

PUBLIC COMMENTS SUBMITTED



Commerce and Industry Association of New Jersey

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Trenton Office: 222 West State Street • Suite 212 • Trenton, NJ 08608 • Tel: 609-695-5900

TO: New Jersey Highlands Council

FROM: Diane Walsh, Vice President CIANJ

DATE: Thursday, Jan.19, 2012

SUBJECT: CIANJ Support of Tennessee Gas Pipeline Project

Good afternoon, members of the New Jersey Highlands Council. I am Diane Walsh, vice president of government affairs and communication of the Commerce and Industry Association of New Jersey. I thank you for the opportunity to speak with you this afternoon. The Tennessee Gas Pipeline Company has been safely delivering natural gas to New Jersey Local Distribution companies since the 1950's with its pipeline running through northern New Jersey. At this time the company is planning to expand its capacity to deliver natural gas to New Jersey by adding approximately 16 miles of new pipe through portions of Montague, Wantage, West Milford, Ringwood and Mahwah. The Commerce and Industry Association of New Jersey supports this project and urges you to give it your approval.

The economic vitality and quality of life people in New Jersey enjoy is dependent upon a reliable supply of energy. Consumers in New Jersey have several choices of energy from which to choose. Natural gas is one of the cleanest sources of energy available in the region and the demand for it has recently increased. Tennessee Gas Pipeline Company is working to help satisfy this demand by expanding its capacity to deliver natural gas through the expansion of its delivery system to local distribution companies.

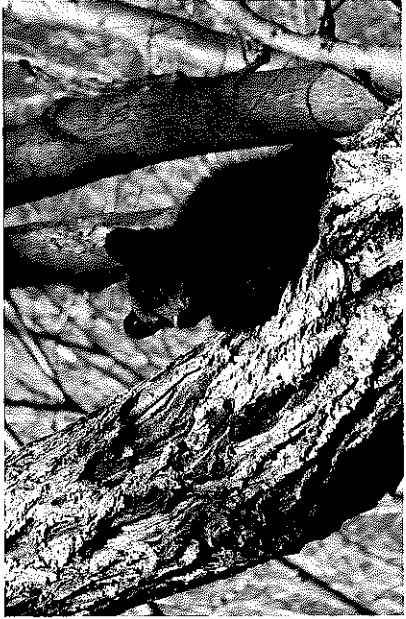
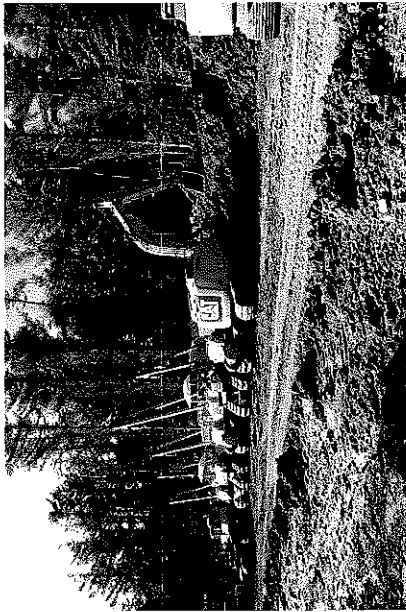
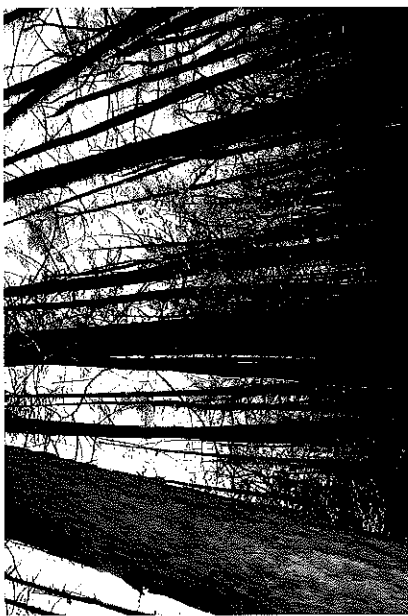
In addition to the delivery of natural gas, the project conveys both short and long term economic benefits. The natural gas supplied through the pipeline will serve as a primary source of the energy necessary for New Jersey businesses to continue to operate and thrive in our state, thereby allowing future economic growth and job creation.

