Stewards of the Lower Susquehanna, Inc.

Lower Susquehanna RIVERKEEPER®

Aug. 18, 2014

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: Comments on EIS Scoping and Environmental, Cultural and Historic Issues Associated with the Proposed Atlantic Sunrise Pipeline Project, PF-14-8-000

Dear Secretary Bose,

On behalf of the Lower Susquehanna RIVERKEEPER® Michael Helfrich, and the supporting nonprofit organization Stewards of the Lower Susquehanna, Inc., please accept the following comments concerning the solicitation for scoping comments on the proposed Atlantic Sunrise Pipeline Project (hereinafter "Project"), docket number PF-14-8-000. The Federal Energy Regulatory Commission (hereinafter "FERC") provided notice of request for scoping comments on July 18, 2014 with a comment period running until August 18, 2014.

Stewards of the Lower Susquehanna, Inc. is a 501(c)3 nonprofit, membership organization that supports the advocacy work of the Lower Susquehanna Riverkeeper. The organization is dedicated to protecting and improving the ecological and aesthetic quality of the Lower Susquehanna Watershed and Chesapeake Bay. Much of our work entails protecting and preserving landscapes and waterways, and finding solutions to improve areas with diminished ecological integrity.

Our members live, work, and recreate in and among waterways and landscapes throughout South Central Pennsylvania, and in particular in the region directly adjacent the proposed Project's route, especially Lancaster County. Thus the Lower Susquehanna Riverkeeper and Stewards of the Lower Susquehanna Inc. have direct interests that may be negatively affected by the proposed project.

I. Executive Summary

The proposed Project would create and/or incite significant, diverse and negative environmental, cultural, historic and economic consequences on the Susquehanna River Basin. While we are pleased to see that FERC has agreed that the significance and breadth of the

proposed Project merits completion of an Environmental Impact Statement (EIS), we urge FERC to ensure all relevant impacts are fully considered for their probative worth in determining the propriety of the Project. For the reasons discussed below we oppose the proposed Project and respectfully request that FERC fully document these and other impacts in its future EIS and, in turn, deny approval of this Project and issuance of related permits for the Project as it is not in the public interest.

I. The Project

The proposed Atlantic Sunrise Project (Project) involves the construction and operation of substantial pipeline and related infrastructure by Transcontinental Gas Pipeline Company, LLC (hereinafter "Transco"), a subsidiary of Williams Partners L.P. (hereinafter "Williams"). More specifically, Transco's Project entails the construction and operation of a vast, *new* pipeline infrastructure across not only the Susquehanna River Basin, but in the states of Pennsylvania, Maryland, Virginia, North Carolina and South Carolina.

Its purpose is touted as supplying natural gas from Pennsylvania to demand hubs along Transco's existing pipeline system, implicating the trememndous industrial production of natural gas presently occuring in the Marcellus and Utica shales underlaying much of Pennsylvania. The Project entails significant new development and construction, including:

- construction of approximately 177.3 miles of new 30- and 42-inch-diameter pipelines in Columbia, Lancaster, Lebanon, Luzerne, Northumberland, Schuylkill, Susquehanna, and Wyoming Counties, Pennsylvania;
- construction of approximately 12 miles of new 36- and 42-inch-diameter pipeline loops1 in Clinton and Lycoming Counties, Pennsylvania;
- replacement of 2.5 miles of 30-inch-diameter pipeline in Prince William County, Virginia;
- construction of two new compressor stations:
    - Compressor Station 605 – installation of two electric-driven Solar Mars 100S 15,000-horsepower compressors in Susquehanna, Pennsylvania; an
    - Compressor Station 610 – installation of one electric-driven Solar Titan 250S 30,000-horsepower compressor and one electric-driven Solar Titan 130S 20,500-horsepower compressor in Columbia County, Pennsylvania;
- installation of additional compression at three existing compressor stations:
    - Compressor Station 520 – installation of one 16,000-horsepower Solar Mars 100S gas turbine in Lycoming County, Pennsylvania;
    - Compressor Station 517 – installation of one 16,000-horsepower Solar Mars 100S gas turbine in Columbia County, Pennsylvania; and
    - Compressor Station 190 – installation of one 25,000-horsepower electric-driven compressor in Howard County, Maryland;
- modifications at six existing compressor stations in Virginia and North Carolina to allow bi-directional flow and/or installation of supplemental odorization, odor detection, and odor masking/deodorization equipment;
- construction of two meter stations and three regulator stations:
    - Zick Meter Station – a new receipt meter station and pig **2** launcher in

Susquehanna, Pennsylvania;

- Oswego Meter Station – a new receipt meter station in Susquehanna, Pennsylvania;
- Regulator Station – a new regulator station at milepost (MP) L92.7 along the Transco Leidy Line system;
- Regulator Station – a new regulator station and pig launcher/receiver at MP L113.8 along the Transco Leidy Line system; and
- Regulator Station – a new regulator station and pig receiver at MP 1682.7 along the Transco Mainline system;

Similarly, there are significant land use requirements for the Project. Notably, the Project assumes all new rights of way and easements, meaning there will be no minimization of landscape impacts along previously sited natural gas infrastructure. In partcular, Transco is planning on using a 100-foot-wide construction right-of-way for the 42-inch-diameter pipeline segments and a 90-foot-wide construction right-of-way for the 30- and 36-inch-diameter pipeline segments. Following construction, Transco would retain a 50-foot-wide easement for operation of the pipelines. Transco would also require land for additional workspaces at road, railroad, waterbody, and wetland crossings; topsoil storage; access roads; storage or pipeyards; and other purposes during construction.

