



October 9, 2012

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

**Re: Constitution Pipeline Company, LLC, Docket No. PF12-9-000
Constitution Pipeline Project
Response to Notice of Intent to Prepare an Environmental Impact Statement for the
Planned Constitution Pipeline Project, Request for Comments on Environmental
Issues, and Notice of Public Scoping Meetings**

Dear Ms. Bose:

On behalf of the Delaware Riverkeeper Network ("DRN"), we submit the following comments on the scope of the Environmental Impact Statement ("EIS") to be prepared by the Federal Energy Regulatory Commission ("FERC") with respect to the Constitution Pipeline Project (the "Project") proposed by Constitution Pipeline Company ("Constitution").

This Project, and others like it, fit into a larger picture of exploding shale gas development in the Marcellus Shale region. Currently, there are at least twelve separate large scale transmission pipeline projects that either currently traverse the Delaware River Basin or are planned to cross the Delaware River Basin. These projects include:

- TGP 300 Line Upgrade Project (CP09-444)
- Columbia 1278k Replacement (CP10-492)
- ESNG Eastern Shore Expansion (C11-333)
- ESNG New Castle Project (CP11-303)
- DTE Bluestone Pipeline (Map Attached)
- TGP Northeast Upgrade Project (CP11-161)
- ESNG Greenspring Project (CP12-461)
- Transco Northeast Supply Link (CP12-30)
- Transco Philadelphia Lateral (CP11-508)
- Transco Mainline "A" Replacement (CP12-497)
- **Constitution Pipeline (PF12-9)**
- Texas Eastern Appalachia to Market Expansion 2014 (TEAM 2014) Project (not in pre-filing yet)

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- Transco Leidy Southeast Expansion (Not in Prefiling yet)
- Sonoco Mariner East Project (Not in Prefiling yet)
- Commonwealth Pipeline (Not in Prefiling yet)
- Transco Northeast Connector (Not in Prefiling yet)
- NiSource East Side Expansion Project (Not in Prefiling yet)

Records maintained by the Pennsylvania Department of Environmental Protection show that drilling of wells in the Marcellus Shale increased by nearly 400 percent between 2008 and 2009, from 195 wells to 768 wells.¹ The increased development is not limited to the drilling of wells. FERC has reported that 5.6 billion cubic feet per day of pipeline capacity was constructed in the Northeast in 2008 and 2009, and an additional 1.2 billion cubic feet per day will have been constructed in the region by January 2011.² According to FERC, “[m]uch of the new pipeline capacity in the area is targeted at improving the access of shale gas to markets.”³ Thus, the proposed Project is both a product of the development of the Marcellus Shale and a likely catalyst for further gas development. The impacts of the Project cannot be understood apart from the totality of the past, present, and reasonably foreseeable future actions associated with Marcellus Shale development.

These comments begin by identifying crucial matters not listed in the Notice of Intent to Prepare an Environmental Assessment (the “Notice of Intent”) that FERC must assess.⁴ The comments then address some of the issues that FERC must consider within the ten categories of potential impacts listed in the Notice of Intent. Lastly, the comments call FERC’s attention to recent and ongoing action by the Delaware River Basin Commission (“DRBC”) regarding that agency’s authority in regulating natural gas pipeline construction projects. Additionally, provided as Exhibit 1, are DRN’s comments on FERC’s Plans and Procedures (FERC Docket No. AD12-2-000), which DRN encourages FERC to adopt, and apply, to any construction activities for the current Project.

I. FERC Must Assess Crucial Matters Not Included in the Notice of Intent.

NEPA⁵ and its implementing regulations⁶ require agencies to consider a full range of environmental impacts, including “ecological (such as the effects on natural resources and on the

¹ See Bureau of Oil & Gas Mgmt., Pa. Dep’t of Env’tl. Prot., *Wells Drilled in 2008* (Dec. 31, 2008),

<http://www.dep.state.pa.us/dep/deputate/minres/oilgas/BOGM%20Website%20Pictures/2008/2008%20Wells%20Drilled.jpg>; Bureau of Oil & Gas Mgmt., Pa. Dep’t of Env’tl. Prot., *Wells Drilled in 2009* (Jan. 25, 2010),

<http://www.dep.state.pa.us/dep/deputate/minres/oilgas/BOGM%20Website%20Pictures/2009/2009%20%20Wells%20Drilled.jpg>.

² Fed. Energy Regulatory Comm’n, *Winter 2010-11 Energy Market Assessment* 10 (Oct. 21, 2010), <http://www.ferc.gov/market-oversight/mkt-views/2010/10-21-10.pdf>.

³ *Id.*

⁴ Fed. Energy Regulatory Comm’n, Docket No. PF12-9-000, Notice of Intent to Prepare an Environmental Impact Statement for the Planned Constitution Pipeline Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings (Sept. 7, 2012) [hereinafter “Notice of Intent”].

⁵ 42 U.S.C. §§ 4321-4370f (2006).

⁶ 40 C.F.R. §§ 1500-08 (2010).

components, structures, and functioning of affected ecosystems), aesthetic, historic, [and] cultural” impacts, “whether direct, indirect, or cumulative.”⁷ The Notice of Intent fails to address several important issues that FERC must assess as part of the NEPA review process.

A. Climate Change and Greenhouse Gases

Carbon sequestration in forest cover is a critical mechanism in combating climate change. Forests serve as carbon sinks, removing excess carbon dioxide from the atmosphere and storing the compound over several decades. Constitution proposes to clear-cut a stretch of 80 miles of forest, decreasing the ecosystem’s ability to provide carbon sequestration benefits. This impact must be addressed in the EIS.

The construction of the Project will require a large amount of fossil fuel to power construction equipment. The EIS must explore what impact construction vehicle emissions will have on the climate.

Further, FERC should consider the cumulative impacts of the Project’s direct and indirect greenhouse gas (“GHG”) emissions. Direct emissions may include but are not limited to carbon dioxide (“CO₂”) and nitrous oxide (“N₂O”) emissions from compressor engines, line heaters, and generators; fugitive methane emissions from compressors and pipelines;⁸ and black carbon emissions from diesel vehicles and equipment. Notably, methane is 56 times and N₂O is 280 times more warming than CO₂ over a twenty-year period,⁹ while black carbon is estimated to be 2,200 times more warming than CO₂ over the same period.¹⁰ A recent study published in the peer-reviewed journal *Climatic Change Letters*, estimates that somewhere from 3.6 – 7.9 percent of methane is making its way into the atmosphere during the production life cycle of shale gas extraction.¹¹ Such estimates indicate GHG emissions from the process of shale gas extraction via hydraulic fracturing approximate, and I not exceed, the GHG emissions from coal.

Indirect emissions, “which are caused by the [proposed] action and are later in time or farther removed in distance, but are still reasonably foreseeable,”¹² are among the effects that agencies are required to consider under NEPA.¹³ The Council on Environmental Quality

⁷ 40 C.F.R. § 1508.8 (2010).

⁸ “The U.S. natural gas transmission network contains more than 279,000 pipeline miles. Along this network, compressor stations are one of the largest sources of fugitive emissions, producing an estimated 50.7 billion cubic feet (Bcf) of methane emissions annually from leaking compressors and other equipment components such as valves, flanges, connections, and open-ended lines.” Env’tl. Prot. Agency, *Lessons Learned from Natural Gas STAR Partners 1* (Oct. 2003), available at http://www.epa.gov/gasstar/documents/ll_dimcompstat.pdf.

⁹ See United Nations Framework Convention on Climate Change, *Global Warming Potentials* http://unfccc.int/ghg_data/items/3825.php (last visited Nov. 10, 2010).

¹⁰ See L. Bruce Hill, Clean Air Task Force, *The Carbon Dioxide-Equivalent Benefits of Reducing Black Carbon Emissions from U.S. Class 8 Trucks Using Diesel Particulate Filters: A Preliminary Analysis 3* (2009), available at <http://www.catf.us/resources/publications/files/CATF-BC-DPF-Climate.pdf>.

¹¹ Robert Howarth et al., *Methane and the greenhouse-gas footprint of natural gas from shale formations*, CLIMATIC CHANGE, (November 12 2010).

¹² 40 C.F.R. § 1508.8(b) (2010).

¹³ See *id.* § 1508.25(c).

(“CEQ”) Draft Guidance has noted that “for Federal actions that require an EA or EIS *the direct and indirect GHG emissions from the action should be considered in scoping,*” and these GHG impacts should be considered in the context of the “aggregate effects of past, present, and reasonably foreseeable future actions.”¹⁴ One indirect effect of the Project’s transportation of natural gas from the Marcellus Shale region is that this gas will be combusted for use, releasing greenhouse gases that cause climate change. This effect is reasonably foreseeable. Where CEQ has called for NEPA analyses of GHG sources to “take account of all phases and elements of the proposed action over its expected life,”¹⁵ such downstream effects of a gas pipeline should be assessed. Moreover, cumulative impact analysis requires that these GHG emissions be considered in the context of GHGs emitted from the aggregate of natural gas that has been and foreseeably will be extracted from the Marcellus Shale region.

B. Energy

Energy impacts must also be examined in the NEPA document. Aspects of the Project that should be studied for their energy impacts include: all energy-consuming equipment and processes that will be used during the construction and operation of the Project; the energy efficiency of required materials, fuels, and equipment; the number of maintenance trips necessary for maintaining the ROW; the mode of transportation and use of fuel for these activities; and an estimate of the total energy requirements for each proposed alternative.

The NEPA documents should also examine the impacts of increased energy consumption that will result from upgrading the natural gas pipeline. Part of this analysis should discuss how bringing more energy into New York will affect future energy conservation efforts.

Energy consumption impacts should be calculated for the lifetime of the proposed Project and Project alternatives and should be an aspect of the irreversible commitment of resources section of the NEPA document.

C. Infrastructure, Access, and Circulation

FERC must examine the potential degradation of roadways due to utilization by construction vehicles. The heavy construction machinery and high traffic volumes associated with Project construction activities could ruin roads, leaving taxpayers to pay for repairs. FERC should consider this eventual tax burden as it weighs alternatives during the NEPA process.

FERC must also address localized impacts along access roads arising from the removal of vegetation, which will in turn lead to loss of forest connectivity, increased edge effects on the core forest, and increased erosion. The heavy construction equipment utilizing these roads will compact the soil, leading to a degradation of groundwater recharge capabilities. Access roads constructed or modified to enter gas exploration or extraction facilities contribute significantly to

¹⁴ Council on Env'tl. Quality, Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions 5, 9-10 (Feb. 18, 2010) (emphasis added), *available at* http://ceq.hss.doe.gov/nepa/regs/Consideration_of_Effects_of_GHG_Draft_NEPA_Guidance_FI_NAL_02182010.pdf (notice of availability published at 75 Fed. Reg. 8,046 (Feb. 23, 2010)).

¹⁵ *Id.* at 5.

sedimentation and surface water quality degradation.¹⁶ Finally, the installation of fill materials along these roads will also import invasive species to the ROW. The NEPA document must examine these long-term effects.

D. Environmental Justice

The large land area impacted by the Project raises substantive environmental justice issues. The Commission is obligated to address these issues in accordance with Executive Order 12,898 (“Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”).¹⁷ Many of those in communities living in the area impacted by the Project particularly rely on the conservation of the natural environment. The disproportionate impact on these communities must be included in the scope of FERC's environmental review.

E. Land Pricing

FERC must require the applicant to consider alternative routes that do not impact public open space. Utilities routinely propose pipeline routes that impact public open space because these lands are valued at a lower rate when compared to non-preserved lands.¹⁸ FERC must not permit this “savings” to the applicant to drive the siting process. Public and preserved lands must be priced according to their value to the utility.

We urge FERC to be mindful of the distorted pricing of open space as it evaluates alternative routes for this Project and as it considers the cumulative environmental harms of the proposed pipeline expansion. We suggest that FERC's historical approach to evaluating cumulative impacts gives inadequate consideration to the distorted incentives of utility companies.¹⁹

II. FERC Must Thoroughly Assess All of the Potential Impacts Identified in the Notice of Intent

¹⁶ See C.J. Randall, Hammer Down: A Guide to Protecting Local Roads Impacted by the Marcellus Shale (Dec. 2010), available at

¹⁷ Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 11, 1994).

¹⁸ See *Portland Natural Gas Transmission Sys. v. 19.2 Acres of Land*, 195 F. Supp. 2d 314, 323-4 (D. Mass. 2002) (valuing “industrial park” parcels at \$50,000/acre and \$30,000/acre; valuing “open space” parcels at \$983/acre); Letter from John J. Donahue, Superintendent, Delaware Water Gap National Recreation Area, Nat’l Park Serv., U.S. Dep’t of the Interior, to David Hanobic, Fed. Energy Regulatory Comm’n 2 (Oct. 8, 2010) (hereinafter “Nat’l Park Serv. Comment”) (“[u]tility companies normally assert the least environmental impacts result from utilizing utility corridors located in this national park unit. This is flawed logic and can adversely affect the natural and cultural resources in [the DWGNRA] as well as the mission of the [NPS].”).

¹⁹ See Order Issuing Certificate and Approving Abandonment, 131 F.E.R.C. ¶ 61,140, at ¶ 84, 2010 WL 2007482, at *20 (May 14, 2010) (finding no “significant cumulative impact” on “special water resources in Pike County” from the concurrent development of the 300 Line Project, the Susquehanna-Roseland Electric Transmission Line project, the Columbia Gas Pipeline (Line 1278/Line K Replacement) Project, and Marcellus Shale Development Activities).

The Notice of Intent identified ten categories of impacts that could occur as a result of the construction and operation of the Project:

- geology and soils;
- land use;
- water resources, fisheries, and wetlands;
- vegetation and wildlife,
- endangered and threatened species;
- cultural resources;
- air quality and noise;
- socioeconomics;
- cumulative impacts; and
- public safety.

The following comments identify particular issues of concern within six of the ten categories listed in the Notice of Intent. Given the dramatic growth of natural gas development in the Marcellus Shale, and the significant environmental degradation resulting from that development, the comments begin with FERC's obligations to consider the cumulative impacts of this Project.

A. Cumulative Impacts and Land Use

i. Cumulative Impacts

Cumulative impacts are:

impact[s] on the environment which result[] 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.²⁰

CEQ has emphasized that cumulative effects analysis includes a “[f]ocus on truly meaningful effects” of “past, present, and future actions” as well as “all federal, nonfederal, and private actions.”²¹

CEQ has made clear that “[t]he statutory clause ‘major Federal actions significantly affecting the quality of the human environment’ is to be construed by agencies with a view to the overall, cumulative impact of the action proposed (and of further actions contemplated).”²² Whether a project “significantly” affects the quality of the human environment²³ depends on

²⁰ 40 C.F.R. § 1508.7 (2010) (emphasis added).

²¹ Council on Env'tl. Quality, Considering Cumulative Effects Under the National Environmental Policy Act 11 (1997), *available at* <http://ceq.hss.doe.gov/nepa/ccenepa/sec2.pdf>.

²² Statements on Proposed Federal Actions Affecting the Environment, 35 Fed. Reg. 7,390, 7,391 (May 12, 1970).