The short term economic benefits have been well documented by a recent study conducted by the Bloustein School at Rutgers University that cites that the construction will result in: \$64 million being spent in New Jersey for goods and services; the creation of a significant number of good paying jobs directly related to the project (440 job years) and approximately 255 indirect jobs for a total labor benefit over the course of the project of \$36.5 million; more than \$2 million in tax revenue to the state; and approximately \$2 million in local ad valorem tax revenue to the towns through which the project crosses.

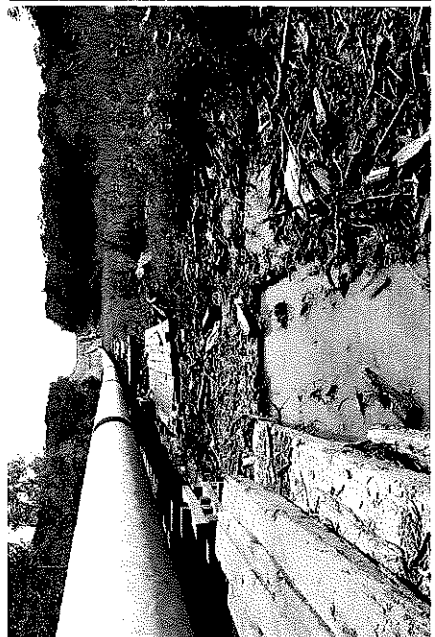
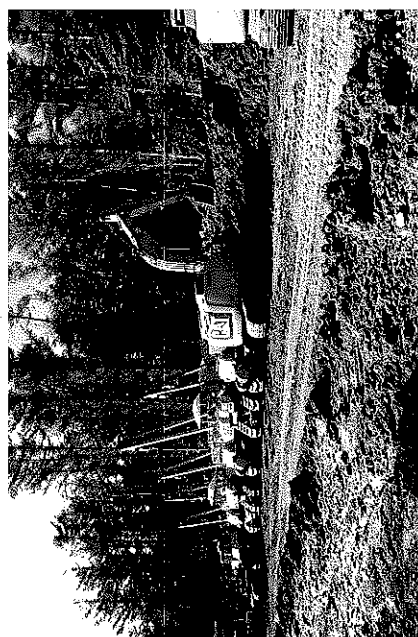
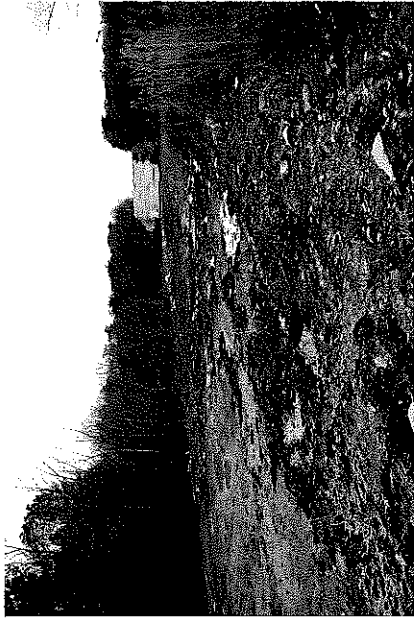
In conclusion, CIANJ believes that the need for the project exists to satisfy an increasing demand for natural gas that has occurred for several reasons including the fact that it is one of the cleanest sources of energy available; the Tennessee Gas Pipeline Company has a long track record of reliable, safe service in New Jersey and its history indicates that it will approach and complete the project in a responsible manner; and the project conveys significant long and short term economic benefits that will help New Jersey's economy, especially at this time when we are still recovering from the effects of the recent recession that has left our unemployment rate at unacceptably high levels. For these reasons I urge you to give your approval to the project. Thank you.