II. Project Impacts FERC Must Assess Pursuant to NEPA

A. FERC Must Take a Hard Look at All the Project's Impacts

Congress enacted NEPA in 1969, directing all federal agencies to assess the environmental impact of proposed actions that significantly affect the quality of the environment. 42 U.S.C. § 4332(2)(C). The law requires federal agencies to "consider every significant aspect of the environmental impact of a proposed action . . . [and] inform the public that it has indeed considered environmental concerns in its decision-making process."[1] To accomplish this goal, NEPA imposes procedural requirements to ensure that federal agencies "take a 'hard look' at environmental consequences."[2]

NEPA's disclosure goals are two-fold: (1) to insure that the agency has carefully and fully contemplated the environmental effects of its action, and (2) "to insure that the public has sufficient information to challenge the agency."[3] By focusing the agency's action on the environmental consequences of its proposed action, NEPA "ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed and the die otherwise cast."[4] The Council on Environmental Quality (CEQ) promulgated uniform regulations to implement NEPA that are binding on all federal agencies.[5]

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[1] *Earth Island Inst. v. USFS*, 351 F.3d 1291, 1300 (9th Cir. 2003).

[2] *Id.*

[3] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989); *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1151 (9th Cir. 1998).

[4] *Robertson*, 490 U.S. at 349.

[5] 42 U.S.C. § 4342; 40 C.F.R. § 1500 *et seq.*

FERC is required under NEPA to prepare an environmental impact statement (EIS) for any "major federal actions significantly affecting the quality of the human environment."[6] An EIS must consider both direct and indirect environmental impacts of the proposed action.[7] Direct effects are caused by the action and occur at the same time and place as the proposed project.[8] Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.[9] Both types of impacts include "effects on natural resources and on the components, structures, and functioning of affected ecosystems." *Id.*

The regulations implementing NEPA also require an agency to assess the cumulative effects of its proposed action on the environment.[10] The pertinent regulation defines cumulative impact as follows:

> Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.[11]

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.[12] NEPA additionally requires that environmental information be made available to public officials and citizens before decisions are made and before actions are taken.[13] The information must be of high quality.[14] The purpose of this requirement is to ensure that the public has information that allows it to question and understand the decision made by the agency.

NEPA requires an EIS to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[15] The NEPA process and documents should "identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment."[16] Importantly, while an EIS is being prepared FERC must not take action concerning the proposal that is the subject of the EIS until the EIS is complete and a formal Record of Decision has been issued. During this time, FERC may take no action which would tend to limit the choice of reasonable alternatives, or tend to determine subsequent development.

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[6] 42 U.S.C. § 4332(2)(C).
[7] 40 C.F.R. § 1508.8.
[8] *Id.* at § 1508.8(a).
[9] *Id.* at § 1508.8(b).
[10] 40 C.F.R. § 1508.7.
[11] *Id.*
[12] *Id.*
[13] 40 C.F.R. §1500.1 (b).
[14]
[15] 42 U.S.C. § 4332(E).
[16]

B. Geology & Soils

i. South Central Pennsyvania's Karst Geology

South Central Pennsylvania is underlain by a porous carbonate-based geologic formation scientifically termed "karst geology." Carbonate rocks are exposed at or underlie about one-fifth of the area of the earth's land surface. They contain large quantities of groundwater, an important part of the world's supply of petroleum and natural gas, and valuable reserves of metallic ores. It is not only the extent of carbonate terrains and the productivity of their aquifers that engenders special attention. Their hydrology differs in several ways from that of other terrains. The main difference is due to the relatively high solubility of most carbonate materials. Hydrological characteristics, such as permeability, are often erratic, irregular, and not fixed with respect to time and space. To the extent that the movement of water aids solubility it can also increase permeability, which may lead to an increase in the amount of water in circulation and therefore the movement of constituents present in such water.

See Figure 1 below, showing quadrangles of Pennsylvania underlain by Karst Geology.[17]