²³ 42 U.S.C. § 4332 (C) (2006).

“considerations of both context and intensity.”²⁴ Intensity refers to “the severity of impact” and requires consideration of factors including “[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts.”²⁵ “Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.”²⁶

The requirement to consider cumulative impacts applies to EISs.²⁷ Cumulative impacts caused by “reasonably foreseeable” future actions are cognizable under NEPA.²⁸ Moreover, FERC must consider the cumulative effects of actions similar to the proposed action, whether existing or reasonably foreseeable.²⁹

In one particularly instructive case in the Northeast region, the Postal Service proposed construction of a facility that would require the paving of six acres of undeveloped land adjacent to an existing airport and highway.³⁰ The court found the agency’s Finding of No Significant Impact in its Environmental Assessment (“EA”) arbitrary and capricious, noting that the EA’s consideration of the proposed facility’s cumulative impact on water quality only addressed “the

²⁴ 40 C.F.R. § 1508.27 (2010).

²⁵ 40 C.F.R. § 1508.27(b)(7) (2010).

²⁶ *Id.*

²⁷ *See Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1076 (9th Cir. 2002).

²⁸ *See* 40 C.F.R. § 1508.7 (2010); *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1214-15 (9th Cir. 1998).

²⁹ *See, e.g., Nat’l Audubon Soc’y v. Dep’t of Navy*, 422 F.3d 174, 196-97 (4th Cir. 2005) (stating that cumulative impact analysis of a proposed outlying landing field for Navy aircraft should have considered whether flights from and between the aircraft homebase station and the field would “add any significant noise-related or other environmental impacts to those that the *existing* military airspace currently imposes” and whether the proposed field would have cumulative effects in light of the reasonably foreseeable designation of additional military operating areas, even in non-adjacent areas) (emphasis added); *Lands Council v. Powell*, 395 F.3d 1019, 1027 (9th Cir. 2005) (finding environmental impact analysis of timber harvesting activity inadequate where the agency did not consider “in detail past timber harvesting projects and the impact of those projects,” in combination with the proposed timber harvest, on the environment); *Grand Canyon Trust v. Fed. Aviation Admin.*, 290 F.3d 339, 347 (D.C. Cir. 2002) (noting that the EA for the proposed construction of a replacement airport “must evaluate the cumulative impact of noise pollution [on a nearby national park] as a result of construction of the proposed replacement airport *in light of air traffic near and over the Park, from whatever airport, air tours near or in the Park*”) (emphasis added); *Natural Res. Def. Council v. Hodel*, 865 F.2d 288, 298 (D.C. Cir. 1988) (determining that cumulative impact assessment of an Outer Continental Shelf (“OCS”) oil and gas leasing activity must consider the cumulative impacts of “simultaneous OCS development in different areas”); *Mountaineers v. U.S. Forest Serv.*, 445 F. Supp. 2d 1235, 1247-48 (W.D. Wash. 2006) (concluding that cumulative impact analysis that only accounts for the incremental environmental effect of a proposed trail project on current trail use and only in a narrowly defined area is inadequate and must instead address “the overall level of environmental impact caused by the [entire] trail system”).

³⁰ *See U.S. v. 27.09 Acres of Land*, 760 F. Supp. 345, 347 (S.D.N.Y. 1991).

interaction of expected runoff from the site with present levels of runoff from the nearby highway and airport.³¹ The court commented:

This inquiry included no consideration of possible future development of those facilities or of other nearby land. While such an omission may be excusable where future development is unlikely or difficult to anticipate, in the present case there currently exist plans to expand the airport dramatically, and movants have identified substantial additional development in progress or being planned in the vicinity. The impact of this array of near-certain future development will in fact be felt in combination with the effects of the facility's construction and operation and accordingly must be analyzed.

The failure of the EA to consider the facility's cumulative impact in conjunction with nearby anticipated development is a matter of particular concern in light of the regulations' clear statement that agencies should account for the impact of "reasonably foreseeable future actions."³²

The Court further found the EA lacking because it "framed its cumulative impact analysis too narrowly by considering only the facility's two immediate neighbors," the airport and highway.³³ "[A] critical consideration in determining the facility's cumulative environmental effects must be the interaction of its runoff with other pollutants . . . from whatever source."³⁴ In short, the determination that must be made – whether a proposed project will have "significant" impacts – necessarily includes a consideration of the impact of the action when added to other past, present, and reasonably foreseeable future actions, whether federal, non-federal, or private.³⁵

FERC is required to consider the impacts of the Project in the context of existing and reasonably foreseeable Marcellus Shale development, which includes but is not limited to the hundreds of miles of gathering and transportation pipelines that have been and will need to be constructed to move the gas from the thousands of wells that have been and will be drilled to interstate markets.

Courts have regularly held that induced development related to large-scale development projects has properly been considered cumulative actions under NEPA. For example, a court held that NEPA required the Corps to analyze both the significant upland development adjacent to several shoreline casinos, and the secondary development that may result from the casinos. *Friends of the Earth v. United States Army Corps of Eng'rs*, 109 F. Supp. 2d 30, 43 (D.D.C. 2000); *see also City of Davis v. Coleman*, 521 F.2d 661 (9th Cir. 1975) (requiring agency to prepare an EIS on effects of proposed freeway interchange on a major interstate highway in an agricultural area and to include a full analysis of both the environmental effects of the exchange itself and of the development potential that it would create.); *Mullin v. Skinner*, 756 F. Supp. 904, 925 (E.D.N.C. 1990) (agency enjoined from proceeding with bridge project which induced growth in island community until it prepared an adequate EIS identifying and discussing in detail the direct, indirect, and cumulative impacts of and alternatives to the proposed Project); *Grand Canyon Trust v. Fed. Aviation Admin.*, 290 F.3d 339, 347 (D.C. Cir. 2002) (the cumulative

³¹ *Id.* at 351.

³² *Id.* (citing 40 C.F.R. §§ 1508.6, 1508.27(b)(7)).

³³ *Id.*

³⁴ *Id.* at 351-52.

³⁵ *See* 40 C.F.R. §§ 1508.7-8, 1508.27 (2010).

impact analysis for the proposed construction of an airport was required to evaluate the cumulative impact of noise pollution on a nearby park as a result of the proposed action, “in light of air traffic near and over the Park, from whatever airport, and air tours near or in the Park.”).

The scope of a cumulative impact analysis is not even categorically delimited by a requirement of causality. The language of the NEPA regulations indicates that cumulative impacts include impacts of “past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7. The impacts of these “other actions” considered in the cumulative impact analysis need not be directly initiated by the project. *See also Nat. Res. Def. Council. v. Hodel*, 865 F.2d 288, 298 (D.C. Cir. 1988) (determining that the cumulative impact assessment of an Outer Continental Shelf (“OCS”) oil and gas leasing activity must consider the cumulative impacts of “simultaneous OCS development in different areas” without requiring that such other OCS development be *caused* by the proposed leasing activity).

Here, the fact that some natural gas development may or may not occur with or without the Project’s construction is ultimately irrelevant. What controls here is that there will be significant development around the Project. *U.S. v. 27.09 Acres of Land*, 760 F. Supp. 345, 351–52 (S.D.N.Y. 1991) (finding a FONSI unsupported where the cumulative impact analysis for construction of a Postal Service facility failed to consider the impacts of future nearby development without requiring that such other development be *caused* by construction of the proposed facility).

In the cumulative impacts analysis, FERC staff must not abdicate its NEPA responsibilities by categorically deferring to standards administered by other agencies, without independently assessing anticipated impacts. *See, e.g., Calvert Cliffs’ Coordinating Comm. v. U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1123 (D.C. Cir. 1971) (holding that lead agency’s deferral to standards of other agencies neglected NEPA’s “mandated balancing analysis”). There are no cases “indicating that exclusion of consideration of an issue under the AEA requires exclusion of the same issue from consideration under NEPA.” *Limerick Ecology Action, Inc. v. U.S. Nuclear Regulatory Comm’n*, 869 F.2d 719, 729 (3d Cir. 1989). To the extent that the EIS addresses impacts related to gas development, it must independently assess the impacts from such activities and not simply point to compliance with other agencies’ permitting requirements as a basis for concluding that no significant cumulative impacts exist. Such blind acceptance of presumed compliance with standards implemented by another agency as a basis for a FONSI does not suffice as a hard look under NEPA. *See Calvert Cliffs’*, 449 F.2d at 1122. Permitting requirements “essentially establish a *minimum condition*” for approval of a project, *id.* at 1125 (emphasis in original), and do not necessarily indicate whether a project’s impacts will be significant as understood in the NEPA context.

The foreseeable related activities include the impacts of gas exploration and production and the construction and operation of well pads, access roads, gathering lines, compressor stations, and other infrastructure. The Commission staff must not merely acknowledge “general development of the Marcellus Shale” upstream activities, but instead address existing wells and gathering systems.

That the scope of a cumulative impact analysis is not bound by a causation requirement notwithstanding, there is a clear and linear causal link between interstate natural gas transmission line construction and upstream natural gas development. Ultimately, the development of

upstream activities in the Marcellus region may only proceed if the Commission continues to expand access to markets through the interstate pipeline system. All potential interstate transmission lines must first be approved by the Commission before construction may begin. Thus, the Commission is, in effect, a gatekeeper, able to promote, prevent, or otherwise affect such activities. “[W]hen an agency serves effectively as a ‘gatekeeper’ for private action, that agency can no longer be said to have ‘no ability to prevent a certain effect [under the *Public Citizen* rule].” *Humane Soc. of U.S. v. Johanns*, 520 F. Supp. 2d 8, 25 (D.D.C. 2007).

Here, there can be no doubt whatsoever that the construction of an interstate natural gas transmission line in order to enable natural gas drillers to get their product to market is causally related to the development of shale gas resources in the Project area because of the Commission’s role as gatekeeper. Indeed, a better example of a federal agency’s serving as gatekeeper could hardly be imagined. Unlike a hypothetical producer of widgets, which has many options to transport its goods to markets across state lines via road, train, and/or air freight, natural gas producers are entirely constrained by the nature of the product they produce and sell and are wholly reliant on FERC-approved interstate natural gas transmission lines to sell their goods in interstate commerce. But for the construction of an interstate pipeline – whose approval is entirely controlled by the Commission – natural gas producers would simply be unable to access markets across state lines without access to interstate transmission lines.

Thus, Marcellus Shale development activities, particularly those in and around the pipeline’s service area, are reasonably foreseeable consequences of the Project, and their effects must therefore be considered in the Commission’s cumulative impacts analysis. The cumulative impact analysis must encompass consideration of actions that cause an effect within “all, or part, of the time span” of the proposed Project’s effects. The effects of Marcellus development will have effects within “all, or part, of the time span” of the Project’s effects, and Marcellus development should therefore be included in the cumulative impacts analysis.

Nor can the Commission evade its responsibilities to engage in a meaningful cumulative impacts analysis in the EIS by arguing that it is impossible to determine where within the Project’s service area shale gas development will occur. Publicly available maps of permitted gas wells in Pennsylvania show the locations of wells already drilled in the Pennsylvania counties to be crossed by the Project as well as the locations of newly-permitted well sites. The Commission quite simply cannot argue that the location, scale, and timing of wells impacting the Project area are “unknown” when numerous wells are already permitted and relevant data on them is widely available on-line.

FERC must examine the cumulative impact of the multiple utility and other linear projects that are being proposed or constructed in the area. These projects do not occur in a vacuum. As one by one they steadily deplete the natural and scenic resources of the region, the combined impact becomes potentially devastating. If utility infrastructure proposals continue to move forward at this pace, the environmental impacts will be ruinous.

ii. Land Use

Any NEPA analysis by FERC must recognize and address the role that state regulations play in the Project. The Land and Water Conservation Fund Act of 1965 created a fund “for and authorizing Federal assistance to the States in planning, acquisition, and development of needed land and water areas and facilities and ... for the Federal acquisition and development of certain

lands and other areas.”³⁶ These lands must be “continually maintained in public recreation use unless NPS approves substitution property of reasonably equivalent usefulness and location and of at least equal fair market value.”³⁷ The NEPA document must address whether the Project will impact any lands receiving assistance from the Land and Water Conservation Fund. If the Project will convert such lands “in whole or in part to other than public recreation uses[.]” an application must be submitted to the National Park Service and “[a]ll practical alternatives to the proposed conversion [must] be[] evaluated.”³⁸

B. Geology and Soils

This section must include a full examination of the geological formations that will be impacted by construction activities, such as groundwater aquifers and water table depth, sinkholes, and springs. FERC must disclose how this Project will avoid all negative impacts to these features.

The digging of trenches for the Project will involve excavating tons of soil and requires that soil surveys be conducted in relation to the Project. Construction and re-establishment of vegetation along the ROW provides an opportunity for run-off and the loss of productive soil. Construction activities will change the drainage patterns along the ROW and necessitate detailed studies of impacts to water resources. Expansion of the ROW has the potential to affect the physical properties of the soil along and adjacent to the ROW by clearing land cover, thus changing the sunlight exposure and moisture content of the soil. Reduction in soil moisture increases the risk of wind erosion. ROW expansion will also require increased use of herbicides in federally protected lands and state and county parklands for ROW maintenance, which will chemically alter soil composition. Spillage of fuel oil and the creation of trench breakers during construction activities may also result in the chemical alteration of soil.

Construction activities will also necessitate the removal and disposal of material. The NEPA document must address where the removal will be conducted and where the material will be disposed, whether digging to install the pipeline is likely to intercept the water table, and what effects the resultant pumping will have.

C. Water Resources, Fisheries, and Wetlands

i. Water Resources

Expanding infrastructure for corporate profit while endangering the water supply for state residents is not a wise policy nor is it required by public convenience and necessity. Locating the Project on these lands is especially alarming as the pipelines and gravel surrounding them create new conduits for water, altering the hydrologic pattern of the watershed lands. Water will run parallel with the new pipeline instead of recharging aquifers and river ecosystems, degrading the quality and quantity of water.

We also have concerns about the chemical contamination of water resources. Any expansion of the ROW will require that the applicant provide maintenance to a larger area.

³⁶ Land and Water Conservation Fund Act of 1965 Pub. L. No. 88-578, 78 Stat. 897 (1965).

³⁷ 36 C.F.R. § 59.3 (2010).

³⁸ *Id.*

Current practices call for the ROW to be clear of vegetative matter to prevent damage to the gas pipeline. Herbicides are used to accomplish this. For Alternative K, widening the ROW will result in increased herbicide use on the federal, state, and county parklands along the ROW and, as run-off capacity will be intensified in the ROW due to lack of vegetation and forest cover, the herbicides may travel downstream to the Upper Delaware Watershed and the Delaware River (a major source of drinking water for New York, New Jersey, and Pennsylvania).

Beyond chemical contamination, water quality effects will also result from an increase in suspended solids in the water due to erosion. Upon entering the stream ecosystem, this increase in suspended solids will result in a reduction to the streams' water bearing capacity, in turn reducing oxygen availability and impacting aquatic plant and animal species, especially habitat for fish reproduction and macroinvertebrate diversity.