The TGP project is flawed, after witnessing and documenting all phases of the 300 pipeline project, in my opinion the work is sloppy and extremely abrasive to the environment, and does not live up to the standards in which the TGP has agreed to. In Waywayanda State Park in Vernon the TGP finished laying the pipe in mid November 2011 during the pipeline project our town has seen a major mudslide (Aug 28th), fires in the State Park, (June 7th 2011) and a 7 mile long by 200 foot wide scar gutting through our State Park left by the deforestation of 53,000 trees worth a market value of 16,000,000. The Vernon Environmental Commission has witnessed and documented a large contaminated wetland area in Wawayanda State Park, this wetland area was vital to 1000s of migrating birds, including the 4 endangered species that live in Vernon, The Red Shoulder Hawk, Pileated Wood Pecker, timber rattler and bog turtle. The State Park is now home to spoiled wetlands that have been allowed to remain and leach for months spilling into lakes and streams that far exceed the designated perimeter that TGP applied for, the contaminated wetland area is 200 feet long by 125 feet wide and has been covered over with 2 to 3 feet of mud, and is at this minute seeping throughout Waywayanda State Park with no mitigation date set, On November 28th 2011 I notified Comm. Bob Martin of the DEP that Oily residue was fluent throughout the wetland area in the State park, he was not aware, and I was not surprised, he sent 3 DEP inspectors out the next day to meet with me and walk the pipeline, the inspectors stated they had never been to this area before and came toting trail mix and tissues not the sample bottles and soil bags I had expected, the DEP has yet to comment. The DEP needs to understand their position, they are being payed by the tax payers of New Jersey to protect the environment not to protect the interest of big fat cat corp. with deep pockets masking themselves behind fancy titles like economic stimulators and using fluffy phrases like minimal impact to environmentally sensitive areas. The reforestation model the DEP has set fourth is sparse and inaccurate to say the least. I gave TGP reps a list of 54 indigenous tree, herb, berry and tuber species that were taken out of Waywayanda State Park, that did not make it on the replanting list, oversights of this magnitude are not expectable. New Jersey has a message for the El Paso co, the DEP and especially for our own Government; New Jersey has taken off the rose colored glasses. Our State ranks # 4 for the filthiest air in the nation, # 3 for the highest breast cancer rate and we are 2nd to New York for having the highest taxes. However the good news is New Jersey has some of the most committed and educated environmental activist in the nation and we are here today to tell you **WE ARE NOT BUYING WHAT YOUR SELLING!!**

53 Thousand Trees ripped out of Wawayanda State Park



300 Pipeline Project Devastates Wetlands in Wawayanda State Park 2011



Ms. Francesca Giglia
8 Citation Ln
Manalapan, NJ 07726-9570

Jan 7, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

We as a nation should preserve our god given beautiful natural resources. We need to respect, appreciate nature; land, animals and all living things. It is imperative that mankind maintain the delicate balance with Mother Nature.

Sincerely,
F. Giglia

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Francesca Giglia

Ms. Terri Caliendo
462 Bergen Ave
Township of Washington, NJ 07676-5201
(201) 358-1966

Jan 7, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Terri Caliendo

Ms. Elena Valentino
53 Horizon Farms Dr
Warwick, NY 10990-2261
(973) 945-0676

Jan 7, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Elena Valentino

Mrs. Barbara Stansfield
19 Wilson St
Oakland, NJ 07436-3915

Jan 8, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Barbara Stansfield

Mrs. Carol Flanagan
1079 Lafayette Ave Ext
Hawthorne, NJ 07506-2209

Jan 8, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

This project will result in the destruction of environmentally-sensitive lands, including water supply watersheds, wetlands, and even the Monksville reservoir

It will lead to destruction of critical forest resource areas, habitats of threatened and endangered species, open waters and buffers, and conservation priority areas as designated by the Highlands.

The pipeline will cut through several public lands across the Highlands region: Stokes State Forest, Long Pond Ironworks State Park, the Monksville Reservoir, Ringwood State Park and Ramapo River Reservation.

The scenic beauty of the Highlands and our state forests will be destroyed.

Since gas in the pipeline would come from drilling in the Marcellus Shale in Pennsylvania and New York, it would encourage development of those gas fields, which will hurt the environment in the Poconos and the Catskills, polluting the Delaware River and affecting New Jersey's water supply.

We will see more erosion of important soils and sedimentation of waterways as a result of this company

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Carol Flanagan

Mr. Victor Tuohy
182 Riverdale St
Hillsdale, NJ 07642-1511

Jan 8, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Victor Tuohy

Mrs. Linda isenburg
445c Laurelbrook drive
Bricktown, NJ 08724

Jan 9, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again. It is time to stop destroying this planet, there are so many unsuspecting people whom are totally unaware of decisions made by major for huge profit companies at the expense of the health of children and future generations, it is time to STOP.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Linda isenburg

Ms. Andrea Shadel
62 Division St
Keyport, NJ 07735-1540

Jan 9, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Andrea Shadel

Mr. Andrew Gargano
45 Apshawa Cross Rd
West Milford, NJ 07480-3701
(201) 819-1701