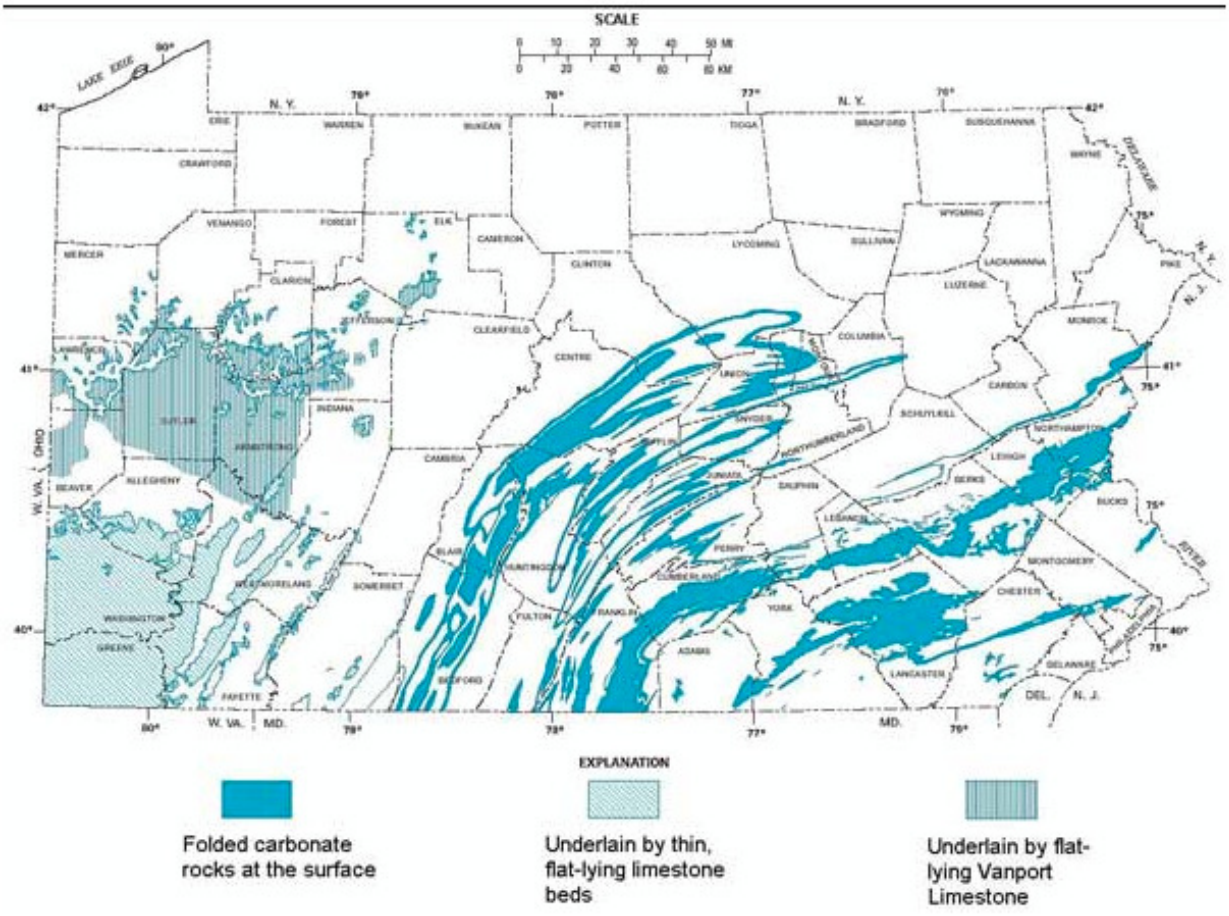

Figure 1. Carbonate rocks in Pennsylvania (modified after Pennsylvania Geological Survey, 2000).

[17] Digital Karst Density Layer and Compilation of Mapped Karst Features in Pennsylvania, U.S. Geological Survey Open-File Report 03–471, available online at: http://pubs.usgs.gov/of/2003/of03-471/reese/

Karst areas are susceptible to a greater range of environmental impacts than any other terrain, because of the additional set of difficulties associated with highly developed subetrannean networks and their associated fragile ecosystems and geology. Unfortunately, the high permeability of these types of landscapes has long been a "dumping ground" for wastes, because upon application, wastes typically "disappear" underground and thus become out of sight and out of mind. In the case of pipeline construction for the instant Project, FERC's EIS must address the increased threat Pennsylvania's karst geology poses in terms of the potential for pollutant transfer and undermining the stability and safety of surface or subsurface pipelines.

Pennsylvania's Karst Geology Significantly Increases the Risk of Pollutant Transfer In the Event of A Spill, Accident or Negligence

Karst aquifers, like that underlying the Lower Susquehanna River Watershed and much of the proposed Project's route, are notoriously effective in transmitting rather than naturally treating any pollutant addition. This arises from the unfortunate fact that the relatively large capacity for self-treatment found in many groundwater systems is comparatively poorly developed in karst. Karst geology in fact transfers pollutants instead of naturally filters via water because:

- The surface area available for colonization of microorganiisms as well as for adsorption and ion exchange is much less in dense, fractured karst rocks than in porous elastic sediments;
- Rapid infiltation into karst reduces the opportunity for evaporation, a mechanism key to elimination of highly volatile, organic compounds;
- Physical filtration is relatively ineffective in typically thin karst-soil and through rocks with large secondary voids, meaning high transmissability of pollutants;
- Transmission of particulate matter right through karst systems is assisted by turbulent flow regime commonly associated with conduit aquifers;
- Time dependent elimination mechanisms (of bacteria and viruses for example) are curtailed in effectiveness because of rapid flow through conduits and reduced absorption.

See Karst Geomorphology and Hydrology, Ford, D.C. and P.W. Williams, Chapman & Hall, 1989, at Section 11.2 et seq.