Impacts to groundwater have not been examined and, as the installation of the Project will involve drilling and digging into the bedrock, potential effects must be considered. If these activities result in interception of the water table, dewatering activities would result in the localized drawdowns of water table elevation and could impact local wells. These construction activities may also result in contamination of groundwater by creating a direct flow of contaminants, including herbicides, into local aquifers due to drilling. FERC must determine whether any of the aquifers along the ROW are sole-source as this would magnify any negative impacts of construction.

Increasing the runoff potential of soils will negatively impact the prime groundwater recharge areas surrounding the ROW. By removing the topsoil layer and associated forest litter and humus, runoff will decrease the soil porosity and moisture retention capacity. This will induce even greater levels of runoff and will damage the groundwater recharge capabilities of the ecosystem. The decreased ability to absorb water resulting in runoff and sedimentation severely decreases water quality.

To determine current water quality, the NEPA document must include a survey of the established benthic community in potential impacted streams. This should include the composition, quantity, and diversity of the community. Construction related water impacts include the possibility of fuel spills and contamination of runoff and further erosion and sedimentation. This concern and possible prevention must be addressed in the general construction activity stormwater permit as required under the Clean Water Act.³⁹

Any potential channel relocations that occur due to construction must be studied as an impact. Installing the Project will require stream diversions that will impact wetland areas. These areas of stream channel modification must be identified so that the impacts on wildlife resources be can fully examined with the coordination of NPS, Fish and Wildlife Service, and New York and Pennsylvania agencies as required under the Fish and Wildlife Coordination Act.⁴⁰

In studying impacts to water quality, consideration must also be given to visitor experience and how diminished water quality would affect recreational uses of the Delaware

³⁹ See 33 U.S.C. § 1342(p) (2006); 40 C.F.R. § 122.26 (b)(15) (2010); 40 C.F.R. § 450.10 to §450.24 (2010) (except for the turbidity limitations of §450.22(a), which according to §450.10(b), are not applicable to gas pipeline construction activity).

⁴⁰ 16 U.S.C. § 662 (a) (2006).

River and state and county parklands (e.g., boating, canoeing, aesthetic qualities, and degradation of fisheries).

Finally, this Project is specifically being proposed to facilitate transportation of Marcellus Shale natural gas and to the extent that Alternative K is considered, the NEPA document must review the environmental consequences of using hydraulic fracturing techniques in the Delaware River watershed as a cumulative impact of the Project. This must include an examination of the impacts to the Delaware River watershed from withdrawing water for drilling purposes, use, and disposal of water containing fracking compounds back into the ecosystem. The impact on benthic communities stemming from increased total dissolved solids in ecosystems as a result of drilling and water withdrawal activities must be examined.

ii. Wetlands

Any impacts to the physical characteristics of wetlands resulting from the use of fill must be examined. Wetland delineations and assessment of values and functions will be required. As part of this analysis, hydrology, vegetation, and soils must be examined in delineations. Assessment of function and value must consider all ecosystem services being provided, such as groundwater recharge, water quality and sedimentation, wildlife habitat, flood protection, biological diversity, recreation, and aesthetics, so that potential impacts and alternatives can be properly assessed.

The NEPA document must assess impacts to wetlands such as changes in water levels, flow characteristics, circulation patterns, or flooding frequencies due to the Project. Changes in substrate conditions may affect the ability of the wetland to sustain vegetation and wildlife populations. Increased run-off as addressed above may introduce contaminants or more sedimentation to the ecosystem. Increased nutrient loading could produce algal blooms and reduce available oxygen in the water.

iii. Floodplains

Beneficial floodplain values identified in the Unified National Program for Floodplain Management⁴¹ should be utilized in examining impacts. These include the accelerated runoff produced along the ROW that will result in more erosion and deposition within streams, increased transport and loading of contaminants, increase in flood peaks due to accelerated runoff (in turn reducing the amount of water entering the ground), decrease in groundwater recharge, blocked or diverted groundwater flow, and the removal of habitat and food source for wildlife and fishery resources. These impacts can also produce a “ripple” effect by upsetting the balanced ecosystem of the landscape through construction activities. The NEPA document must consider these long-term, cumulative impacts.

iv. Fisheries

⁴¹ The Fed. Interagency Floodplain Mgmt. Task Force, A Unified National Program for Floodplain Management (1994), *available at* <http://www.fema.gov/library/viewRecord.do?id=4150>.

To the extent that Alternative K is considered, impacts to the entirety of the Upper Delaware River watershed caused by the Project must be examined, including tributaries and wetlands.

The headwater streams impacted by the Project must be surveyed for native brook trout. The crossing of multiple streams, all of which are trout waters, will have a large impact on the trout populations and spawning in the region, especially during construction, and will degrade the waterways long after the Project is completed.

Beyond impacts resulting from construction of the Project, the NEPA document must examine impacts to all wetland ecosystems caused by the channelization of groundwater to new areas as it runs parallel to the new pipeline. A recent gas pipeline installation that crosses the Musconetcong River in Asbury, New Jersey has resulted in an alteration in the channelization of groundwater towards running parallel with the pipeline and away from the river, decreasing water levels in the river and negatively impacting trout spawning and macroinvertebrate populations.⁴²

D. Vegetation, Wildlife, and Endangered and Threatened Species

i. Vegetation

The removal of vegetation will have a multitude of secondary effects including increasing runoff potential and erosion, allowing for the encroachment and establishment of invasive species and destruction of wildlife habitat along with primary impacts of loss of biodiversity, loss of forest cover and increase and magnification of forest edge impacts, including deer browse, to the core forest, and increased use of herbicides along the ROW that will impact the surrounding ecosystem. Removal of forest cover would change the light exposure and soil moisture content, which will have impacts to the surrounding vegetative community. Vegetation removal will also be required along proposed access roads and similar impacts should be expected in these areas as well.

ii. Wildlife

Clearance along the ROW and proposed access roads will result in loss of habitat and even individual animals. FERC should assess the likelihood of displaced animals surviving in adjacent areas because often that community will be at a carrying capacity for that particular species.

In areas of highly valued but threatened ecosystems, the best available science must be employed to ensure protection of wildlife and avoid jeopardy to wildlife habitat. Failure to employ the best available science to determine the biological baseline and evaluate potential impacts would thwart the purposes of NEPA.⁴³

⁴² See Stephen E. Laney, *Spring Flow Restoration*, *The Professional Geologist*, March/April 2007, at 43.

⁴³ See 42 U.S.C. § 4332 (2006) (requiring, "to the fullest extent possible," that "all agencies of the Federal Government shall - (A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment"); 40 C.F.R. §

iii. Endangered and Threatened Species

Endangered species and their suitable habitat must be carefully studied as part of the NEPA document. Species monitoring is an extensive process and the timeframe for conducting these studies must not be cut short simply to satisfy the applicant's desired in-service date.

FERC must provide full information on this aspect of impacts as no federal agency may assist or sponsor any activity that may adversely affect an endangered species in compliance with the Endangered Species Act.⁴⁴ Specifically, a recent report from Bat Conservation International indicates that land disturbance associated with shale gas development, such as pipeline construction, pose serious threats for bat populations, including the little brown bat and the federally endangered Indiana bat.⁴⁵ The report notes that bats have been significantly impacted by White-nose Syndrome and as a result are at increased risk from human impacts such as shale gas development.⁴⁶ An additional species that threatened by gas drilling activities is the Federally and State-listed endangered dwarf wedgemussel. The presence of dwarf wedge mussel indicates a clean water source of well-oxygenated, unpolluted water. An examination on the potential impacts to species such as the dwarf wedgemussel and Indiana Bat as a result of construction activity for the Project is an important part of the EIS.

The scope of study for impacts to threatened, endangered, and rare species cannot be limited to the ROW. The ROW forest buffer, and access roads and buffer must be examined for species and habitat. The effects of increased forest edge and habitat degradation due to the impacts of construction and permanent impairment of resources on these species must be analyzed as well.

iv. Invasive Species

1502.6 (2010) (implementing this statute); 40 C.F.R. § 1502.8 (2010) (interpreting this statute to require Environmental Impact Statements to be written and edited "based upon the analysis and supporting data from the natural and social sciences and the environmental design arts."). See 42 U.S.C. § 4332 (2006) (requiring, "to the fullest extent possible," that "all agencies of the Federal Government shall - (A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment"); 40 C.F.R. § 1502.6 (2010) (implementing this statute); 40 C.F.R. § 1502.8 (2010) (interpreting this statute to require Environmental Impact Statements to be written and edited "based upon the analysis and supporting data from the natural and social sciences and the environmental design arts.").

⁴⁴ See 16 U.S.C. § 1536(a)(2) (2006) (requiring each Federal agency to insure, using the best scientific and commercial data available, that any action authorized by such agency "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary . . . to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section.").

⁴⁵ Hein, C. D., *Potential impacts of shale gas development on bat populations in the northeastern United States*, Bat Conservation International (2012), available at:

http://www.delawariverkeeper.org/resources/Reports/Impacts_of_Shale_Gas_Development_on_Bats.pdf.

⁴⁶ *Id.*

Invasive vegetation out-competes native vegetation and spreads rapidly through forest openings.⁴⁷ The entire Project would extend the ROW during construction, creating edge impacts on forest communities that were previously undisturbed. The newly-created forest edge will be a direct impact of the Project and will be a prime spot for invasive species infestation due to the increased light intensity on the newly-created edge. Moreover, the Project's disturbance of vegetation in the ROW, access roads, and temporary workspace will require re-vegetation following construction, which will itself introduce new invasive species.

The spread of invasive species, whether already established and able to find new favorable habitats due to the Project, or inadvertently brought in during re-vegetation, would have a major impact on biodiversity through widespread loss of native vegetation. The loss of biodiversity is a tragedy in its own right, but it will also affect visitor experience and may result in less utilization of the affected parklands by flora enthusiasts in favor of more biologically diverse sites in New York and Pennsylvania. The reestablishment of native vegetation will take many years, and until reestablishment is achieved the area will be susceptible to further invasive species infestation. FERC must consider these impacts in the NEPA document

Moreover, NEPA review must also encompass the impacts of invasive species on groundwater recharge. Invasive species often have shallower root systems than native plants, which allows the soil to erode more readily and to degrade the quality of watersheds by adding to "suspended sediment loads and turbidity."⁴⁸

If Constitution anticipates treating restoration sites with lime and fertilizer, infestation by invasive species might be facilitated. The impacts of adding these compounds to the soil structure and its effects of creating a suitable habitat for invasive species must be addressed in the NEPA document.

Unless FERC requires long-term invasive species management practices, including inspection and maintenance to coincide with ROW mowing every 3-5 years, for the entire length of the ROW and forest buffer of the Project here, the impacts of invasive species infestations stemming from the Project will be vast.

Finally, the financial impacts of invasive species management must be considered. If the applicant does not commit to conducting invasive species management for a long time and outside the ROW in the associated forest buffer, other agencies will be left to foot the bill for future eradication programs and efforts. The NEPA document must consider the Project in light of the unavailability of government resources to ensure the applicant's mitigation and restoration projects are successful on public trust lands.

⁴⁷ New Jersey Audubon Society, Forest Health and Ecological Integrity Stressors and Solutions: Policy White Paper (March, 2005), *available at* <http://www.njaudubon.org/Portals/10/Conservation/PDF/ForestHealthWhitePaper.pdf> (stating that unpalatable exotic plants rapidly take over forest openings, because white tailed deer only eat the native plants).

⁴⁸ T. Stohlgren, C. Jarnevich & S. Kumar, Forest Legacies, Climate Change, Altered Disturbance Regimes, Invasive Species and Water, *Unasylva* 229, 2007, at 44, 47-8, *available at* <http://www.fao.org/forestry/unasylva/8707/en/>; Audubon Society of Portland, Invasive Plant Management <http://audubonportland.org/sanctuaries/invasives> (last visited Nov. 11, 2010).

The Project is likely to result in further encroachment of robust and undesirable invasive vegetation species into forest and park lands, destroying biodiversity, reducing the effectiveness of groundwater recharge, and driving away recreational visitors. FERC cannot allow Constitution to proceed without investigating the possible extent of these impacts during NEPA review, especially at a time when the state and federal budgets cannot cushion the affected communities from the environmental impact.

v. Landscape Connectivity

The construction of the ROW will create further fragmentation of the forest, allowing edge species, specifically white-tail deer and cowbirds, to encroach deeper into the core forest. These edge effects can negatively impact species at least 300 feet within the forest boundary.⁴⁹ As deer herbivory is a major culprit in the declining health and biodiversity of forest subcanopies,⁵⁰ these impacts must be examined to ensure rare, threatened, and endangered plant species populations can be maintained in the ecosystem surrounding the ROW. This will similarly decrease habitat for fauna and result in dislocation of species. These habitats must be examined to ensure no portions of the planned expansion area are an essential functional portion of a species' overall habitat requirements, such as nesting or feeding, and therefore could not or would be very difficult to replace. An overall decline in population numbers could result if the remainder of habitat area cannot meet the specific requirements of the species. Furthermore, species requiring large integral home ranges will be negatively impacted and coordination with NPS and Fish and Wildlife Service is necessary to identify whether such species will be impacted by further forest fragmentation.

E. Cultural Resources

i. Archaeological Resources

Thorough studies must be conducted along the ROW, access roads, and all areas that will be potentially impacted by this Project, i.e. locations along the Delaware River (in the context of Alternative K), for resources protected by the Archeological Resources Protection Act of 1979,⁵¹ which requires that permits be issued to remove or excavate all archeological resources that will be impacted by the Project before construction can begin.⁵² These studies must determine what impacts the Project might have and if excavation of the archeological resources would be successful. This will require cooperation with tribal groups for permission to remove these remnants.⁵³ All areas must be identified and studied in depth before permits can be granted to the applicants.

⁴⁹ See Janzen, D.H., *The Eternal External Threat*, in Conservation Biology, The Science of Scarcity and Diversity (Soulé, M. E., ed. 1986).

⁵⁰ See New Jersey Audubon Society, Forest Health and Ecological Integrity Stressors and Solutions: Policy White Paper 9 (March, 2005), available at <http://www.njaudubon.org/Portals/10/Conservation/PDF/ForestHealthWhitePaper.pdf> (stating that "[e]levated deer densities have devastating impacts on the understory of forests and even the regeneration of the forest itself.").

⁵¹ See 16 U.S.C. §§ 470aa-mm (2006).

⁵² 43 CFR §§ 7.4, 7.5 (2010).

⁵³ 43 CFR § 7.7 (2010).

ii. Viewsheds

Viewshed impacts should be examined in a way that describes any physical changes to the landscape, examines consistency with the objectives of state and county parkland management plans to preserve scenic resources, compatibility in mass, scale, and prominence, and degree of contrast in line, color, and form.

F. Air Quality and Noise

i. Air Quality

This Project will have serious impacts on the air quality along the ROW, ROW buffer, access roads, and surrounding landscape. Air quality degradation needs to be examined in relation to visitor experience and wildlife. Diesel emissions during construction will also impact visitor experience and wildlife. Further increases in diesel emissions as a result of the Project may lead to a higher level of ozone along the ROW as the cleared ROW provides more sunlight for nitrogen oxides and reactive organic gases to combine.