Jan 9, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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If the Highlands Council were to allow a public utility, with no real conscience, and an unending thirst for profits \$\$\$, to ruin our mature forests, wetlands and natural wildlife, it would be an absolute crime.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Andrew Gargano

Ms. Susan Glaser
245 Sheridan Ave
Ho Ho Kus, NJ 07423-1138

Jan 9, 2012

Highlands Councilmembers

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Sincerely,
Ms. Susan Glaser

Ms. Erica Panek
32 White Birch Trl
Stockholm, NJ 07460-1109

Jan 9, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Erica Panek

Mr. Lee Snyder
128 W Centennial Dr
Medford, NJ 08055-8124

Jan 10, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Lee Snyder

Ms. Teresa Stimpfel
328 Andover Pl
Robbinsville, NJ 08691-3436

Jan 10, 2012

Highlands Councilmembers

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Sincerely,
Ms. Teresa Stimpfel

Mrs. Regina Discenza
233 Sunset Dr
Forked River, NJ 08731-2915

Jan 5, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Regina Discenza

Ms. Sandra Simpson
405 Long Hill Rd
Hillsborough, NJ 08844-1316

Jan 5, 2012

Highlands Councilmembers

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The pipeline will cut through several public lands across the Highlands region: Stokes State Forest, Long Pond Ironworks State Park, the Monksville Reservoir, Ringwood State Park and Ramapo River Reservation.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Sandra Simpson

Mrs. Renee Allessio
PO Box 76
Hewitt, NJ 07421-0076

Jan 5, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

I live in West Milford. I know the mitigation measures proposed by this company have been inadequate. I have personally watched the installation of the 300 Line create an environmental nightmare for Lake Lookover and the residents who live in this lake community. This lake is in walking distance to my home in Upper Greenwood Lake. It is now January and the hillside above this lake and the lake itself have still not been mitigated. Come the spring rains what will happen? Mudslides and flooding have already increased this past year due to clear cutting of trees, depletion of other vegetation and erosion on steep slopes and wetlands combined with heavy rains and snow. There are other concerns for local residents living in close proximity to gas pipelines, worries about ground water contamination, release of methane gas and homeland security issues. Please do not let this company continue with the Northeast project to destroy the rest of the Highlands.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Renee Allessio

Mr. Martin Wolf
2220 Capra Way
Colo Spgs, CO 80919-3526
(719) 548-1932

Jan 5, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Martin Wolf

Mr. Leona & George Fluck
229 Sharon Rd
Robbinsville, NJ 08691-2314

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Please consider future generations - water is our life. Protect our state and the Highlands from another corporate greed project. We are citizens and residents of New Jersey - these are our lands and we expect you as the Council to stand and protect the shrinking open space and water supplies that are vital to humans and wildlife alike.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Leona & George Fluck

Mrs. Shelley Dougherty
190 Magnolia Ave
Hillsdale, NJ 07642-2128

Jan 6, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.
This is too much! Leave our lands alone!

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Shelley Dougherty

Mr. Joel McGreen
9 Farm Valley Ln
Blairstown, NJ 07825-2502

Jan 6, 2012

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Sincerely,
Mr. Joel McGreen

Ms. debra tomajko
276 Readington Rd
Branchburg, NJ 08876-3725
(908) 392-1774

Jan 6, 2012

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Sincerely,
Ms. debra tomajko

Mr. Joseph Dewan
1674 Perrineville Rd
Monroe Township, NJ 08831-1949
(732) 605-1288

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Joseph Dewan

Mr. Mark Sibley
134 Cider Press Dr
Mullica Hill, NJ 08062-9486
(856) 478-0458

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Mark Sibley

Ms. Paula Magdosko
8 Citation Ln
Manalapan, NJ 07726-9570
(732) 970-6463

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Paula Magdosko

Mr. Christopher Hoffman
34 Field St
Bridgewater, NJ 08807-3307

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

I am concerned with this project due to the uncertain aspects of the fracking procedure to extract gas from shale. I don't think this meets the standards of environmentally sound practices to go forward with this pipeline. There has not been enough time given to research the effects of fracking on the public health and safety.

Do not be at haste, to lay my Earth to waste!

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Christopher Hoffman

Mr. Rolf Schudel, Jr.
756 Hickory Hill Rd
Wyckoff, NJ 07481-1603

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again. Hopefully, our New Jersey Highlands will be protected from this monstrous intrusion! Polluted water, lands destroyed, animals killed, all these issues and so much more will result from an unnecessary pipeline through N.J.'s most sensitive remaining environment.

