NOAA Fisheries guidelines into its Terminal Use Agreement with LNG ship operators. In all coastal and offshore waters along the east coast of the U.S. and Canada:
- a. If a right whale sighting is reported within 20 nautical miles of a ship's position, post a lookout familiar with spotting whales;
  - b. If a right whale is sighted from the ship, or reported along the intended track of a large vessel, mariners shall exercise caution and proceed at a slow, safe speed when within a few miles of the sighting location, bearing in mind that reduced speed may minimize the risk of ship strikes;
  - c. Do not assume right whales will move out of your way. Right whales, generally slow moving, seldom travel faster than 5-6 knots. Consistent with safe navigation, maneuver around observed right whales or recently reported sighting locations. It is illegal to approach closer than 500 yards of any right whale (see 50 CFR 222.32, Chapter 2);
  - d. Any whale accidentally struck, any dead whale carcass spotted, and any whale observed entangled in fishing gear shall be reported immediately to the U.S. or Canadian Coast Guard noting the precise location and time of the accident or sighting; and
  - e. In the event of a strike or sighting, the following information shall be provided to the U.S. Coast Guard: Location and time of the accident or sighting; wind speed and direction; speed of the vessel; size of the vessel; water depth; description of the impact; fate of the animal, if known; and species and size, if known.
29. Dominion shall continue to consult with MDNR regarding mitigation that may be appropriate to avoid or minimize impact on state listed rare species in Maryland. Dominion shall file the results of its consultation, including a description of final agreed upon mitigation measures, with the Secretary, prior to construction.
30. Dominion shall continue to consult with the PADCNR regarding additional surveys or mitigation that may be appropriate to avoid or minimize impact on state listed plants along the TL 492 EXT3 and PL1 EXT2 Pipelines in Pennsylvania. Dominion shall file the results of its consultation, including a description of final agreed upon mitigation measures, with the Secretary, prior to construction.
31. In the event that new residences are built prior to Project construction, Dominion shall update table 4.8.2.1-1 of this EIS for the residences located within 50 feet of the construction work areas (*i.e.*, construction right-of-way and extra temporary work space) and file this information in its initial Implementation Plan with the Secretary **before construction**. For all residences that would be 25 feet or closer to the construction work

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- area, Dominion shall file a site-specific plan with the Secretary for review and written approval of the Director of OEP **before construction**.
32. Dominion shall develop, in consultation with the affected landowners or land managing agencies, site-specific construction and restoration plans, as necessary, for those areas listed in table 4.8.3.1-1 of this EIS. Consultations shall include discussion of the need for construction timing restrictions and/or special construction techniques and restoration measures. Dominion shall file documentation of consultation, and any resulting site-specific plans, with the Secretary **before construction**.
  33. Dominion shall consult with the PAFBC Bureau of Boating Office to determine if specific mitigation measures would be required during open-cut crossings of any Pennsylvania waterbodies to ensure safe navigation for recreational boaters. Dominion shall file documentation of this consultation, and any resulting site-specific plans, with the Secretary **before construction**.
  34. Dominion shall not begin construction of the project **until** it files with the Secretary a copy of the determination of consistency with the Coastal Zone Management Program issued by the Maryland Department of the Environment.
  35. Dominion shall defer construction and use of facilities, and use of staging, storage, temporary work areas, and new or to-be-improved access roads, **until** the Director of OEP notifies Dominion in writing that it may proceed with the data recovery plans or construction.
  36. Dominion shall not begin construction activities in Maryland or Pennsylvania **until** Dominion files with the Secretary, for review and written approval by the Director of OEP, a full air quality analysis identifying all mitigation measures required to demonstrate conformity and submits detailed information documenting how the project would demonstrate conformance with the applicable SIP in accordance with Title 40 CFR Part 51.858. The documentation should address each regulatory criteria listed in Part 51.858; provide a detailed explanation of whether or not the project would meet each requirement; and for each criteria being satisfied, provide all supporting information on how the project would comply. Should any element of the project change substantially, Dominion should resubmit the aforementioned information so that OEP staff may determine the Conformity Determination of the revised action.
  37. Dominion shall file with the Secretary a revised acoustical analysis and mitigation plan for the additional horsepower proposed at the Wolf Run Compressor Station, for the review and approval of the Director of OEP. Dominion shall demonstrate that noise at the nearest noise-sensitive areas (NSA), including the location of Mr. Smith's planned cabin, is below 55 dBA  $L_{dn}$ .
  38. Dominion shall file with the Secretary, **prior to construction**, a drilling noise analysis and a mitigation and compliance plan for each residence near the Hunting Creek and Patuxent River crossings where the  $L_{dn}$  sound level from HDD drilling activities would be greater than 55 dBA. This plan shall demonstrate that noise due to drilling operations would be below 55 dBA  $L_{dn}$  at the nearest NSAs, specify all noise mitigation equipment