The cumulative impact analysis also should include consideration of the incremental impact of the Project on air quality, added to the air quality impacts of existing and reasonably foreseeable Marcellus Shale development in the region, including other pipeline construction. Natural gas and oil production and transmission emit substantial amounts of air pollution, including volatile organic compounds (“VOCs”), nitrogen oxides (“NOx”), and toxic air pollutants.⁵⁴ The toxic air pollutants include benzene, a known carcinogen; toluene, nhexane, and xylenes, which can lead to nervous system effects; and ethylbenzene, which can cause blood disorders.⁵⁵ Recent tests suggest that compressor stations also may emit harmful levels of formaldehyde, another known carcinogen.⁵⁶ VOCs and NOx contribute to local and regional ozone pollution, which has serious impacts on human respiratory and cardiovascular health as well as on vegetation and forest ecosystems.⁵⁷ Particulate matter too, whether directly emitted from exhaust and fugitive dust during construction or from operation of diesel-fired engines or

⁵⁴ See Al Armendariz & Env'tl. Def. Fund, Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements 24 (2009), available at http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf; see also Env'tl. Prot. Agency, Outdoor Air – Industry, Business, and Home: Oil and Natural Gas Production – Additional Information, http://www.epa.gov/oaqps001/community/details/oil-gas_addl_info.html (last visited Nov. 11, 2010).

⁵⁵ See *Id.*

⁵⁶ See Aman Batheja, *Carcinogen from gas compressor stations being monitored*, Star_Telegram, Oct. 4, 2010, available at http://www.star_telegram.com/2010/10/03/2516374/formaldehyde_from_gas_compressor.htm.

⁵⁷ See National Ambient Air Quality Standards for Ozone, 75 Fed. Reg. 2,938, 2,938, 3,000 (Jan. 19, 2010); see also Judy Fahys, *Ozone Raises Its Ugly Head in Utah*, Salt Lake Tribune, Oct. 21, 2010, available at <http://www.sltrib.com/sltrib/home/50516943-76/ozone-county-basin-epa.html.csp>.

indirectly created from interactions of NOx emissions in the atmosphere, affects respiratory and cardiovascular health.⁵⁸

An examination of 2009 emissions data shows that in north-central Texas, VOCs and NOx emissions from compressor engines in the Barnett Shale area amounted to four times the emissions from all airports in the Dallas-Fort Worth area,⁵⁹ which includes the Dallas-Fort Worth International Airport, one of the busiest airports in the world. 2009 NOx and VOC emissions from Barnett Shale oil and gas development generally were comparable to emissions from all the cars and trucks in the nine-county Dallas-Fort Worth metropolitan area.⁶⁰ These figures suggest that any proper assessment of a Marcellus Shale development project must consider the cumulative impacts of all oil and gas development in the area in order to truly comprehend the Project's effect on the quality of the human environment.

The NEPA document must assess air emissions from the construction and operation of the Project infrastructure based on the cumulative impact of the proposed hub line's emissions *together with* air emissions from existing and reasonably foreseeable Marcellus development.

ii. Noise

FERC must explore the impacts of construction, operation, and maintenance of the Project on wildlife and visitor experience.

Noise associated with construction can have a devastating impact on wildlife. Certain species depend on hearing for courtship and mating behavior, prey location, predator detection, or homing and will suffer serious detrimental impacts from construction. Such aspects of temporary impacts must be considered.

Noise impacts to visitor experience must be examined as sensitivity to noise is very variable and these impacts may lead to less utilization of the associated parklands by the public. These areas are generally given additional protection when projects are evaluated. For example, the Federal Highway Administration's Exterior Noise Abatement Criteria has an activity category "Land where serenity and quiet are of extraordinary importance" and the maximum noise level is 57 dBA.⁶¹ Consequently, we urge FERC to consider the proposed construction area a noise sensitive area and hold the Project to at least the minimal standards⁶² given other sensitive areas (i.e. a 55 dBA day/night limit for new compressor stations) and also evaluate whether even that impact might be excessive in terms of affecting natural preservation and public enjoyment of the area.

⁵⁸ Env'tl. Prot. Agency, Particulate Matter: Health and Environment, <http://www.epa.gov/pm/health.html> (last visited Nov. 11, 2010).

⁵⁹ See Armendariz, *supra* note 121, at 25.

⁶⁰ See *id.*

⁶¹ 23 C.F.R. § 772.19 (2010) (Table I ("Noise Abatement Criteria") sets a limit of 57 dBA for "[l]ands on which serenity and quiet are of extraordinary significance and serve an important public need and where preservation of those qualities is essential if the area is to continue to serve its intended purpose").

⁶² See 18 C.F.R. § 157.206(b)(5).

In addition, given the scale of the Project and sensitivity of its location, FERC must include construction impacts in the scope of its environmental review. To determine these impacts, the applicant must be asked to provide specific details on construction activities, including the type of equipment that will be used and when it will be used, what season and time of day construction activities will occur, and the specific noise-producing attributes of each piece of equipment. Noise levels produced at 50 ft are about 84 to 85 dBA from backhoes and bulldozers, 91 to 92 dBA from graders, and 80 to 88 dBA from compressors.⁶³

The possibility of ground-borne vibration and noise impacts related to construction activities on habitat, steep slopes, etc. must be studied. Resources near the Project will be especially susceptible to ground-borne vibration as the applicant is proposing to construct an underground pipeline that will require the creation of a trench across an extremely sensitive landscape.

Noise impacts to the landscape will be exacerbated by the expansion of the ROW and the removal of vegetation. As the ROW expands, noise from construction, operation, and maintenance of the pipeline will penetrate farther into the forest, affecting wildlife. FERC must assess the severity and nature of this impact.

The movement of construction equipment and long-term maintenance vehicles may impact sensitive receptors in the surrounding local communities along utilized roadways and access roads. Further, if detours are used during the construction project, the roadways that bear the re-directed traffic may be impacted by the increased noise. The NEPA document must address both of these secondary noise impacts.

III. As a Condition to any FERC Certification of the Project, FERC Must Require that the Project Sponsor Obtain All Applicable Authorizations and Approvals from Federal and State Regulatory Bodies, Which Includes the Delaware River Basin Commission.

In the event that a portion of the proposed project crosses through the Delaware River Basin, Constitution must apply for a docket, and receive approval of that docket, before the Delaware River Basin Commission (“DRBC”). This requirement should be made clear as a condition on any Certification provided by FERC for the Project.

DRBC review is required when a project entails (a) a withdrawal or discharge that exceeds an established threshold, (b) diversion of wastewater into the basin, or (c) diversion of water or wastewater out of the basin. To the extent that the Project involves such activities it must apply for a withdrawal/discharge docket with the DRBC.

Additionally, pursuant to Section 2.3.5.A.12 of the Rules of Practice and Procedure of the DRBC, the DRBC also requires project proponents to submit projects for review for all projects that involve a “involve significant disturbance of ground cover affecting water resources.” Constitution’s Project undeniably meets this standard, as a significant portion of the pipeline (Alternative K) may lie within the jurisdiction of the DRBC. Therefore, Constitution must consult with, and gain approval of, the DRBC regarding construction of this pipeline. To the

⁶³ U.S. Department of Transportation, FHWA, CADOT, and SBAG 1993.

extent that Constitution has not made such a consultation, and received such approval, any Certification of the Project by the Commission allowing construction activities is improper.

Conclusion

FERC must require a full Environmental Impact Statement that analyzes the extensive and egregious impacts the Project threatens on water resources, forest ecosystems, habitats, air quality, and parks and open space. The NEPA document must assess cumulative and secondary impacts. To do so, the analysis must be thorough and objective.

Thank you for the opportunity to comment on the scope of the assessment. We look forward to full participation in this important process.

Respectfully Submitted,



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/s/ Aaron Stemplewicz

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Exhibit 1



October 9, 2012

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

RE: Delaware Riverkeeper Network Comments to FERC's Upland Erosion Control, Revegetation and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures), Docket Number AD12-2-000.

Dear Secretary Bose:

On behalf of the Delaware Riverkeeper Network, please consider the following comments on the Federal Energy Regulatory Commission's ("FERC" or the "Commission") update to the Upland Erosion Control and Revegetation and Maintenance Plan ("Plan"), and the Wetland and Waterbody Construction and Mitigation Procedures ("Procedures"), Docket Number AD12-2-000. The Plan and Procedures are referred to at 18 C.F.R. § 380.12(i)(5) and § 380.12(d)(2), respectively, as well as 18 C.F.R. § 157.206(b)(3)(iv).

I.) The Draft Plan and Procedures as Proposed are Inadequate and Not Supported by the Best Available Evidence and Standards.

The Delaware Riverkeeper Network ("DRN") has concluded that FERC's draft Plan and Procedures, as proposed in the docket, provide inadequate guidance for the effective protection of human health and the environment from the detrimental impacts of pipeline construction activity. DRN was dismayed to see that many of the scoping comments and suggestions submitted in our January 18, 2012 letter to the Commission were not addressed in the current draft. DRN urges that the comments and recommendations provided below will be reviewed and considered by the Commission in its adoption of these guidance documents.

Additionally, DRN is concerned that the Commission's current draft proposal fails to include a rationalization for many of the proposed changes. For example, the section dedicated to "Stormwater Pollution Prevention Plans" (formerly section III.G of the Plan) was entirely discarded without any explanation. The Commission must provide a reasonable justification as to why this section was excised from the Plan and not replaced with an equivalently protective measure. The Plan and Procedures include many other instances wherein changes were made

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without any explanation as to how or why such changes improve the way in which the regulations protect human health and the environment.

Additionally, the Commission has failed to include, *or even cite*, any scientific or technical evidence that supports any of the changes made in the drafts. Such a glaring omission demonstrates that the draft Plan and Procedures is not supported by the best available evidence. The Commission should provide for public review and comment both an explanatory document fully detailing the changes made to the drafts, and the scientific and technical recommendations that are being relied upon to justify the changes in the drafts. After these documents have been provided the draft Plan and Procedures should be re-noticed and issued for a second round of public comment.

II.) Specific Section Comments for the Upland Erosion Control, Revegetation and Maintenance Plan

Section I.A.2. – “is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions;”

Comment: The Commission must specifically define the terms “infeasible” and “unworkable” in this section. Such vague terminology provides operators with unchecked latitude, allowing them to take advantage of the Commission’s process in order to receive variances that may be harmful to human health and the environment. A more specific description based on an identifiable standard should be included.

Section I.A. – A provision should be added in this section addressing the following comment.

Comment: The Plan should articulate a clear process in this section for FERC to obtain input from local soil conservation districts, as well as state environmental protection agencies, before approving variances. In this section, the Commission should also limit the number and scope of variances allowed on a per-project basis. Local and state agencies are best situated to provide useful comments on the environmental ramifications of significant variances, and these variances should not be able to move forward without this well-informed input.

The Plan should also outline a process for receiving public input and comments for potential variances (particularly level three variances). The current regulations do not require, or even provide the opportunity for, any public input on requested variances. The current draft invites situations wherein numerous variances are requested and approved with no input from any institution or the public, which fundamentally alter the environmental impact contemplated in the Project’s Environmental Assessment. This process unnecessarily exposes human health and the environment to potentially dangerous and destructive construction activities.

Section II.A.1. – “The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.”

Comment: The Plan should require a more specified level of training, experience, or credentials for the inspectors. This would reduce the likelihood of improper or inconsistent application of the regulations. The word “appropriate” in the current draft does not provide adequate guidance for the requisite experience level of an inspector. There should be objective standards (i.e. specific licenses, years of experience, education level, environmental training programs, local knowledge, etc.) outlined in the Plan as a baseline for inspector approval.

There were numerous potentially improper and inconsistent categorizations of pollution events by inspectors during the recent construction of two large scale pipeline projects (the Tennessee Gas and Pipeline Company’s 300 Line Upgrade Project and the Columbia 1278k Replacement Project). These inconsistent categorizations and results are a direct consequence of poorly designed standards for evaluating the credentials and experience of inspectors.

Section II.A.1. – A provision should be added in this section addressing the following comment.

Comment: The Plan should articulate how the extent of a “spread” is determined.

Section II.A.3. – “Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the Certificate, stipulations of other permits or approvals . . .”

Comment: Currently, inspectors only have the power to issue stop-work orders (a power that is very rarely exercised). This section should include strengthened authority that includes a mandate for inspectors to issue noncompliance notices that would result in fines to the associated project sponsor. The fines should be allowed to be levied immediately. If a payment is delayed, the inspectors should have the authority to then immediately issue a stop-work order. An example of such a provision is provided in the Environmental Protection Agency’s Model Ordinance for Erosion and Sediment Control:

“No person shall construct, enlarge, alter, repair, or maintain any grading, excavation, or fill, or cause the same to be done, contrary to or in violation of any terms of this ordinance. Any person violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and each day during which any violation of any of the provisions of this ordinance is committed, continued, or permitted, shall constitute a separate offense. Upon conviction of any such violation, such person, partnership, or corporation shall be punished by a fine of not more than \$ _____ for each offense. In addition to any other penalty authorized by this section, any person, partnership, or corporation convicted of violating any of the provisions of this ordinance shall be required to bear the expense of such restoration.”

(See DRN Scoping Comment, Exhibit 3, Model Ordinance to Protect Local Resources, EPA).

An example of the inadequacy of FERC inspectors’ current level of authority – which went unchanged in the draft Plan and Procedures – can be gleaned from a review of inspection reports and construction activity reports for two large scale pipeline projects

(the Columbia 1278 Replacement Project and the Tennessee 300 Line Project). During the 300 Line Extension Project, in 28 out of 38 “Environmental Compliance Monitoring Program Weekly Summary Report” that were provided on FERC’s website there was at least one recorded incident where an activity did not come into “compliance with Project specifications, mitigation measures, and applicable FERC-approved Project plans.” This 73% failure rate demonstrates that there were systemic and continued failures in TGP’s compliance with regulatory controls, which suggests improper oversight, and or, inadequate regulatory enforcement. Even worse, during the Columbia 1278 Replacement Project, in each “Environmental Compliance and Inspection Report” the inspection summary indicated that there were “construction/restoration problems” and that “construction/restoration was unsatisfactory.”

Providing FERC inspectors with the authority to immediately levy fines, and issue stop-work orders for violations of these regulations would incentivize operators to follow best management practices in the first instance, thereby reducing the likelihood that they will be repeat offenders.

Section II.A. – A provision should be added in this section addressing the following comment.

Comment: Inspectors should be free of all contractual issues or limitations that may impede or prevent them from properly issuing fines or stop-work orders. This freedom from conflicts of interest should be outlined in the Plan, as there currently is no such provision.

Section II.B. – A provision should be added in this section addressing the following comment.

Comment: A clear delineation between the responsibilities of Army Corps inspectors and the FERC inspectors should be articulated in the Plan and Procedures. Such guidelines in the Plan and Procedures would better indicate who is directly responsible for corrective actions, how quickly they should occur, and who is ultimately responsible if they do not occur, and or, are delayed.