Stop the PipeLine Now!

Sincerely,
Rolf Schudel, Jr.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Rolf Schudel, Jr.

Ms. Patricia Phillips
487 Wolcott Ave
Kent, OH 44240-2355

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Patricia Phillips

Mrs. Beverly Budz
4 Grand St
Highland Lakes, NJ 07422-1301
(201) 919-1787

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again. I live in Highland Lakes and I have watched the El Paso Co harvest 53 thousand trees from Waywayanda State Park leaving a 7 mile 200 foot wide scar through are beautiful park while distrupting precious wetland areas of over 200 feet long by 100 wide that used to be filled with birds and aquatic life and now it is a dead zone,migratory birds depend on the parks wetlands, especially the endangered Red Shoulder Hawks, and Fisher Eagles (Bald Eagles) that have been photographed nesting in this exact spot year after year, but not this year. Let's Stand For Something People or are we now Falling For Anything!!

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Beverly Budz

Ms. Diana Reed
2033 Westfield Ave
Scotch Plains, NJ 07076-1811
(908) 889-8833

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Corporations have done alot to build this country, yet that have also done alot to destroy our economy, our environment and our trust. Please do not allow individuals, and the companies they represent, to become rich while our ecosystem is polluted with the chemicals that shacking requires. Pleaseconsider the Haliburton exemption, and how defenseless that leaves the people who will suffer from this project. I implore the Highlands Council, at least, to stand up and require this pipeline meet the strict standards of the Highlands Act.

Sincerely,
Diana Reed
2033 Westfield Ave.
Scotch Plains, NJ 07076

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Diana Reed

Mr. frank angiulli
8 Tom Ln
West Milford, NJ 07480-1719

Jan 6, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

I live in West Milford and have seen first hand the sediment damage in Lake Lookover and the stripping of the ground cover and all foliage on the steep slopes on both sides of Clinton Rd. completely exposing the rock face, allowing water and sediment, including heavy diesel equipment runoff to flow unimpeded into Lake Lookover. The hay bale barriers proved inadequate and failed miserably to protect the lake which they also installed the pipeline through at great environmental impact. This is a rather small body of water and could not easily dissipate the volume of oil contaminants and sediment inherent in such an operation. It's appalling to see a supposedly high end professional pipeline company fail so miserably to protect the local environment by cost cutting shortcuts and oversight. They have failed in their promise to protect and are not worthy of any exemptions. The legitimacy of the Highlands act is at stake. Its purpose is to protect vital water sources and this project is the most significant threat to these sources to come along. This project should not only be denied any exemptions from the Highland's standards but should be denied access to any bodies of water or wetlands. Anything less would be a travesty of reason.

Sincerely,
Frank Angiulli
8 Tom Ln.
West Milford, NJ 07480

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. frank angiulli

Ms. Lee Cleary
64 Woods End Dr
Basking Ridge, NJ 07920-1930

Jan 5, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Lee Cleary

Dr. Amir Handzel
150 Secatogue Ave Apt 2c
Farmingdale, NY 11735-2729

Jan 5, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Dr. Amir Handzel

Dr. Sheila Jacobs-Carey
52 Ivy Pl
Wayne, NJ 07470-6141

Jan 5, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Dr. Sheila Jacobs-Carey

Ms. Frances Spann
70 Farmersville Rd
Califon, NJ 07830-3303

Jan 5, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Frances Spann

Ms. marleigh siebecker
5 Foxhill Ln
Ringwood, NJ 07456-2717

Jan 5, 2012

Highlands Councilmembers

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Sincerely,
Ms. marleigh siebecker

Ms. Nicole Rahman
41 Lilac Dr
Flemington, NJ 08822-7048

Jan 5, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Nicole Rahman

Mrs. Elise Murray
75 Cherrybrook Dr.
Princeton, NJ 085407710

Jan 5, 2012

Highlands Councilmembers

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Once the water is contaminated there is no mitigation; please protect NJ's drinking water.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Elise Murray

Mrs. Elise Murray
75 Cherrybrook Dr.
Princeton, NJ 085407710

Jan 5, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Elise Murray

Mr. Robert Spivack
5 Cedarwood Ter
Woodland Park, NJ 07424-3708
(973) 111-1111

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Sincerely,
Mr. Robert Spivack