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necessary to reduce noise below 55 dBA  $L_{dn}$ . Dominion shall detail the method by which they would ensure compliance. Where surveys indicate that noise attributable to drilling exceeds 55 dBA  $L_{dn}$ , Dominion shall:

- a. immediately stop drilling and mitigate the noise at the affected NSAs to reduce the noise levels at those NSAs to 55 dBA  $L_{dn}$  or below, or
  - b. offer temporary housing until  $L_{dn}$  levels at the NSAs are 55 dBA or below.
39. Dominion shall file noise surveys with the Secretary **no later than 60 days** after placing the expansion facilities in service at the Cove Point LNG Terminal. If the noise attributable to the operation of all of the equipment at the LNG terminal exceeds an  $L_{dn}$  of 55 dBA at any nearby NSAs, Dominion shall file a report on what changes are needed and shall install the additional noise controls to meet the level within 1 year of the in-service date. Dominion shall confirm compliance with the above requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.
40. For the proposed Perulack and Centre Relay Compressor Stations, and for the additional compression/upgrades proposed at the Mockingbird Hill and Wolf Run Compressor Stations, Dominion shall file a noise survey with the Secretary **no later than 60 days** after placing each of the authorized compressor station facilities and/or upgrades (Perulack, Centre Relay, Mockingbird Hill Upgrade, and Wolf Run Compressor Station expansion) in service. If the noise attributable to the operation of any of these facilities at full load exceeds an  $L_{dn}$  of 55 dBA at any nearby NSAs, Dominion shall install additional noise controls to meet that level within 1 year of the in-service date. Dominion shall confirm compliance with the  $L_{dn}$  of 55 dBA requirement by filing a second noise survey for each station with the Secretary **no later than 60 days** after it installs the additional noise controls.
41. If the Coast Guard issues a LOR finding the waterway to be suitable for increased LNG marine traffic, Dominion shall coordinate, as needed, with the Coast Guard to define the responsibilities of Dominion's security staff in supplementing other security personnel and in protecting the LNG ships and terminal.
42. Dominion shall annually review its waterway suitability assessment for the Project; update the assessment to reflect changing conditions; provide the updated assessment to the Captain of the Port/Federal Maritime Security Coordinator, Sector Baltimore and Sector Hampton Roads for review and validation and for any appropriate action; and provide a copy to the FERC staff.

The following measures shall apply to the LNG terminal expansion facilities design and construction details. Information pertaining to these specific recommendations shall be filed with the Secretary for review and approval by the Director of OEP either: prior to initial site preparation; prior to construction of final design; prior to commissioning; or prior to commencement of service as indicated by each specific recommendation. Items relating to Resource Report 13: *Engineering and Design Material* and security should be submitted as critical energy infrastructure information (CEII) pursuant to 18 CFR §388.112 and PL01-1. Information pertaining to items such as: offsite emergency response; procedures for public

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notification and evacuation; and construction and operating reporting requirements shall be subject to public disclosure. All information shall be submitted a minimum of 30 days before approval to proceed is required.

43. A complete plan and list of the hazard detection equipment shall be filed prior to initial site preparation. The information shall include a list with the instrument tag number, type and location, alarm locations, and shutdown functions of the proposed hazard detection equipment. Plan drawings shall clearly show the location of all detection equipment.
44. Dominion Cove Point LNG shall provide a technical review of its proposed facility design that:
  - a. identifies all combustion/ventilation air intake equipment and the distances to any possible hydrocarbon release (LNG, flammable refrigerants, flammable liquids, and flammable gases); and
  - b. demonstrates that these areas are adequately covered by hazard detection devices and indicate how these devices would isolate or shutdown any combustion equipment whose continued operation could add to or sustain an emergency.

Dominion Cove Point LNG shall file this review **prior to initial site preparation**.