Section II.B.14. – “Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow”

Comment: The Commission must more specifically define the term “as soon as conditions allow” in this section. Such vague terminology provides operators with the opportunity to delay repairing temporary erosion and sediment control measures without meeting an identifiable standard for the delay.

Section II.B. – A provision should be added in this section addressing the following comment.

Comment: In the construction Status Reports that are required to be submitted by the operators, the operators should be required to publish as exhibits to each report any copies of correspondence received by the operator from and federal, state, or local permitting agency concerning instances of noncompliance of the operator. The operator should also be required to keep and publish a running tally of instances of noncompliance from these permitting agencies.

Section II.B. – A provision should be added in this section addressing the following comment.

Comment: Environmental inspectors should also be required to send electronic and paper copies detailing each instance of noncompliance to all other federal, state, and local permitting authorities. This communication should be made within 48 hours after the noncompliance issue has been identified and reported by the FERC inspector.

Section III.A.2. – “Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of certificated work areas.”

Comment: The use of the term “encourage” renders this entire provision toothless. The Plan should provide a more specific requirement for expanding surveys in areas where there is a possibility that a variance will be requested. For example, the Plan should require that unless the survey has been completed a variance cannot be requested. The use of such ineffectual terminology should be discouraged throughout the Plan.

(Former Section G.) – Stormwater Pollution Prevention Plan.

Comment: The Commission must explain why this entire section – detailing a very important part of the Plan – has been completely excised from the regulations. Unless an equally protective section is added to replace former Section G, the Plan and Procedures proposed are demonstrably inadequate and not supported by the best available evidence.

Section III.G. – For all residences located within 50 feet of construction work areas, project sponsors shall: not remove mature trees and landscaping within the construction work area unless necessary for safe operation of construction equipment; fence the edge of the construction work area for a distance of 100 feet on either side of the residence; ensure that construction equipment and materials, including the spoil pile, remain within the construction work area; and restore all lawn areas and landscaping within the construction work area, consistent with this Plan, immediately after backfilling the trench.

Comment: This new section is not clear if the 50 feet setback is intended to be from the property line or 50 feet from the residence (structure) itself. If it is 50 feet from the structure it is too close, if damage occurs to the root system of mature trees the homeowner is likely to lose the tree and incur the cost of tree removal. More specific technical guidance (or reference to guidance) is needed for tree protection because if they leave a mature tree in place but damage it, the homeowner is damaged as well as now bearing the threat of a safety hazard that could be unknown to them as the tree slowly dies. Additionally, there could be many other issues working this close to a residence, including damage to such things as utilities, on-site septic systems, and wells. This section of the plan, as proposed, does not provide proper guidance.

Section III.I. – “The plan shall address winter construction procedures (e.g. snow handling and removal, access road construction and maintenance, soil handling under saturated or frozen conditions, and topsoil stripping), stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g. mulching and erosion controls, inspection

and reporting, stormwater control during spring thaw conditions), and final restoration procedures (e.g. subsidence and compaction repair, topsoil replacement, and seeding).”

Comment: The Plan should articulate more specific requirements and standards for the winter construction plan. There is no guidance on who approves the plan. Will the plan be made publically available before it is approved? Is there a process for public input? What details need to be submitted, and what standards will apply to determine if the winter construction plan is sufficiently protective? All of these questions must be answered in this section.

Additionally, the Plan should indicate the specific dates that are considered winter (i.e. Oct 15 – Apr 15) for different regions, or require that the Winter Construction Plan define the dates. Winter work should have a limited disturbance footprint (i.e. no more than 1 acre at a time “exposed” without stabilization) and a limited timeframe for areas to be exposed (i.e. 15 day maximum). A phasing plan should be included, and an area should meet specific criteria for stabilization before work begins on the next area.

This section should also include requirements for previously disturbed areas that have not achieved a sufficient level of vegetative cover (i.e., 85%) by beginning of winter. There are a number of other requirements common to cold weather states that should be addressed in the winter construction plan, and specific guidance is needed, not just an open-ended requirement for a plan:

- Mulch or erosion control mix should not be placed over snow.
- Higher mulching rates are required in winter (usually twice the amount of mulch)
- Stockpiles should receive additional protection during winter
- Stockpiles cannot be within a certain distance of waterways or wetlands (i.e. 100 feet)
- Material excavated during frozen conditions should not be mixed or stockpiled with other material.
- Sediment barriers (i.e. compost socks) must be properly embedded during frozen conditions.

It is very difficult to maintain good erosion and sediment control in winter conditions, and work should not be allowed to occur within a certain distance of sensitive water features.

Section IV, includes details on many of these issues. Each sub-section in IV should provide specific winter criteria for these items.

Section IV.A.2. – “However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval . . .”

Comment: This provision should read, “non-wetland areas **and forested areas**” (this language parallels the rest of paragraph). But in fact we would not support a provision

that allows expansion of a construction right of way in forested areas at the discretion of the pipeline company. Forests are critically important for preventing water pollution, air pollution, noise pollution, and runoff that can contribute to flooding and erosion, forest also provides critical habitat with the habitat implications of a loss of forest expanding beyond just the immediate land area deforested. Any expansion of the right of way into forested areas must be prohibited without the explicit review, approval and permitting of all appropriate authorities.

Section IV.B.3.b. – “in soils with less than 12 inches of topsoil make every effort to segregate the entire topsoil layer.”

Comment: The use of the term “every effort” renders this entire provision meaningless. The Plan should articulate clear and identifiable standards that can be effectively enforced by FERC inspectors. The use of ambiguous language – such as “every effort” – only acts to hinder proper protection of human health and the environment.

Section IV.B. – A provision should be added in this section addressing the following comment.

Comment: The following requirements need to be added to Section IV.B:

- Topsoil should NEVER be allowed to leave a site.
- Topsoil should ALWAYS be segregated, not just in the locations listed. Successful restoration depends upon it.
- Topsoil importation should not be allowed in residential areas or anywhere. This allowance will encourage movement of topsoil to residential areas from other non-residential pipeline areas (to the detriment of those areas).
- Movement of topsoil is a source of weed and invasive seed material, and for this reason alone should be prohibited.

Section IV.C.2. – “Probe all drainage tile systems within the area of disturbance to check for damage.”

Comment: The Plan should identify how often surveys need to be done to examine for potential damage to drainage tile systems.

Section IV.E. – A provision should be added in this section addressing the following comment.

Comment: If tracked vehicles or heavy equipment is required to enter a roadway, a stabilized construction entrance should be required.

Section IV.F.1.b. – “Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion.”

Comment: The use of the term “excessive” renders this entire provision meaningless. The word “excessive” should simply be eliminated.

Section IV.F.1. & 3. – A provision should be added in this section addressing the following comment.

Comment: Weed free hay should not be an option. Hay is a primary source of weed seeds, it is difficult to determine if it's truly weed-free, and high quality hay is expensive. Only straw should be permitted.

Section IV.F.1. & 3. – A provision should be added in this section addressing the following comment.

Comment: Straw bales are not effective as temporary sloop breakers. They tend to float and are ineffective as velocity reducers. This method should be eliminated from the Plan.

Section IV.F.2. – “Temporary trench plugs are intended to segment a continuous open trench prior to pipeline installation.”

Comment: This section of the Plan is inadequately protective as it fails to state a limit on how long an exposed trench can remain open, or any limits on the length of a trench that can be open at one time. This is a critical issue that needs limits. For example, standard practice for utility installation (i.e. water lines, sewer lines) limits trench excavation to the length that can be backfilled within one day.

Section IV.F.4. – A provision should be added in this section addressing the following comment.

Comment: More specific language on the use of mulch binders, specifically the use of polyacrylamides. This material is being heavily marketed and its impacts on both water bodies and soil ecology are uncertain. The research is limited and the use of this material should be approached with caution until full environmental impacts and benefits are understood. Guidance on application rates are required, and effects on revegetation areas, soil health, etc. need to be understood before it is approved in the Plan.

Section V. – Provisions should be added in this section addressing the following comment.

Comment: This entire section is severely deficient. It would be well served by a Guidance Document / Manual, and there are a number of sources to draw on for this material. Most importantly, “restoration” is not defined in terms of soil content, soil compaction, amount and type of cover, plant health, plant species, restoration of topography, restoration of wildlife corridors, size of “woodland areas” and increase in edge conditions, and hydraulic conductivity to wetlands and water bodies. Clear and quantifiable parameters are needed for “restoration”, with supporting timeframes for evaluation and remedial action.

Section V.A.1. – “If construction will unexpectedly continue into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring, file a winter construction plan (as specified in section III.I).”

Comment: if there are no requirements for the timeframe of trench backfill, material can remain for an undefined time period. Also, the restoration periods are too long (20 days and 10 days). This work should happen concurrently with the trench backfill. Inspection requirements should also be detailed in this section. Furthermore, for unexpected winter construction, further activity should be suspended until written approval is obtained for the winter construction plan.

Section V.A.4. – “Remove excess rock from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas, as well as other areas at the landowner’s request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction.”

Comment: In all areas, not just agricultural and residential areas, existing conditions related to the top 12 inches of the trench and topsoil should be restored to previous and surrounding conditions (rock is not acceptable).

Section V.A.5. – “Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.”

Comment: Quantifiable parameters for “soil in proper condition for planting” are required. For example, bulk density, organic content, amount of large material, soil classification, etc.

Section V.A.6. – “Remove construction debris from all construction work areas unless the landowner or land managing agency approves otherwise leaving materials onsite for beneficial reuse, stabilization, or habitat restoration.”

Comment: This should also require land-owner approval in writing.

Section V.A.7. – “Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.”

Comment: This section should clearly articulate what the parameters are for “successful revegetation”, including a mandate that only native species be used. A process for final inspection and approval (in writing) by inspectors is needed.

Section V.B.1 & 2. – Provisions should be added in this section addressing the following comment.

Comment: Guidance is needed on inspection and repair specific to Trench Breakers and Slope Breakers to assure that measures are functioning as intended (i.e. wetland areas are not being inadvertently drained). The engineer or “other qualified” professional should be required to attest to their oversight and decisions regarding placement, etc. The same professional should be required to sign off regarding inspection and repair. Criteria for accepted performance should be defined (i.e., drainage is not occurring along trench, erosion is not occurring along edges of slope breakers or below slope breakers, etc.).

Furthermore, Section V.B.2.d. states that “slope breakers may extend slightly (about 4

feet) beyond the edge of the construction right of way to effectively drain water off the disturbed area.” While this is not a new requirement, it is concerning from a regulatory perspective when determining the limit of permit coverage. For example, PA requires traditional construction projects to demonstrate an overall “limit of disturbance” that includes all areas where construction activity, include placement of permanent erosion control measures, will occur that becomes the legal permit boundary. Any allowance outside of a construction right-of-way without clarification of other protective requirements may lead to insufficient oversight and regulation.

Section V.C.1. – “Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.”

Comment: In all areas, not just agricultural and residential areas, soils should be protected from compaction to the maximum extent practicable. Forested soils, as they have remained undisturbed for decades, typically have low compaction rates and high organic matter. Their destruction will impact the long term ability of a site to recover and support a desired plant community. Specific testing methods and frequency should be more clearly defined; the term “at regular intervals” is insufficient. This section also requires tests to be conducted on the same soil types under similar moisture conditions in undisturbed areas to approximate preconstruction conditions; preconstruction conditions should be conducted prior or concurrent with excavation to document actual preconstruction conditions and avoid estimation.

Section V.C.2. – “Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil.”

Comment: Parameters for what qualifies as “severely compacted” must be provided.

Section V.C.3. – “Perform appropriate soil compaction mitigation in severely compacted residential areas.”

Comment: Parameters for “appropriate soil compaction mitigation” and “severely compacted” in residential areas must be provided.

Section V.D.1. – “The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b.”

Comment: Parameters for “successful revegetation” should be provided as well as inspection and documentation of achievement of successful revegetation prior to any permit closeout action.

Section V.D.2. – “Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as practicable after application.”

Comment: A maximum timeframe for incorporation of soil additives should be provided. As soon as practicable leaves a lot of room for interpretation on projects with virtually unlimited disturbance areas. Furthermore, soil additives and fertilization recommendations should only be based upon written recommendations that are grounded in an approved soil test and applicable to the targeted vegetative system desired for restoration.

Section V.D.3. – A provision should be added in this section addressing the following comment.

Comment: The use of annual species seeding should be clarified to emphasize the requirement to establish native, perennial vegetation at the beginning of the next growing season. Furthermore, the Environmental Inspector should be required to document the reason for approving the use of annual species.

Section V.D. – A provision should be added in this section addressing the following comment.

Comment: The Commission makes no mention of the need to perform a pre-disturbance inventory of vegetation systems and only mentions landowner compensation for turf, ornamental shrubs, and “specialized landscaping” (undefined term). Owners of naturalized land should be compensated for the loss of structural and functional benefits associated with tree, shrub, or healthy meadow cover. The science and methodologies for determining these ecosystem and structural values are well known. The Commission must require landowner compensation for the FULL net loss of value and/or complete vegetation restoration.

Furthermore, glaringly absent from the Commission’s “revegetation” plan is any mention of restoring the baseline plant communities or vegetation systems that existed on the site prior to disturbance. Erosion control is NOT restoration. Restoration involves a careful assessment of baseline conditions PRIOR TO disturbance and the identification of a “reference” community that will serve as a metric for species compositions and structural diversity

Section VII.A.1. – “Conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation.”

Comment: Plan should outline a general inspection schedule that should be followed absent further guidance from state or local permitting agencies.

Section VII.A.2. & 4. – Provisions should be added in this section addressing the following comment.

Comment: The Commission’s standard for gauging the success of a restoration effort is wholly inadequate. The phrase “. . . similar in density and cover to adjacent undisturbed lands” is not a quantifiable metric and subject to an excessive degree of subjective judgment. The appropriate methodology of determining the success of revegetation is to quantify the species composition, cover levels and structural diversity of a local

“reference” community that is undisturbed. Duplication of that plant community to an accuracy level of greater than 90% is a reasonable metric that is frequently achieved on restoration projects across the United States.

Measurement of restoration success requires the establishment of vegetative plots both within the reference community and within the restoration area. Records need to be kept on no less than an annual basis regarding species composition and cover density levels.

Additionally, successful restoration requires several years of maintenance and monitoring to assure plant communities become properly established. This requirement has not been addressed in this plan. FERC makes no recommendations for plant survival, replacement, and acceptable mortality levels post installation.

Furthermore, given that invasive plants and biological invasion by undesirable organisms is aggravated and promoted by land disturbance and linear landscape disruptions, the absence of a mandated strategy for addressing invasive species in this document is alarming. At a minimum, FERC should require annual monitoring and species-specific interventions along each project area for the entire service life of the ROW. This is fundamentally the same as monitoring and suppressing wildfire risk – ROW construction creates ideal conditions for biological invasion of both the ROW and adjoining lands, to fail to monitor and suppress infestations with an early detection – rapid response model assures these organisms will become established and landowners will suffer negative economic and ecological consequences.