Pennsylvania's Karst Geology Significantly Increases the Risk of Infrastructure Failure Due to Unstable Construction Conditions On and In Its Geology

Karst processes and landforms pose many different problems for construction and other development. Problems encountered can be classified by the extent of the impact of construction or other development upon karst features already existing at the site. Large scale impact is more common if the water table is raised or lowered; this can become pronounced and extreme in the case of construction of dams, tunnels, mines or underground subsurface feautres. *Id.*

In the case of the Project, where much of the pipeline infrastructure may be placed underground, because of karst geology there exists a significantly higher potential for subsidence or other subsurface land collapse or movement that increases the potential for pipeline failure and, as

discussed above, the resulting and very likely transfer and dispersal of pollutants. FERC must analyze these potential impacts in its EIS.

ii. South Central Pennsylvania's Type 1 Farm Soils

We incorporate by reference the "Soil Survey of Lancaster County Pennsylvania,"[18] and its findings that, generally speaking, Lancaster County – through which the proposed Project will run - contains some of the Eastern Seaboard's richest farming soil. The farmlands in this region boast some of the richest, most productive, non-irrigated agricultural soils in the world. The Soil Conservation Service rates over half of that land as Class I or Class II soil --considered "prime" farmland.

There is a high percentage of preserved farmlands in the southern area of the proposed pipelines. Many of these properties have been preserved with private and public funds, and have clauses that restrict the use of these lands for any other business purpose. Pipelines and associated facilities are indeed "business," and may impact the agreements and owners may be forced to forfeit funds paid to them for preservation. The source of the funding for preservation should not determine the enforceability of these preservation agreements. Using eminent domain to override these agreements is improper and threatens to undermine projects that may have been completed with federal and/or state dollars and, as such, FERC must identify and reconcile those conflicts of interests.

In sum the Project would undeniably affect local landscapes and Lancaster Counties' farmlands. We believe that any such impact would categorically be negative and must be analyzed by FERC in its EIS.

C. Water Resources & Wetlands

Human activities in the Mid-Atlantic Seaboard have resulted in the fragmentation of what was once a pre-dominantly forested landscape. Fragmentation involves a reduction in the average size of remaining forest patches, increasing the distance between patches and increasing the ratio of edge to interior. Shale gas development consumes not only vast quantities of water but also acres of land for well pads, pipelines, and access roads. In the forested and agricultural lands overlaying the Marcellus Shale, massive industrialization associate with development, including pipeline construction, use and maintenance, will cause widespread impacts to surface water quality from deforestation, stormwater runoff, and erosion and sedimentation.

Forests play an essential role in water purification.[19] The scientific literature clearly establishes the link between percent forest cover and water quality; for example, reductions in forest cover are directly correlated with negative changes in water chemistry, such as increased

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[18] *See* Soil Survey of Lancaster County Pennsylvania, United States Dept. of Agriculture, Soil Conservation Service, published May 1985, available online at: http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/pennsylvania/PA071/0/Lancaster.pdf

[19] Robert A. Smail & David J. Lewis, Forest Service, U.S. Dep't of Agric., Forest Land Conversion, Ecosystem Services, and Economic Issues for Policy: A Review 12 (2009), available at http://www.fs.fed.us/openspace/fote/pnw-gtr797.pdf

levels of nitrogen, phosphorus, sodium, chlorides, and sulfates as well as reduced levels of macroinvertebrate diversity.[20] Reducing forest cover decreases areas available for aquifer recharge, increases erosion, stormwater runoff, and flooding, and adversely affects aquatic habitats.[21] Already in Pennsylvania, researchers have correlated areas of high natural gas well density with decreased water quality, as indicated by lower macroinvertebrate density and higher levels of specific conductivity and total dissolved solids.[22]

Both deforestation and shale gas infrastructure construction and operation will, in turn, lead to greatly increased levels of erosion, sedimentation, and stormwater runoff affecting surface water quality. Excess sedimentation is associated with a number of detrimental effects on water quality, stream morphology, and aquatic life, and has been identified by the EPA as one of the primary threats to US surface waters.[23] The proposed Project must cross waterways both large and small. No matter what pipeline construction technique is used, there is vegetation loss associated with clearing stream banks. This reduction in foliage increases stream temperature and reduces its suitability for fish incubation, rearing, foraging and escape habitat. The loss of vegetation also makes the stream more susceptible to erosion events, as the natural barrier along the stream bank has been removed.

Shale gas infrastructure sites are like traditional construction sites in terms of stormwater runoff and sediment discharge levels.[24] A 2005 EPA study concluded that "gas well sites have the potential to negatively impact the aquatic environment due to site activities that result in increased sedimentation rates."[25] In Pennsylvania, the Nature Conservancy has estimated that nearly two-thirds of well pads and infrastructure targeting the Marcellus Shale will be developed in forested areas, necessitating the clearing of 38,000 to 90,000 acres.[26] An additional 60,000 to

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[20] Jackson, J.K. & Sweeney, B.W., "Expert Report on the Relationship Between Land Use and Stream Condition (as Measured by Water Chemistry and Aquatic Macroinvertebrates) in the Delaware River Basin," Stroud Water Research Center, Avondale, PA, available at http://www.state.nj.us/drbc/Sweeney-Jackson.pdf

[21] State of N.J. Highlands Water Prot. and Planning Council, Ecosystem Management Technical Report 39 (2008).