45. A complete plan and list of the fixed and wheeled dry-chemical, fire extinguishing, and high expansion foam hazard control equipment shall be filed prior to initial site preparation. The information shall include a list with the equipment tag number, type, size, equipment covered, and automatic and manual remote signals initiating discharge of the units. Plan drawings shall clearly show the planned location of all fixed and wheeled extinguishers.
46. Facility plans showing the proposed location of, and area covered by, each monitor, hydrant, deluge system, hose, and sprinkler, as well as piping and instrumentation diagrams, of the fire water system shall be filed **prior to initial site preparation**.
47. A copy of the hazard design review and list of recommendations that are to be incorporated in the final facility design shall be provided **prior to initial site preparation**.
48. Dominion shall develop an updated Emergency Response Plan (including evacuation) as needed to reflect the proposed expansion activities and coordinate procedures with the Coast Guard, state, county, and local emergency planning groups, fire departments, state and local law enforcement, and appropriate federal agencies. This plan shall include at a minimum:
  - a. designated contacts with state and local emergency response agencies;
  - b. scalable procedures for the prompt notification of appropriate local officials and emergency response agencies based on the level and severity of potential incidents;
  - c. procedures for notifying residents and recreational users within areas of potential hazard;

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- d. evacuation routes/methods for residents along the route of the LNG marine transit, the Cove Point area, and other public use areas that are within any transient hazard areas;
  - e. locations of permanent sirens and other warning devices; and
  - f. an “emergency coordinator” on each LNG vessel to activate sirens and other warning devices.

The Emergency Response Plan shall be filed with the Secretary for review and written approval by the Director of OEP **prior to initial site preparation**. Dominion shall notify FERC staff of all planning meetings in advance and shall report progress on the development of the updated Emergency Response Plan at 3-month intervals.

49. The Emergency Response Plan shall include a Cost-Sharing Plan identifying the mechanisms for funding all project-specific security/emergency management costs that would be imposed on state and local agencies. In addition to the funding of direct transit-related security/emergency management costs, this comprehensive plan should include funding mechanisms for the capital costs associated with any necessary security/emergency management equipment and personnel base. The Cost-Sharing Plan shall be filed with the Secretary for review and written approval by the Director of OEP **prior to initial site preparation**.
50. The **final design** of the hazard detection equipment shall identify manufacturer and model.
51. The **final design** of the hazard detection equipment shall provide flammable gas and UV/IR hazard detectors with local instrument status indication as an additional safety feature.
52. The **final design** of the fixed and wheeled dry-chemical, fire extinguishing, and high expansion foam hazard control equipment shall identify manufacturer and model.
53. The **final design** shall include details of the LNG tank tilt settlement and differential settlement limits between each LNG tank and piping and procedures to be implemented in the event that limits are exceeded.
54. The **final design** shall include resistance temperature detectors (RTDs) in the outlet stacks of the LNG tank relief valves to continuously monitor for relieving and fire conditions.
55. The **final design** shall include provisions to measure the discharge flow of each LNG pump.
56. The **final design** shall specify, in the piping specifications for hazardous fluids, that pipe and nipples two inches and less shall not be less than schedule 80.
57. The **final design** shall include a separate line from the minimum flow recycle valve ADV-3142 to the LNG storage tanks.

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58. The **final design** shall include provisions to ensure that glycol/water circulation is operable at all times when LNG is present in the LNG sendout pump discharge piping or when the temperature in the LNG inlet channel to any vaporizer is below 0°F.
  59. The **final design** shall include automatic shutoff isolation valves for the boiloff compressors, located on the suction and discharge located outside of the boiloff compressor building.
  60. The **final design** shall include a fire protection evaluation carried out in accordance with the requirements of NFPA 59A, chapter 9.1.2.
  61. The **final design** shall include details of the shut down logic, including cause and effect diagrams for alarms and shutdowns.
  62. The **final design** shall include emergency shutdown of equipment and systems activated by hazard detection devices for flammable gas, fire, and cryogenic spills, when applicable.
  63. The **final design** shall include details of the air gaps to be installed downstream of all seals or isolations installed at the interface between a flammable fluid system and an electrical conduit or wiring system. Each air gap shall vent to a safe location and be equipped with a leak detection device that: shall continuously monitor for the presence of a flammable fluid; shall alarm the hazardous condition; and shall shutdown the appropriate systems.
  64. The **final design** shall include a HAZOP review of the completed design. A copy of the review and a list of the recommendations shall be provided.
  65. All valves including drain, vent, instrument root, main, and car sealed valves shall be tagged in the field during construction and **prior to commissioning**.
  66. Operation and Maintenance procedures and manuals, as well as safety procedure manuals, shall be filed **prior to commissioning**.
  67. The contingency plan for failure of the LNG tank outer shell shall be filed **prior to commissioning**.
  68. A copy of the criteria for horizontal and rotational movement of the inner vessel for use during and after cool down shall be filed **prior to commissioning**.
  69. The FERC staff shall be notified of any proposed revisions to the security plan and physical security of the facility **prior to commencement of service**.
  70. Progress on the construction of the LNG terminal shall be reported in monthly reports filed with the Secretary. Details shall include a summary of activities, problems encountered and remedial actions taken. Problems of significant magnitude shall be reported to the FERC **within 24 hours**.