The maintenance program for addressing invasive species should limit to only those species necessary the use of herbicides including things like glyphosate. The generalized application of herbicides for weed or invasives control does not have the effective of discouraging invasives and encouraging native species; it simply kills all species with which it comes in contact merely leaving open the door for invasives to take control in the future, and in fact making that outcome easier by killing off any competing natives that could have been getting established.

III.) Specific Section Comments for the Wetland and Waterbody Construction and Mitigation Procedures

Section I.A.2 – “is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions;”

Comment: The Commission must more specifically define the terms “infeasible” and “unworkable” in this section. Such vague terminology provides operators with unchecked latitude, allowing them to take advantage of the Commission’s process in order to receive variances that may be harmful to human health and the environment. A more specific description based on an identifiable standard, such as a cost/benefit analysis, should be required.

Section I.A. – A provision should be added in this section addressing the following comment.

Comment: See Comment from Section I.A. of the Plan.

Section I.B.1.b. – A provision should be added in this section addressing the following comment.

Comment: The minimum distance proposed (100-feet) does not take into account the slope, stability or ground cover condition with regard to hazardous material/pollution potential. At a minimum, all operations that may result in spills should be performed upland of a secondary containment at all times.

Section II.B. – “a schedule identifying when trenching or blasting will occur within each waterbody greater than 10 feet wide, within any designated coldwater fishery, and within any waterbody identified as habitat for federally-listed threatened or endangered species.”

Comment: This section should be revised to read “a schedule identifying when trenching or blasting will occur within each waterbody greater than 10 feet wide, within any designated coldwater fishery, and within any waterbody identified as habitat for federally **or state**-listed threatened or endangered species.”

Section II. – A provision should be added in this section addressing the following comment.

Comment: In this section the Plan and Procedures should require a review process for potential cumulative impacts of stream crossing construction activity. This review should not only examine the streams impacted by the current project, but also evaluate the impact of other stream crossing construction activities that recently took place on those same waterbodies. Construction of multiple crossings on a stream or river has the potential for cumulative effects on that water system, even in instances where a single crossing may not. Recurrent stresses on fish, such as those that originate from elevated suspended sediment concentrations, may have cumulative effects on fish health, survival and reproduction. The capacity of the system to recover from an impact may be exceeded, and the detrimental effects of crossing construction may become permanent. (*See* DRN Scoping Comment, Exhibit 7, Lucie Levesque et al., Review of the Effects of In-Stream Pipeline Crossing (2007))

For a more comprehensive analysis of the different development scenarios for pipeline construction in the Marcellus Shale Region, and the resulting cumulative impacts of that construction activity, the Commission should review a report provided by the Nature Conservancy titled, “Natural Gas Pipelines: An Excerpt From Report 2 of the Pennsylvania Impacts Assessment.” (*See* DRN Scoping Comments, Exhibit 8).

Section III.A. – “The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.”

Comment: The Procedures should require a more specified level of training, experience, or credentials for their inspectors. This would reduce the likelihood of improper or inconsistent application of the regulations. The word “appropriate” in the current draft does not provide adequate guidance for the requisite experience level of an inspector. There should be objective standards (i.e. specific licenses, years of experience, education

level, environmental training programs, local knowledge, etc.) outlined in the Procedures as a baseline for inspector approval.

There were numerous potentially improper and inconsistent categorizations of pollution events by inspectors during the recent construction of two large scale pipeline projects (the Tennessee Gas and Pipeline Company's 300 Line Upgrade Project and the Columbia 1278k Replacement Project). These inconsistent categorizations and results are a direct consequence of poorly designed standards for evaluating the credentials and experience of inspectors.

Section III. – A provision should be added in this section addressing the following comment.

Comment: Inspectors should be free of all contractual issues or limitations that may impede or prevent them from properly issuing fines or stop-work orders. This freedom from conflicts of interest should be outlined in the Procedures, as there currently is no such provision.

Section III. – A provision should be added in this section addressing the following comment.

Comment: A clear delineation between the responsibilities of Army Corps inspectors and the FERC's inspectors should be articulated in the Procedures. Such guidelines in the Plan and Procedures would better indicate who is directly responsible for corrective actions, how quickly they should occur, and who is ultimately responsible if they do not occur, and or, are delayed.

Section IV.A.2. – A provision should be added in this section addressing the following comment.

Comment: This section must provide a clear minimum time period in which a project sponsor must respond to a spill or discharge. Furthermore, this section should also outline the time period in which the clean-up activities must be completed, and the standards by which environmental inspectors will determine whether or not the clean-up activities were successful. While such baseline measures may be superseded by more protective measures at the state or local level, they should still be in place in case such measures are absent.

Section V.B.3. – A provision should be added in this section addressing the following comment.

Comment: The Procedures should include specific requirements and procedures that ensure operators properly identify all streams, springs, or other water bodies so that proper setbacks can be observed. Some regional and state departments of environmental protection, such as PADEP in Pennsylvania, rely on 7-1/2 minute USGS quads to define the locations of streams, springs, or other bodies of water; however, many surface waters do not appear as blue lines on 7-1/2 minute USGS quads because they are not scientific representations of surface waters or even perennial or intermittent streams. (*See* DRN Scoping Comments, Exhibit 5, Michelle Adams, Evaluation of Erosion and Sediment Control and Stormwater Management for Gas Exploration and Extraction Facilities in Pennsylvania under Existing Pennsylvania Regulations and Policies to Determine if

Existing Safeguards Protect Water Quality in Special Protection Waters of the Delaware Basin for the Delaware River Basin Commission (DRBC)).

Section V.B.3.c. – “Where pipelines parallel a waterbody, attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way.”

Comment: 15 feet of undisturbed vegetation between a waterbody and a parallel construction right of way is inadequate. At a minimum, construction should be kept out of the floodplain, particularly in a FEMA studied area or at a minimum 50-feet from the top of any defined bank.

Section V.B.3.g. – “Crossing of waterbodies when they are dry or frozen to the bottom may proceed using standard upland techniques and the staff’s Plan, provided that Environmental Inspector verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, the project sponsor must comply with all applicable Procedure requirements for “waterbodies” as defined in section I.B.1.”

Comment: This section should address restoration of crossing areas to a pre-construction condition, include photo documentation before and after construction as well as soil compaction and bulk density testing to ensure hydrologic connectivity is not severed from upland sources (i.e., springs).

Section V.B.3 – 9. – A provision should be added in this section addressing the following comment.

Comment: FERC should include standards for tree preservation in the locating and construction of stream crossings. Priority should be given to identifying crossing locations that do not remove streamside canopy from the banks and riparian corridors.

Furthermore, there should be a requirement for streambank vegetation that can be protective of water quality and provide for streamside and aquatic habitat – such as the use of native shrubs or meadow ecosystems that can be beneficial ecologically and also consistent with the existence of the pipeline.

Additionally, allowing open cut crossings of minor and intermediate waterbodies and not major waterbodies is logically inconsistent. The cumulative impacts of multiple crossings of minor and headwater streams is potentially more threatening to watershed health than a single crossing of a large waterbody. As noted, open cut crossings should be prohibited regardless of waterbody size.

Section V.B.4. – “All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water’s edge or in additional extra work areas as described in section V.B.2.”

Comment: All spoil piles should be placed outside the floodplain or, at a minimum, 50-feet from the top of any defined bank.

Section V.B.5.c. – “Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place.”

Comment: The use of the term “highest flow expected to occur” is not sufficiently specific enough to ensure adequate environmental protection. A higher standard should be identified. For example, the Procedures should require that the bridge be able to withstand the 100 year flood levels – a standard applied in many other construction zones proximate to waterbodies.

Section V.B.5.e. – “Remove equipment bridges as soon as practicable after permanent seeding. Obtain any necessary approval from unless the COE, or its delegated appropriate state agency, authorizes it as for permanent bridges.”

Comment: The Procedures should define a specific time period within which the project sponsor must remove the bridge. Use of the term “practicable” is not sufficiently specific enough to be adequately protective. Unless a specific schedule is established in the Procedures project sponsors will have the opportunity to leave bridges in place well beyond their intended use.

Section V.B.6.b. – A provision should be added in this section addressing the following comment.

Comment: The Procedures should articulate more stringent requirements for filtration systems used in “dry cut” crossing construction Plan. The only way in which “dry cut” methods can be successful is if there is a specific plan implemented for handling “dirty water” in the trench during excavation. The Pike County Conservation District has identified instances where filtration systems that were installed for this kind of construction failed resulting in high turbidity and discharges into the waterway. (*See* DRN Scoping Comments, Exhibit 2, Beecher, Letter, Dated December 20 2011).

Section V.B.6.c. – A provision should be added in this section addressing the following comment.

Comment: The Procedures should require the installation of secondary containment structures in all applicable areas during and after construction to ensure proper environmental protection.

Section V.B.6.d. – A provision should be added in this section addressing the following comment.

Comment: The Procedures should require that a specific contingency plan for the high-risk operation of Horizontal Directional Drilling be in place at the time the FERC Certificate is issued. (*See* Exhibit 2, Beecher, Letter, Dated December 20 2011).

Section V.B.6.d. – A provision should be added in this section addressing the following comment.

Comment: The Procedures should require that project sponsors disclose the chemical composition of their drilling muds by the time the FERC Certificate is issued. The provision should also include incentives for project sponsors to use non-toxic drilling muds. In July and August 2011 three separate spills muddied a high value stream in Susquehanna County, where at least 1,400 gallons of drilling mud spilled into the waterway. Kevin Marion, director of pipeline engineering at Laser, stated that Susquehanna County geology has led to inadvertent returns “more often than any other place I've ever worked.” And Furthermore, that “[t]here's really hardly anything we can do to design this or build it differently.” The requisite disclosure of the drilling muds would help facilitate appropriate responses to such accidents. (*See Exhibit 11, Laura Legere, Third Spill at Pipeline Sullies Susquehanna County Creek, (2011).*)

Section V.B.7. – “Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:”

Comment: The open-cut construction method should be prohibited on all waterbodies. Smaller tributary streams provide critical habitat and preserving their quality and health has a direct affect on the quality of downstream flows. There is no reason for the open-cut method to be used on any size waterbody. And there is certainly no justification for a provision that allows the use of open-cut (or “wet cut”) construction methods on waterbodies that have received any level of special designation at the regional, state or federal level.

Despite being the cheapest crossing method, this construction technique results in significant and unnecessary environmental impacts. The open cut method involves laying utility cable or pipe across a stream by digging a ditch from one side of the stream to the other. A backhoe is used to dig a ditch across the stream while the stream is flowing, and the ditch is not covered during construction. Wet open trench construction occurs without any isolation or diversion of flow away from the work area, and typically results in the significant elevation of downstream sediment loads during and shortly after the period of construction. During this construction method, levels of suspended sediment increase rapidly at the onset of instream activity and are followed by peaks of even higher suspended sediment concentrations during activities such as blasting, trench excavation, and backfilling. Alternate stream crossing techniques, such as directional boring and isolation (dry) methods such as dam-and-pump or flume, produce substantially lower amounts of sediment than wet open trench construction. (*See DRN Scoping Comments, Exhibit 4, Utility Stream Crossing Policy, ETOWA Aquatic Habitat Conservation Plan (2006).*) For a more thorough analysis of the detrimental effects of “wet cut” construction methods please refer to Lucie Levesque’s article titled, “Review of the effects of in-stream pipeline crossing.” (*See DRN Scoping Comments, Exhibit 7.*)

Section V.B.10.a. – “install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or driveable berms) must be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;”

Comment: Sediment barriers removed during the construction day for construction activities should be immediately replaced when the construction activity requiring their removal has stopped.

Section V.B.10.b. – “where waterbodies are adjacent to the construction right-of-way and the right-of-way slopes toward the waterbody, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way; and minimize the potential for sediment flow into the waterbody; and”

Comment: Sediment barriers should be placed a minimum of 50-feet from the top of any defined bank of any waterbody.

Section V.B.11. – “Remove the dewatering structures as soon as practicable after the completion of dewatering activities.”

Comment: The Procedures should define a specific time period within which the project sponsor must remove the dewatering structure. Use of the term “practicable” is not sufficiently specific enough to be adequately protective. Unless a specific schedule is established in the Procedures project sponsors will have the opportunity to leave dewatering structures in place well beyond their intended use.

Additionally, dewatering activities should require the use of a device (i.e., pump water filter bag) placed on a stabilized surface at least 50-feet from the top of any defined bank of any waterbody.

Section V.C.1. – 9. – A provision should be added in this section addressing the following comment.

Comment: See comment for Section VII.A.2. & 4 of the Plan.

Section V.C. – A provision should be added in this section addressing the following comment.

Comment: The section of the Procedures addressing Restoration is completely devoid of any time requirements for the successful completion of restoration activities. This glaring omission must be remedied by requiring a proposed completion time schedule for restoration actions. In a recent large scale pipeline construction project (Tennessee Gas and Pipeline Company’s 300 Line Upgrade Project), the project sponsor was accruing Notices of Violation from local soil conservation districts for failures to restore the Right of Way over seven months after the pipeline had been put in service, and over a year after the construction had been complete. Unless the Commission identifies a reasonable time schedule for restoration activities, project sponsors will continue such activity.

Section V.D.2. – “Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.”

Comment: There are herbicides and pesticides that are specifically labeled for application in close proximity to waterbodies. It is recommended that FERC require all pesticide and herbicide applications on ROW projects (both upland and lowlands) to strictly follow label directions and only be applied by a state-certified pesticide applicator. And the use

of herbicides along waterways or on any portion of the project must be specifically limited to those circumstances for which there is a vegetation restoration and maintenance plan that has been written by an expert in the field of horticulture or landscaping with a level of training specifically articulated, and that the level of herbicide use be strictly limited to only the minimum necessary for invasives control and native plant restoration.

Herbicides and pesticides may be applied 100-feet from any surface water when an appropriate buffer is provided; however, a 200-foot buffer should be maintained around a well head to minimize leaching potential.

Additionally, records of application date, chemical type and application rate should be required to be included in annual reports submitted to regulatory agencies.

Section V. – A provision should be added in this section addressing the following comment.

Comment: Nowhere in the Commission’s Procedures is there any discussion about the Direct Pipe Method. This method should be encouraged by the Commission as it is more environmentally protective than the open-cut or dry-ditch methods, and enjoys numerous technical and cost advantages over the HDD method, including but not limited to: better drill hole support to prevent collapsing, cutting wheel and cutting tools of the micro-tunneling machine can be adapted to any geological conditions, minimal space required, minimum slurry volume required, high performance rates, and significantly less expensive than the HDD method (*See Exhibit 1, Marc Peters, et al., Direct Pipe: Latest Innovation In Pipeline Construction – Technology and References, Pipeline Technology Conference (2008), pg 4.*). The Direct Pipe Method has already been used in numerous instances in the U.S. and abroad, and should be discussed in the Procedures.

Section VI.A.1. – “The project sponsor shall conduct a wetland delineation using the current federal methodology and file a wetland delineation report with the Secretary before construction.”

Comment: See comment from Section V.B.3. of the Plan. Additionally, in order to properly identify waterbodies and wetlands, independent surveys should be required to verify the often specious accuracy of the USGS quads.