[22] Academy of Natural Sciences of Drexel University, "A Preliminary Study of the Impact of Marcellus Shale Drilling on Headwater Streams," available at http://www.ansp.org/research/pcer/projects/marcellus-shale-prelim/index.php

[23] Entrekin, S. et al., "Rapid expansion of natural gas development poses a threat to surface waters," Frontiers in Ecology and Environment 2011, 9(9), 503-11 (Oct. 6, 2011), at 507, 509, available at http://www.esajournals.org/doi/abs/10.1890/110053

[24] Havens, David Loran, Assessment of sediment runoff from natural gas well development sites. M.S. thesis May 2007, available at http://digital.library.unt.edu/ark:/67531/metadc3665/m1/1/high_res_d/thesis.pdf ; see also 55 Fed. Reg. 47,990, 48,044-34 (Nov. 16, 1990) (Phase I stormwater regulation describing scope and significance of water quality impacts from sediment runoff from construction activities); 64 Fed. Reg. 68,722, 68,728-30 (Dec. 8, 1999) (Phase II stormwater regulation reiterating concerns about sediment-laded stormwater discharges and extending permitting requirements to small construction sites).

[25] Banks, Kenneth E., Ph.D., and Wachal, David J., U.S. EPA, Final Report for Catalog of Federal Domestic Assistance Grant Number 66.463 Water Quality Cooperative Agreement for Project Entitled "Demonstrating the Impacts of Oil and Gas Exploration on Water Quality and How to Minimize these Impacts Through Targeted Monitoring Activities and Local Ordinances" (Dec. 2007), available at http://www.epa.gov/npdes/pubs/oilandgas_impactgrant.pdf

[26] Id. at 29.

150,000 acres of forest area will be lost to pipeline construction and right-of-way maintenance.[27] Compressor stations along the pipelines, which occupy an average of five acres each, are likely to number in the hundreds.[28]

Heavy truck traffic on rural roads, especially unpaved roads, that were not built to withstand hundreds or thousands of truck trips also leads to significant erosion and sedimentation problems.[29] Thousands of truck trips (according to Pennsylvania Dept. of Environmental Protection officials speaking at public meetings) with each vehicle weighing up to 10 tons, may be required to construct and operate a single well. Ditches along rural roads are the primary pathways for the conveyance of polluted runoff bearing sediments and nutrients to streams, and increase runoff volume and energy as well, contributing to flooding.[30] In addition, access roads constructed or modified to enter gas exploration or extraction facilities contribute significantly to sedimentation and surface water quality degradation.

Pipeline construction and right-of-way maintenance account for a significant proportion of shale gas extraction's land use impacts. Pipelines also create significant erosion and sedimentation problems during construction as well as over the decades-long maintenance of cleared rights-of-way. In joining well pads to transmission infrastructure, a single gathering line may cross numerous streams and rivers, especially in states such as Pennsylvania with a high density of stream mileage per unit of land.

Further, the Chesapeake Bay TMDL has no growth allocation for Pennsylvania, therefore any new sources, even temporary, must be offset. As FERC would be the authorizing agency, they must comply with President Obama's Executive Order for Chesapeake Bay protection, Order 13508, and include mitigation for all runoff. Our organization has observed massive failures of erosion and sedimentation controls on the recent FERC approved Spectra pipeline construction in York County, also in the river hills, so additional offsets must be enumerated in any federal permit approval issued by FERC. A study should be included that evaluates potential sediment and nutrient loads, using actual loads that bypass approved E&S implementation, with special awareness of the extremely steep slopes of Central Pennsylvania's river hills.

Stream and wetland pipeline crossings cause erosion and sedimentation whether implemented through dry ditch or wet ditch crossings.[31] Though erosion and sediment control permits may be required for stream crossings—indeed, in Pennsylvania they are the only permits necessary for gathering line construction—in practice, permit requirements are routinely

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[27] The Nature Conservancy, "Natural Gas Pipelines," Excerpt from Report 2 of the Pennsylvania Energy Impacts Assessment, December 16, 2011, at 5, available at http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/pennsylvania/ng-pipelines.pdf

[28] Id. at 5-6.

[29] See C.J. Randall, Hammer Down: A Guide to Protecting Local Roads Impacted by the Marcellus Shale (Dec. 2010), available at http://www.greenchoices.cornell.edu/downloads/development/marcellus/Marcellus_Randall.pdf

[30] Yen Hoang & Keith Porter, Stormwater Management in the Rural New York Headwater Areas of the Chesapeake Bay Watershed, Journal of Water Law 21:6 (2010) at 8.