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**The following recommendations shall apply throughout the life of the facility:**

71. The facility shall be subject to regular FERC staff technical reviews and site inspections on at least an **annual** basis or more frequently as circumstances indicate. Prior to each FERC staff technical review and site inspection, Dominion shall respond to a specific data request including information relating to possible design and operating conditions that may have been imposed by other agencies or organizations. Up-to-date detailed piping and instrumentation diagrams reflecting facility modifications and provision of other pertinent information not included in the semi-annual reports described below, including facility events that have taken place since the previously submitted annual report, shall be submitted.
72. **Semi-annual** operational reports shall be filed with the Secretary to identify changes in facility design and operating conditions, abnormal operating experiences, activities (including ship arrivals, quantity and composition of imported LNG, vaporization quantities, boil-off/flash gas, etc.), plant modifications including future plans and progress thereof. Abnormalities shall include, but not be limited to: unloading/shipping problems, potential hazardous conditions from offsite vessels, storage tank stratification or rollover, geysering, storage tank pressure excursions, cold spots on the storage tanks, storage tank vibrations and/or vibrations in associated cryogenic piping, storage tank settlement, significant equipment or instrumentation malfunctions or failures, non-scheduled maintenance or repair (and reasons therefore), relative movement of storage tank inner vessels, vapor or liquid releases, fires involving natural gas and/or from other sources, negative pressure (vacuum) within a storage tank and higher than predicted boiloff rates. Adverse weather conditions and the effect on the facility also shall be reported. Reports shall be submitted **within 45 days** after each period ending **June 30 and December 31**. In addition to the above items, a section entitled “Significant plant modifications proposed for the next 12 months (dates)” also shall be included in the semi-annual operational reports. Such information would provide the FERC staff with early notice of anticipated future construction/maintenance projects at the LNG facility.
73. In the event the temperature of any region of any secondary containment, including imbedded pipe supports, becomes less than the minimum specified operating temperature for the material the Commission shall be notified **within 24 hours** and procedures for corrective action shall be specified.
74. Significant non-scheduled events, including safety-related incidents (*i.e.*, LNG or natural gas releases, fires, explosions, mechanical failures, unusual over pressurization, and major injuries) and security-related incidents (*i.e.*, attempts to enter site, suspicious activities) shall be reported to FERC staff. In the event an abnormality is of significant magnitude to threaten public or employee safety, cause significant property damage, or interrupt service, notification shall be made immediately, without unduly interfering with any necessary or appropriate emergency repair, alarm, or other emergency procedure. In all instances, notification shall be made to FERC **within 24 hours**. This notification practice shall be incorporated into the LNG facility’s emergency plan. Examples of reportable LNG-related incidents include:
  - a. fire;

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- b. explosion;
  - c. estimated property damage of \$50,000 or more;
  - d. death or personal injury necessitating in-patient hospitalization;
  - e. free flow of LNG for five minutes or more that results in pooling;
  - f. unintended movement or abnormal loading by environmental causes, such as an earthquake, landslide, or flood, that impairs the serviceability, structural integrity, or reliability of an LNG facility that contains, controls, or processes gas or LNG;
  - g. any crack or other material defect that impairs the structural integrity or reliability of an LNG facility that contains, controls, or processes gas or LNG;
  - h. any malfunction or operating error that causes the pressure of a pipeline or LNG facility that contains or processes gas or LNG to rise above its maximum allowable operating pressure (MAOP) (or working pressure for LNG facilities) plus the build-up allowed for operation of pressure limiting or control devices;
  - i. a leak in an LNG facility that contains or processes gas or LNG that constitutes an emergency;
  - j. inner tank leakage, ineffective insulation, or frost heave that impairs the structural integrity of an LNG storage tank;
  - k. any safety-related condition that could lead to an imminent hazard and cause (either directly or indirectly by remedial action of the operator), for purposes other than abandonment, a 20 percent reduction in operating pressure or shutdown of operation of a pipeline or an LNG facility that contains or processes gas or LNG;
  - l. safety-related incidents to LNG vessels occurring at or en route to and from the LNG facility; or
  - m. an event that is significant in the judgment of the operator and/or management even though it did not meet the above criteria or the guidelines set forth in an LNG facility's incident management plan.

In the event of an incident, the Director of OEP has delegated authority to take whatever steps are necessary to ensure operational reliability and to protect human life, health, property or the environment, including authority to direct the LNG facility to cease operations. Following the initial company notification, FERC staff would determine the need for a separate follow-up report or follow-up in the upcoming semiannual operational report. All company follow-up reports shall include investigation results and recommendations to minimize a reoccurrence of the incident.