Section VI.A.3. – “Early in the planning process the project sponsor is encouraged to identify site-specific areas where excessively wide trenches could occur and/or where spoil piles could be difficult to maintain because existing soils lack adequate unconfined compressive strength.”

Comment: The Commission should more specifically identify what “early in planning process” means in order to provide project sponsors with adequate guidance. Additionally, the use of the word “encouraged” is not an effective way to ensure that project sponsors are abiding by this provision. The Commission should use stronger language such as “shall” wherever possible.

Additionally, the definition of “excessively wide” should be clearly defined and a justification should be required for why they might occur. A pollution prevention plan should be outlined for practices to implement in those areas.

Section VI.A.4. – “Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.”

Comment: Wetland boundaries and buffers should remain clearly marked until restoration activities have been completed. Restored areas should be marked with permanent conservation easements and maintained/monitored for at least three years following completion of restoration activities.

Section VI.B.1.b. – “The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from wetland boundaries, except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.”

Comment: Submissions for approval of extra work areas and access roads should include construction plans AND justification for evaluation by the Director.

(Former Section VI.B.1.c.) – “Limit clearing of vegetation between extra work areas and the edge of the wetland to the certificated construction right-of-way.”

Comment: Clearing of vegetation between extra work areas and the edge of wetlands should be limited to the certificated construction right-of-way. This provision should remain.

Section VI.B.1.c. – A provision should be added in this section addressing the following comment.

Comment: When the construction right-of-way includes wetland areas with soil firm enough to use for access, precautions should be taken to prevent compaction from heavy traffic. Additionally, restoration should be clearly defined and carefully performed in these areas following construction.

Section VI. B.1. – A provision should be added in this section addressing the following comment.

Comment: The Procedures should include a provision stating that all access roads constructed with crushed rock for a pipeline projects require a complete and separate erosion and sediment control plan. The construction of Gas Exploration and Extraction facilities and associated construction and/or improvement of roads can negatively impact water quality, and these facilities have the same potential as other construction activities to degrade water quality. (See DRN Scoping Comment, Exhibit 5, Michelle Adams, Evaluation of Erosion and Sediment Control and Stormwater Management for Gas Exploration and Extraction Facilities in Pennsylvania under Existing Pennsylvania Regulations and Policies to Determine if Existing Safeguards Protect Water Quality in

Special Protection Waters of the Delaware Basin for the Delaware River Basin Commission (DRBC)).

Some states, such as Pennsylvania, do not apply the same standards of performance, or regulatory oversight, to oil and gas exploration and extraction facilities as is applied to other construction activities. Therefore, it is necessary for uniform federal oversight over these activities to minimize erosion and sedimentation harms. In Pennsylvania, roads constructed of crushed rock are considered to be a “best management practice” adequate for protection of special protection waters. In virtually all other construction projects the construction of roads – including crushed rock roads – is considered earth disturbance that requires its own erosion and sediment control measures.

Section VI.B.2.b. – “Minimize the length of time that topsoil is segregated and the trench is open (i.e., trench the wetland immediately prior to lowering in the pipeline).”

Comment: The Procedures should define a specific time period of how long the trench is open and the topsoil is segregated. Use of the term “minimize” is not sufficiently specific enough to be adequately protective. Unless a specific schedule is established in the Procedures project sponsors will have the opportunity to leave the trench open beyond what is necessary. The length of trench that should remain open should be limited to that which can be excavation and backfilled within one work day.

Section VI.B.2.f. – “The project sponsor can burn woody debris in wetlands, if approved by the COE and in accordance with state and local regulations, ensuring that all remaining debris, including ash, is removed for disposal.”

Comment: Burning of woody debris should not be performed within a wetland.

(Former Section VI.B.2.k.) – “Do not cut trees outside of the approved construction work area to obtain timber for riprap or equipment mats.”

Comment: Tree cutting should not be done outside the approved construction work area.

Section VI.B.3. – A provision should be added in this section addressing the following comment.

Comment: Sediment barriers should be installed prior to ANY disturbance activity.

Section VI.B.3.b. – “Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and minimize the potential for sediment flow into the wetland.”

Comment: Sediment barriers should be designed and installed in a manner sufficient to prevent sediment flow into wetland areas, not just minimize the potential for sediment-laden runoff.

Section VI.B.4. – “Remove the dewatering structures as soon as practicable after the completion of dewatering activities.”

Comment: The Procedures should define a specific time period within which the project sponsor must remove the dewatering structure. Use of the term “practicable” is not sufficiently specific enough to be adequately protective. Unless a specific schedule is established in the Procedures project sponsors will have the opportunity to leave dewatering structures in place well beyond their intended use.

Additionally, trench dewatering should be performed on stabilized areas and within the construction right-of-way, if at all feasible. At a minimum, trench dewatering should be performed. Dewatering activities should require the use of a device (i.e., pump water filter bag) placed on a stabilized surface at least 50-feet from the top of any defined bank of any waterbody.

Section VI.B.1. – 3. – A provision should be added in this section addressing the following comment.

Comment: Extra work areas and staging sites should be located outside of existing forested plant communities. Tree loss and canopy reduction adjacent to wetland systems should be avoided. Additionally, priority should be given to avoiding disturbance of palustine (forested) wetlands. These systems take decades to develop and the temporal scale of restoration makes it problematic.

Section VI.C.5. – “Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).”

Comment: The project-specific wetland restoration plan should be developed prior to construction in the wetland to allow for immediate remediation.

Section VI.C.6. – “Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.”

Comment: This section should read “Ensure that all disturbed areas successfully revegetate with wetland **native/non-invasive** herbaceous and/or woody plant species.” Additionally, the term “successfully” needs to be more specifically defined in this section. Perhaps this could be accomplished by referencing Section VI.D.4. of the Procedures.

Section VI.C.1. – 7. – Provisions should be added in this section addressing the following comment.

Comment: The Commission must require that further details and guidelines be developed and supplied regarding the “Project-specific Wetland Restoration Plan.” This umbrella term does not supply enough information. Additionally, it is unacceptable that this is the only section in either the Plan or Procedures that invasive species suppression is addressed. Invasive species are a major economic and ecological issue in uplands,

lowlands, and wetlands systems. Yet, the Commission only tangentially mentions it as a component of a poorly defined “Wetland Restoration Plan.”

Section VI. D.4.a. – d. – Provisions should be added in this section addressing the following comment.

Comment: The Commission must require a more quantifiable procedure for validating the vegetative cover. This would involve either vegetative plots or transects through both the reference plant community and the disturbed wetland.

Given that trees within 15 feet of the pipeline may not be allowed to grow (an effectively 30 foot ROW) the remaining disturbed area should be required to achieve at least 90 percent of the species, cover and structural diversity of the reference system.

A firm metric needs to be established regarding the level of exotic (invasive) species allowed in the system. As written, FERC would potentially allow a dominance of invasive species if adjacent areas have them present. Disturbance drives biological invasion – it promotes it. As such, additional efforts need to be made to keep invasive organisms out of the ROW for the entire service life of the ROW. Achieving over 95 % native plant cover is a common and obtainable metric for restoration areas.

It is critical to differentiate between “vegetation cover” and restoration. Restoration involves the creation of native plant communities structurally and functionally equivalent to the systems displaced. It does not just involve getting native plants to grow on the site.

Respectfully Submitted,



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Exhibit 1

Direct Pipe ®: Latest innovation in pipeline construction - technology and references.

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1 Introduction

Various methods have so far been applied for crossing works in order to build steel or polyethylene pipelines as pressure lines. Pipe jacking and segmental lining allow for the construction of protective tunnels with subsequent insertion of the pipe string. The HDD method, in contrast, includes the construction of a pilot bore prior to pipe pull-in. Recent developments such as the Easy Pipe method comprise jacking processes -- where tight connection interim steel pipes are pushed towards the target shaft, coupled to a pipeline and then pulled back together. All these methods include a two- or multi-step pipe installation process. The multilevelness of these methods and pertinent aspects such as costs and project duration led to the development of the DIRECT PIPE® method: Steel or polyethylene pipes can now for the first time be jacked efficiently and fast in one operation process.

2 The DIRECT PIPE® method

The development of the DIRECT PIPE® method was based on parameters such as the creation of a one-step pipe jacking method, provision of an efficient alternative to existing methods, reduction of site-infrastructure surfaces and minimization of geological risks (e.g. drill-hole collapse). In addition, disadvantages of the existing methods needed to be eliminated, advantages to be combined and new technologies to be considered. The result is a combination of HDD, Microtunnelling and the Herrenknecht thruster unit Pipe Thruster, which was presented for the first time at the Hanover Fair 2006 and which has been proven in practice.

The DIRECT PIPE® method includes the welding and testing of a pipeline (e.g. steel), which is stored on pulley blocks on the launch side. A microtunnelling machine is mounted in front of the pipeline. To facilitate TBM control, two to three angular steel pipes (connection pipes) are installed between the pipeline and the machine. The Pipe Thruster operates as thrust unit from the launch pit clamping the pipeline on the outside and pushing the machine as well as the pipeline into the ground.

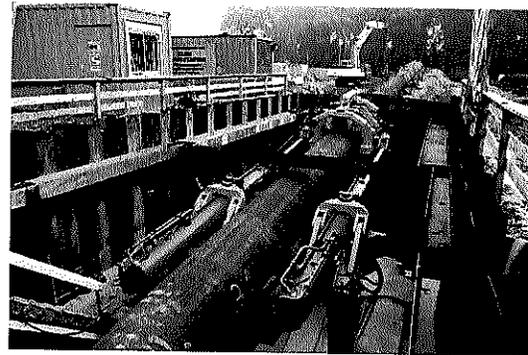
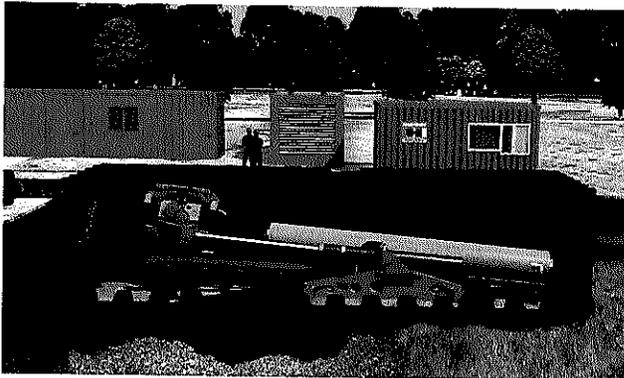
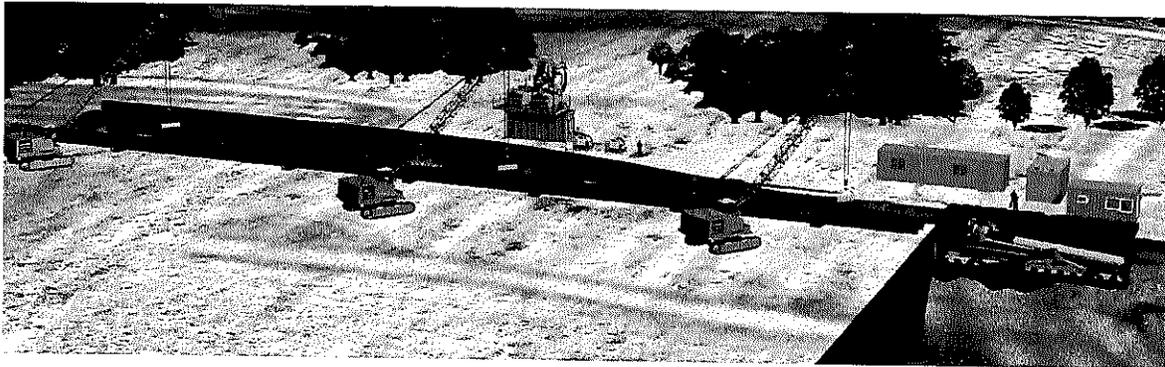


Fig. 1: DIRECT PIPE® site infrastructure.

The tunnel face is excavated by a microtunnelling machine similar to the pipe-jacking method, which has been established for several decades. The cutting wheel can be equipped with cutting tools adapted to the specific geological conditions. In contrast to HDD technology, larger boulders, hard rock as well as soft soils (gravel) can be crossed.

The tunnel face is slurry-supported using a bentonite suspension. The excavated material is removed via a slurry circuit with separation plant in order to separate the spoil from the slurry liquid before feed pumps transport the liquid back to the tunnel face. The micromachine is controlled from the operating container. A gyro compass is used for machine surveying.

The micromachine, pipes and connection pipes are designed conically, which increases the annular gap between the machine or pipe sleeve and the surrounding ground. Bentonite is injected into the annular gap for lubrication from the cutting-wheel assembly. In addition, a lubrication ring is mounted in the transition area between the connection pipe and the product pipeline, where most of the bentonite is added, in order to reduce the friction between the pipeline and the ground to a minimum. In contrast to pipe jacking, a Herrenknecht Pipe Thruster is set up in the launch pit instead of a jacking frame. The Pipe Thruster clamps the pipeline on the outside and pushes the pipes as well as the microtunnelling machine strokewise forward with its thrust cylinders.

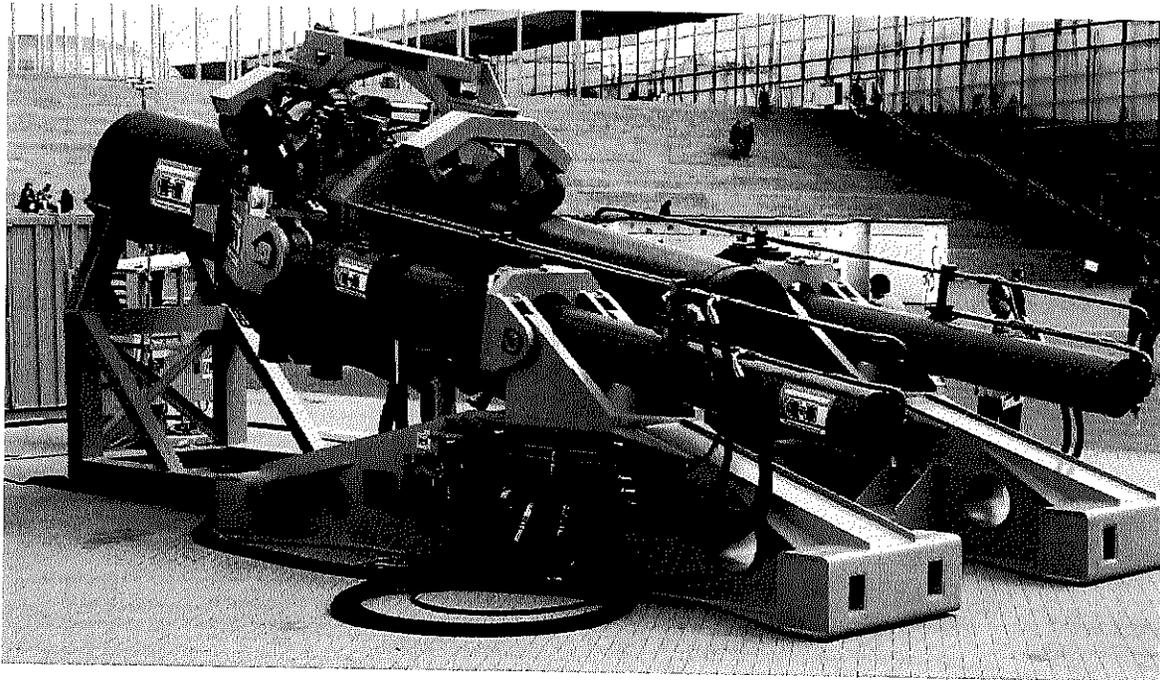


Fig. 2: The Herrenknecht Pipe Thruster presented at the Hanover Fair 2006.