[31] The Nature Conservancy, "Natural Gas Pipelines," Excerpt from Report 2 of the Pennsylvania Energy Impacts Assessment, December 16, 2011, at 7, available at http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/pennsylvania/ng-pipelines.pdf

violated.[32] Both dry and traditional ditch crossings necessitate the clearing of area stream banks. Because riparian vegetation functions as a natural barrier along the stream edge, both removing sediment and other pollutants from surface runoff and stabilizing stream banks,[33]clearing necessarily increases a stream's susceptibility to erosion events. Cumulatively, the construction of numerous crossings across a single watercourse may significantly degrade the quality and flow rate of the water body.[34] Erosion and sedimentation problems are often exacerbated by the staging of construction, during which soils are exposed for long periods and over long distances by clearing, grading, and trench cutting before final pipeline installation and revegetation.[35]

While FERC appears to classify small streams as "minor", these small streams are of the highest value in processing and removing nutrients, and are frequently attached to wetlands in this area of Pennsylvania. All crossings of these streams must use Horizontal Directional Drilling, not dry ditch methods, and the HDD must begin outside of the wetland boundaries.

D. Vegetation & Wildlife

The Susquehanna River Basin's river hill valleys and serpentine barrens include areas of high diversity and rare plant species. Pipeline right-of-ways create areas for invasive species to thrive, which can then spread to out-compete our rare, endangered, and threatened flora.

Vegetative buffers have been installed along streams, with a high concentration of buffers in Lancaster and Lebanon Counties. In many instances these buffers were paid for with taxpayer dollars, and in some cases with local donations and at landowners' expense. This money was spent to increase the ability of streams to process nutrients and remove them before they enter the Susquehanna and Chesapeake Bay, causing eutrophication and dead zones. All buffers should be delineated and maintained. Any stream crossings where vegetative buffers exist should use Horizontal Directional Drilling at the boundary of the buffer or 100 feet from the streams edge.

E. Land Use, Recreation, Special Interest Areas & Visual Resources

i. Permanent Pipeline Easement & Resulting Land Use Conversion, Fragmentation

The proposed new pipelines include 189.3 miles, with a permanent easement of 50 feet. This is 1147 acres of land that will be permanently altered. This land will be a combination of

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[32] Beth Brelje, Pike Conservation Official Fed Up With Gas Company's Violations, Pocono Record, Sept. 20, 2011, http://www.poconorecord.com/apps/pbcs.dll/article?AID=/20110920/NEWS/109200330/-1/rss01 (noting numerous violations documented on Tennessee Gas Pipeline Company project).

[33] David J. Welsch, Forest Service, U.S. Dep't Agric., NA-PR-07-91, Riparian Forest Buffers: Function and Design for Protection and Enhancement of Water Resources (1991), available at http://na.fs.fed.us/spfo/pubs/n_resource/buffer/cover.htm

[34] Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association, and Canadian Gas Association, "Pipeline Associated Watercourse Crossings," 1-4 (2005).

[35] Comments on Environmental Assessment of MARC I Hub Line Project, Exhibit G, FERC Docket No. CP10-480-000, Submittal 20110711-5189 (filed Jul. 22, 2011) (statement of Susan Beecher, Executive Director, Pike County PA Conservation District (Jul. 8, 2011)), available at http://elibrary.ferc.gov/idmws/docket_sheet.asp

meadows (best case scenario) or barren land (after pesticide spraying for "maintenance"). Stormwater, which causes erosion of sediment and nutrients, flooding, and loss of aquifer recharge, will increase due to land use changes.

For instance, forested areas may allow for 90% of stormwater to be processed through absorption or evapotranspiration back into the atmosphere, with 10% becoming runoff. A meadow may allow 50% of the precipitation to become stormwater runoff. A barren area may cause 90 to nearly 100% to become runoff. An evaluation must be made to determine what land has changed and how, and how this affects sediment and nutrient erosion. These impacts must be offset as per the Chesapeake Bay TMDL.

Pipeline construction results in the loss of riparian vegetation as well as the clearing and maintaining of rights-of-way through forested lands; these significant disturbances of ground cover affect both surface and ground water resources.

A report released by the U.S. Geological Survey, titled "Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010" (Open-File Report 2012-1154), documents the significant impacts on forest cover resulting from the construction of unconventional fossil fuel extraction infrastructure, particularly pipelines.[4] Taking Bradford and Washington Counties as the basis for its study, this report documents the massive landscape changes that are reshaping forest and farm lands in Pennsylvania through the construction of gas wells, impoundments, roads, and pipelines.

The report documents the overall loss of forest habitat as well as the increase in forest fragmentation that shale gas and coalbed methane development has caused over a very short time period. In Bradford County, 0.12% of the county's forest was lost to gas development, contributing to a 0.32% loss of interior forest and a gain of 0.11% in edge forest. In Washington County, the USGS report documented a 0.42 percent forest loss, contributing to a 0.96 percent loss of interior forest and a gain of 0.38 percent in edge forest. USGS Report at 28-29.