The Herrenknecht Pipe Thruster can be adapted to diameters ranging between 20" and 48" (500 up to 1,200mm) by a simple exchange of the clamping unit. The clamping units can be deployed on any pipe type and coating. The two thrust cylinders are designed for a stroke of five meters and a maximum pull and push force of 5,000kN each by advance rates of 5m/min. The Pipe Thruster is pivotable, the clamping unit can be pushed forward at various angles and the Pipe Thruster with a total weight of 45t has a modular design for easy transportation.

In the rear of the Pipe Thruster, a prefabricated and tested product pipeline is positioned on pulley blocks ready to be thrust forward. Different from pipe jacking or microtunnelling, the DIRECT PIPE[®] method allows for an installation of the slurry circuit from the start of the project not requiring a delayed installation and successive extension of the circuit: The slurry and pump system is operated parallel to pipe jacking along the entire drive length.

Due to this site configuration, the product pipeline can be installed in one step. The direct installation of the pipeline allows for continuous drill-hole support preventing hole collapse. The DIRECT PIPE[®] site configuration also allows for a basic launch and target shaft design. It is only necessary to provide a launch seal and firm foundation for the Pipe Thruster on the launch side in order to transmit the thrust forces to the soil. Upon arrival in the target shaft, only the TBM and the connection pipes have to be disassembled; the installation of the product pipeline in the ground is then already completed. Feed and slurry lines as well as control, data and power cables are led through the pipeline on special roller assemblies; they can be easily removed from the pipeline using a rope winch.

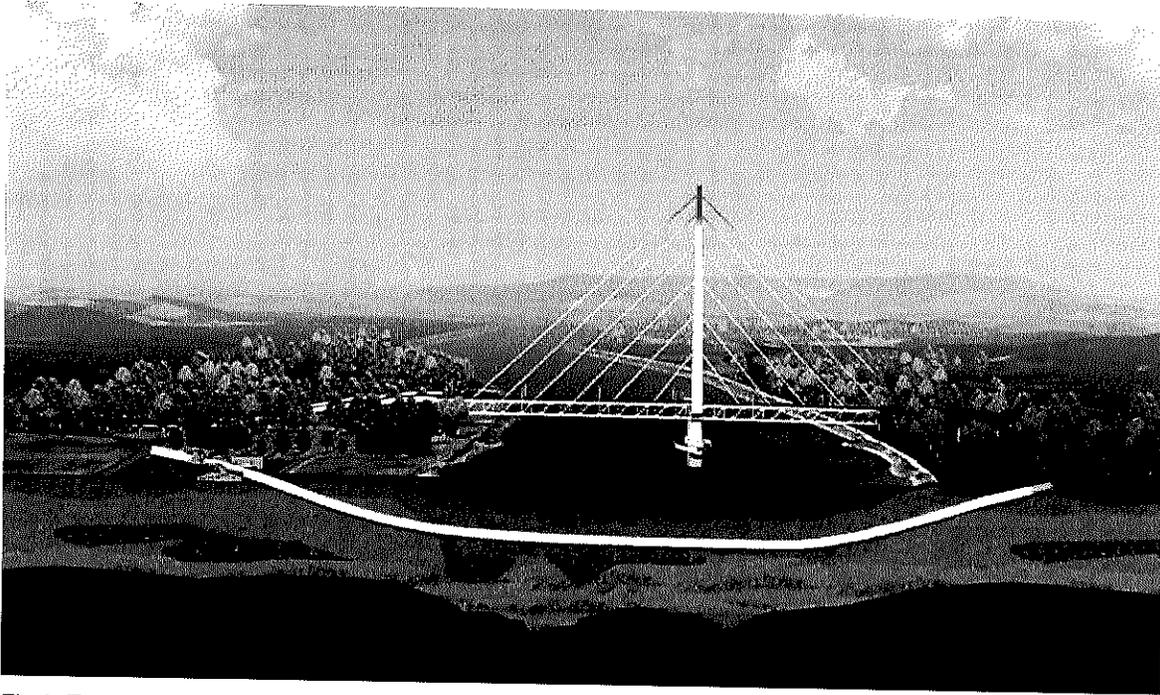


Fig 3: Tunnel cross section up to target shaft.

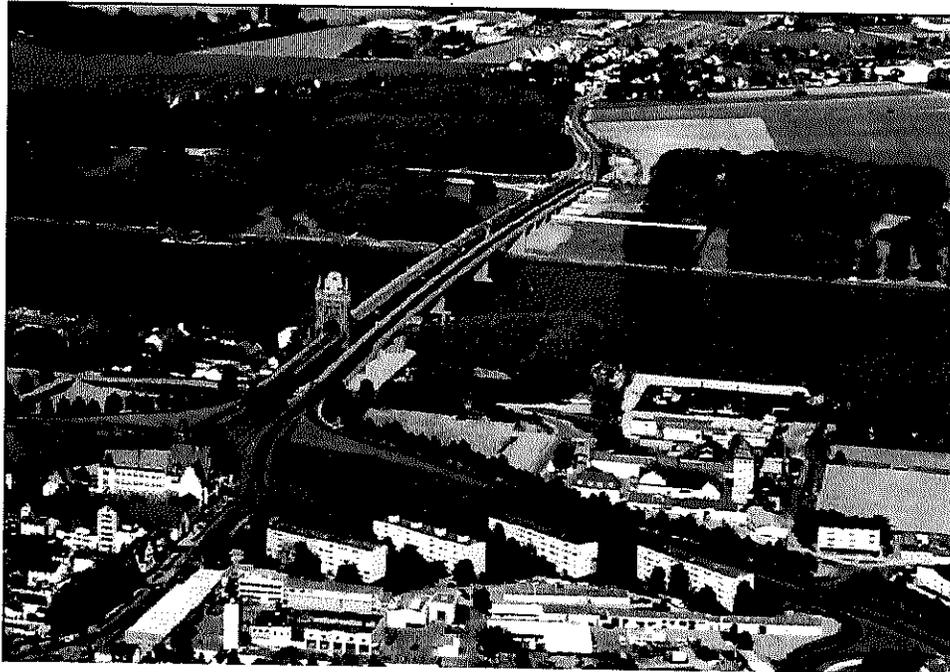
Advantages of the DIRECT PIPE® method:

- One-step jacking method, i.e. the product pipeline is pushed into the ground in one step, in contrast to all common methods, which have so far been applied
- Permanent drill-hole support in order to prevent a drill-hole collapse, advantage over HDD
- Cutting wheel and cutting tools of the microtunnelling machine can be adapted to any geological conditions, which is particularly beneficial over HDD
- Minimum space required, only on the launch side: Advantage over other methods, which either require considerable storage space on the launch side (pipe jacking / segmental lining), which require considerable space in order to install the product pipeline on the target side (HDD) or which require space on both sides (Easy Pipe)
- Minimum slurry volume required due to the small overcut
- High performance rates - due to the deployment of the Pipe Thruster and the possibility to install and test entire pipe sections
- The microtunnelling machine, which is equipped with U.N.S. navigation technology and a north-seeking gyro compass, guarantees high-precision target control

3 Pilot project “Rhine crossing near Worms (Germany)”

During the Rhine crossing near Worms in September 2007, the DIRECT PIPE® method made its debut. Contracted by Worms-based EWR Netz GmbH, Herrenknecht installed a culvert with a total length of 464 meters parallel to the Nibelungen Bridge from the Hessian side of the Rhine River towards downtown Worms located on the other side of the river in the Federal State of Rhineland-Palatinate. The culvert is planned to serve as a casing pipe for a 600-mm

diameter water pipeline and will also accommodate several ducts for power and telecommunication cables. The culvert was designed as steel casing with a diameter of 1,200mm (48"). Casing-pipe voids are cement-filled after product pipe pull-in in order to hold the ducts within the casing pipe in place and protect them for the duration of their service life. The new DIRECT PIPE® method, engineered and tendered by the Hamburg-based engineering firm de la Motte & Partner, bidded by the construction company Sonntag Baugesellschaft mbH & Co. KG from Dörth in cooperation with Herrenknecht AG, was preferred over trenchless construction and HDD technology during the award process.



Pipeline route: River crossing

Pipeline route: Ashore

Fig. 4: Alignment map of the Rhine crossing near Worms – top view.

The method was awarded due to its economic benefits and project-specific advantages such as the minimum space requirements on the target side in Worms only allowing a minimum pit size for the recovery of the micromachine; it was also chosen due to the tight schedule, which required a timely realization of the project because of the flooding danger, expected for late September, that threatened the region of Worms and the entire site infrastructure. The irony of fate, the flooding of the Rhine River, caused by heavy rains in Switzerland, already occurred

during site set-up in mid-August, which means much earlier than expected, leading to a complete evacuation of the jobsite and a delay of approx. one month.

The coverage of the culvert alignment underneath the Rhine River was approx. 5m at a water depth of 10m and 3m in the bank area. The alignment comprised a 100-m long straight drive with a 9.5% gradient and a circle section with a radius of 1,450m towards the target shaft. The maximum water pressure in the middle of the alignment under the riverbed of the Rhine was 1.5bar.

Since site infrastructure was spatially limited due to nearby woods, the pipeline could not be jacked in one step. Instead, pipe sections of 5 x 90m and a first section of approx. 30m length were prepared. The pipeline was extended by welding the pre-installed pipe sections together. Pipeline extension, welding of the pipe sections and coupling of the supply and discharge lines of the machine took between 12 and 15 hours.

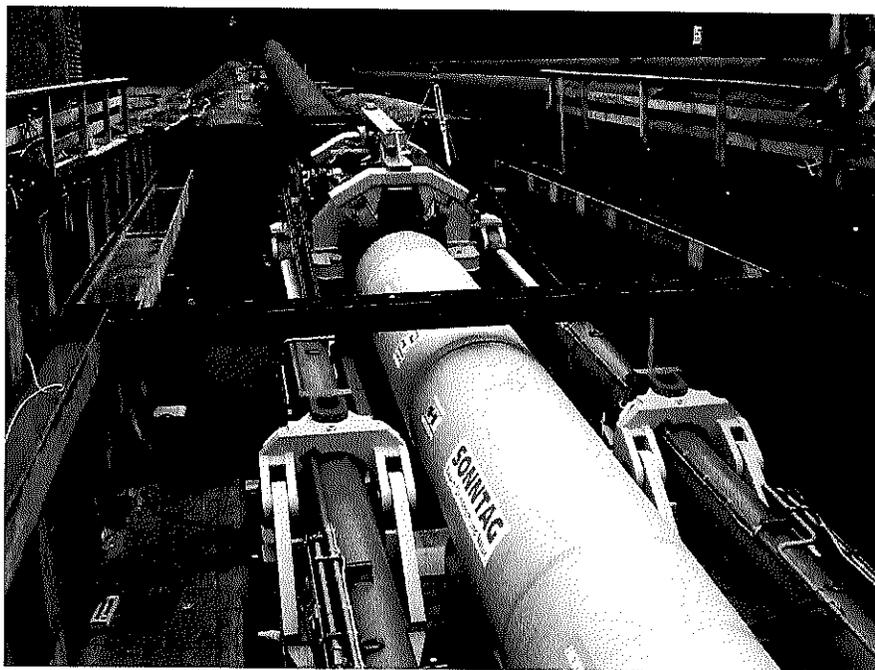


Fig. 5: View into the launch pit during machine launch: In the front, the Herrenknecht Microtunnelling Machine AVN1000XC and the Pipe Thruster; in the rear, the first pipe section on pulley blocks.

After start of excavation, the new method exceeded even the most optimistic expectations. Average performance rates of 15cm/min (maximum 25cm/min) allowed for a fast installation of the pipe sections. On average, a 90-m long pipe section was jacked per day; with average thrust forces of only 70 to 80t. The pipe string was lubricated through a lubrication ring (see item 2) from the machine and from an opening behind the launch seal in the launch shaft; pipe lubrication was not carried out automatically through the pipe string. The overcut of 50mm allowed the pipeline to “float” in the drill hole and helped to considerably reduce friction forces.

Upon arrival in the target shaft, it became evident that the largest part of the thrust force had to be applied due to face pressure (which was no longer generated after the target shaft had been reached). The geological conditions could be deduced from the separation-plant material and by analyzing the excavated soil. The alignment comprised approx. 80 % of gravelly-sandy soils and up to 20 % of silty-clayey soils, which positively influenced performance rates.

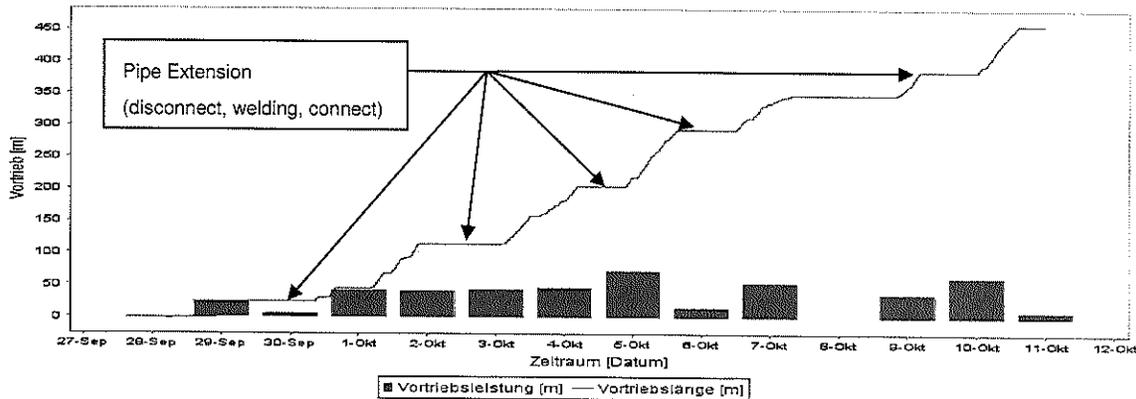


Fig. 6: Advance rates Project Direct Pipe[®] Worms.

4 Conclusion

DIRECT PIPE[®] is another method for pipeline installation not only having theoretical advantages over existing methods (in particular over HDD technology and especially regarding large diameters) but also achieving impressive practical results. DIRECT PIPE[®] allows for project requirements and jacking performances that are not possible with other methods. Future projects will show how far the limits can be pushed with regard to alignment length and performance rates; and there is already a large number of possible upcoming projects due to the high and continuously growing worldwide demand for pipelines and undercrossing structures required for the oil and gas industry, for freshwater and sewage transportation as well as for supply and communication lines.



Fig. 7: Breakthrough in Worms.