According to the USGS data, pipeline construction and associated road construction had the greatest effect on the increase in forest fragmentation, patchiness, and forest edge. *Id.* Of particular concern, "[t]his type of extensive and long-term habitat conversion has a greater impact on natural ecosystems than activities such as logging or agriculture, given the great dissimilarity between gas well pad infrastructure and adjacent natural areas and the low probability that the disturbed land will revert back to a natural state in the near future (high persistence)." *Id.* at 10.

ii. Potential Increase in Forest Fragmentation Incites Greater Lyme's Disease Transmission

Forest destruction and fragmentation in the United States recently have been shown to reduce mammalian species diversity and to elevate population densities of white-footed mice. One potential consequence of reduced species diversity and high mouse density in small fragments is an increase in human exposure to Lyme disease. Increased risk of exposure to this disease is expected because of the role of the white-footed mouse as the principal natural

reservoir of the Lyme bacterium, Borrelia burgdorferi. Blacklegged ticks (Ixodes scapularis) feeding on mice have a higher probability of becoming infected with the bacterium than do ticks feeding on any other host species. In turn, mice habitat is typically small forest patches (2 ha), where studies have shown a higher density of infected nymphal blacklegged ticks, which is the primary risk factor for Lyme disease, than larger patches (2–8 ha).

Studies found a significant linear decline in nymphal infection prevalence with increasing patch area and a significant exponential decline in nymphal density with increasing patch area. The consequence was a dramatic increase in the density of infected nymphs, and therefore in Lyme disease risk, with decreasing forest patch size. These results suggest that by influencing the community composition of vertebrate hosts for disease-bearing vectors, habitat fragmentation can influence human health.[36] Put another way, the more the Project has the tendancy to increase fragmentation of contiguous forestland, the more likely the Project will contribute to increases in Lyme Disease transmission. A study of fragmentation and any addition of "edge" areas should be undertaken by FERC.

F. Socioeconomics

Lancaster County's farmland and the industry it supports provide more than 51,000 jobs and contribute more than $4 billion to our local economy each year. Dairy farming is the area's leading agricultural business, but the local agriculture industry is an excellent example of a well diversified farm economy that is not dependent on any one area for its success. Poultry, swine, beef, crop and vegetable production all contribute to the area's economic strength.

Lancaster County's nearly 6,000 farms provide fresh, local food for local residents and people across the state and the United States; they also protect watersheds; recharge groundwater, help control flooding, improve air quality, and provide food and cover for wildlife. The average Lancaster County farm is about 78 acres, and the county ranks fourth in the country in the number of farms. *See* Chart below.

[36] Effect of Forest Fragmentation on Lyme's Disease Risk, Allan, Brian F., Conservation Biology, Vol. 17, No. 1, February 2003, pp. 267-272; *see also* Combating Lyme Disease in Pennsylvania, The Pennsylvania State University, April 25, 2012, at pp. 13-14.

	Lancaster	Total Pennsylvania
Number of farms	5,462	63,200
Average farm size	78 acres	123 acres
Total acres of farmland	425,336	7.7 million
Percent of land in farmland	68%	27%
Value of farmland per acre	$7,955	$3,100
Cash receipts of crops	$150 million	$1.87 billion
Cash receipts of livestock	$925 million	$4.018 billion
Total cash receipts	$1.07 billion	$5.88 billion

Lancaster County's Value to Pennsylvania Agriculture.[37]

Thanks to the saving of many farms, Lancaster County has one of the strongest economies in the state and is number one in the nation of production from non-irrigated land. Agriculture, business-industry, and tourism are the three major factors in the local economy. Every year Lancaster brings in more than $4 billion from food grown on its farms. One out of every five civilians has a job in the agribusiness industry. Lancaster County brings in $1.7 billion a year thanks to the 7 million tourists visiting the area mainly for the farmland and culture.

Placing a new pipeline and related infrastructure in rural counties like Lancaster and others in the Susquehanna River Watershed will negatively affect the three socioeconomic streams of income discussed above and, in turn, FERC must identify these and like impacts in its EIS for the Project.

Furthermore, as regards the potential eminent domain actions of privately or conservation held lands, we strongly oppose such actions. To begin, according to Transco's prefiling and other information available, a portion of gas proposed for transport through the Project will end up at the proposed Liquefied Natural Gas export facility at Lusby, MD. The negative socioeconomic impacts of shale gas development and related infrastructure on small rural communities must be identified and assessed by FERC. Likewise, FERC must identify and assess the merits of whether, per se, eminent domain actions over private land are appropriate when the actual purpose of such action will support corporate profits made on overseas sales of domestic gas. We believe that the traditional basis for eminent domain is inapplicable to pipelines dedicated to

[37] Available online at: http://www.lcci.com/ag/farmfacts.asp

export of domestic natural gas. FERC should identify and assess these socioeconomic consequences as part of its EIS.

G. Cultural Resources

i. Tribal History

The Lower Susquehanna Valley has been populated by Native Americans for thousands of years. This is the ancestral home of the Shenk's Ferry People, Susquehannock, Lenni Lenape, Seneca, Shawnee, and the Conestoga (a mix of Susquehannock and Seneca People). Dotted throughout the southern end of the proposed pipeline route are likely hundreds to thousands of sites where they lived, and where they are buried. Any attempt to bisect these lands must include an incredibly thorough survey of the path of the pipeline, and of the rights of way used during construction. Specifically, significant areas can be found between Washington Boro and Millersville. These were major areas of population, occupied by the Native Americans during the European colonization of this region.

ii. South Central Pennsylvania's Unique Agronomics & Rural Character

Among all counties in South Central Pennsylvania, the Project potentially threatens Lancaster County with negative impacts the most. Lancaster County, Pennsylvania has been called the Garden Spot of America and, while it has grown fast in many respects, it retains a unique culture and economic basis as a rural oasis in a sprawling desert of modern cities and subburbs. Its agricultural productivity is highest of any nonirrigated county in the nation, and the county's second largest source of income is the tourists who arrive by millions each summer to see its rural landscape.

The Old Order Amish, who still farm the land their ancestors settled, have helped make Lancaster Countu a twenty-first century icon of what rural America was and still is. Rural pride and agrarian ideals have melded with symobolic representations of Lancaster as the home of all that was right and good about traditional rural America.

The previous imposition of natural gas facilities along the Susquehanna River in decades past marred some of this region's landscapes but, conspicuously, most of those pipelines and infrastructure were located on the York County side of the Susquehanna. Now, the Project promises to place new infrastructure in the heart of Lancaster County. The presence of any industrial operations, particularly those of pipelines and natural gas related development, is repugnant to this region's unique, rural character.

H. Reliability & Safety

With the rapid expansion of the unconventional shale gas development industry, there has also been a proliferation of natural gas transmission line construction and expansion projects that cross the Susquehanna River Watershed. Whether considered individually or cumulatively, these pipeline projects demonstrably have had substantial effects and will continue to have substantial effects to the water resources of the Watershed, and the frequency and intensity of adverse impacts, particularly potential safety hazards, will increase as the number of pipeline projects

increases.

I. Cumulative environmental impacts

As FERC has recognized, the construction and operation of the Project demands an EIS because aspects of the project will have significant effects on the human environment. Unquestionably, construction and operation of the proposed Project will have effects; however, stopping the inquiry there would not suffice as a hard look at other related and reasonably foreseeable actions that would arise as a result of FERC's potential, future authorization. Insofar as one purpose of the Project is to help develop capacity for future, upstream gas development and downstream transport to markets, FERC must consider the pipeline's growth inducing impact as a cumulative impact of authorizing the Project.

FERC must specifically take into account the growth-inducing nature of the Project's cumulative impacts. A cumulative impact analysis "must be more than perfunctory; it must provide 'a useful analysis of the cumulative impacts of past, present, and future projects.'"[38] "To be useful to decision makers and the public, the cumulative impact analysis must include "some quantified or detailed information; … general statements about possible effects and some risk do not constitute a hard look absent justification regarding why more definitive information could not be provided.""[39] The need to assess relevant, project-specific effects over the entire period of a proposed project is key to a cumulative impacts analysis.[40] As the EPA also has noted, "reasonably foreseeable future actions need to be considered even if they are not specific proposals."[41]

Infrastructure projects, like the instant Project, that enable resource extraction activities to expand upstream naturally must be fully analyzed in the NEPA framework. In *Northern Plains Resource Council v. Surface Transportation Board*, - F.3d -, 2011 WL 6826409, the Court considered a railway line which was developed in order to expand coal production at several mines.[42] It held that the Surface Transportation Board's NEPA analysis for the line was illegal because the Board had refused to consider the mines' impacts. The Court held that such impacts were plainly "reasonably foreseeable" – and, indeed, were the premise for the construction project in the first place. *Id.* They therefore had to be considered in the NEPA analysis. This same rule of law is applicable to the Project here.

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[38] *Kern v. U.S. Bureau of Land Mgmt.,* 284 F.3d 1062, 1075 (9th Cir.2002) (quoting *Muckleshoot Indian tribe v. U.S. Forest Serv.,* 177 F.3d 800, 810 (9th Cir.1999)).

[39] *Northern Plains Resource Council v. Surface Transp. Bd.*, 2011 WL 6826409, 6, --- F.3d ---- (9th Cir.2011), (quoting *Ocean Advocates v. U.S. Army Corps of Eng'rs,* 402 F.3d 846, 868 (9th Cir.2005) (quoting *Neighbors of Cuddy Mountain v. U.S. Forest Serv.,* 137 F.3d 1372, 1379–80 (9th Cir.1998)).

[40] *See* Council on Envtl. Quality, *Considering Cumulative Effects Under the National Environmental Policy Act,* Office of NEPA Policy and Compliance, 16 (Jan.1997), available online at: http://energy.gov/nepa/downloads/considering-cumulative-effects-under-national-environmental-policy-act ("The time frame of the *project-specific* analysis should also be evaluated to determine its applicability to the cumulative effects analysis.") (emphasis added).

[41] EPA, *Consideration of Cumulative Impact Analysis in EPA Review of NEPA Documents,* Office of Federal Activities,12–13(May1999),availableonlineat: http://www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf

[42] *Northern Plains Resource Council v. Surface Transportation Board,* at *10.

III. Conclusion

For all these reasons the undersigned urge FERC to fully document all these and other related issues and perform the studies necessary to obtain the best information possible before making any decision as to the appropriateness of this project. We hope that, ultimately, FERC finds that the Project is not in the public interest and will deny the Project's application. Alternatively, should FERC decide to authorize the Project, we strongly urge FERC to require stringent, best available science in terms of best management practices outlined herein and in contemporary scientific literature in order to minimize to the maximum extent practicable the Project's impacts.

Respectfully submitted,

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