Mr. chris sieverts
567 Wyckoff Ave
Wyckoff, NJ 07481-1336
(201) 891-6235

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Sincerely,
Mr. chris sieverts

Mr. John Maxwell
16 Picadilly Cir
Marlton, NJ 08053-4233

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. John Maxwell

Mr. Marvin Lewis
3133 Fairfield St
Philadelphia, PA 19136-1107
(215) 676-1291

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Wake up to 'adequate.' There are millions of people in the tri state area that can be impacted.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Marvin Lewis

Mr. ronald sauers
150 Montgomery St
Highland Park, NJ 08904-2302

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. ronald sauers

Mr. M Dawson
96 Crusher Rd
Hopewell, NJ 08525-2202

Jan 4, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. M Dawson

Mr. Peter Ford
74 Little Falls Rd
Cedar Grove, NJ 07009-1544

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

As a volunteer hiking trail maintainer in the New Jersey Highlands and an avid hiker in this region, I urge you to block this destructive pipeline.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Peter Ford

Ms. BETTY FLEMING
456 Riverside Dr
Princeton, NJ 08540-5421
(609) 924-6253

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please do not let the Highlands be destroyed!.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. BETTY FLEMING

Ms. Gay Thormann
16 Erwin Pl
Caldwell, NJ 07006-5316

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Ms. Gay Thormann

Ms. maria cremaschi
125 Liberty St
Bloomfield, NJ 07003-5011

Jan 4, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. maria cremaschi

Ms. Nichole Diamond
8 Ashley Ct
Bedminster, NJ 07921-1437

Jan 4, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Nichole Diamond

Mrs. Mray Rosinski
1729 Chancellor St
Evanston, IL 60201-1513

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

The negative impact of voting for this will impact for our future generations and their quality of life. Please vote responsibility with the long term view not short term necessities.

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Sincerely,
Mrs. Mray Rosinski

Ms. Jill Feldman
26 Harriet Dr
Princeton, NJ 08540-3935
(609) 683-1194

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Sincerely,
Ms. Jill Feldman

Mr. rich pecha
5 Millburn Rd
Lake Hopatcong, NJ 07849-1764

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. rich pecha

Mr. John Cecil
18 Drummers Way
Hatboro, PA 19040-4803
(973) 262-4981

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Mr. John Cecil

Mr. Jeffery Suter
10 Rippling Brook Dr
Highland Lakes, NJ 07422-1032

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Mr. Jeffery Suter

Ms. Melissa Hadley
39 Harrison Ave
Apt 10
Montclair, NJ 07042-2045
(973) 908-8574

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Ms. Melissa Hadley

Mr. Brook Zelcer
30 Engle St
Apt 16-2
Tenafly, NJ 07670-2874

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Brook Zelcer

Mr. Keith Kulper
56 Poplar Dr
Morris Plains, NJ 07950-3231

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Mr. Keith Kulper

Mr. Chris Rosario
402 Main St
323
Metuchen, NJ 08840-1846
(732) 423-9110

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Chris Rosario

Ms. robin rabens
PO Box 444
Idyllwild, CA 92549-0444

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Ms. robin rabens

Mrs. christine pepper
6 apple ridge
saddle river, NJ 07458

Jan 4, 2012

Highlands Councilmembers

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Fracking often destroys the quality of neighboring wells and its affect can be experienced for scores of miles. Please leave our area pure as can be. What use is profit if our children and dearest ones are made sick?

Sincerely
Christine Pepper mother and grandmother hiker
Saddle River, NJ 07458

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. christine pepper

Ms. Mercedes Fol-Okamoto
221 Wychwood Rd
Westfield, NJ 07090-1933
(908) 232-9212

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

Dear Members:

You are charged with a public trust. Do not betray your fellow citizens.

Once a natural resource such as water is polluted, once individuals are harmed, the turning back of a mistake is costly and perhaps impossible. Water is of vital import to the value of land and to the well-being of people living in that region.

Do not fail to uphold the strictest and most prudent protections of our waters in New Jersey. Be most conservative, most cautious and do not bend to the will of a firm that has proven itself untrustworthy.

You as individuals will be in the Public Record—for posterity and so will your individual votes. Would you like to be known individually as one who failed the public and permitted sloppy and reckless endangerment to the water supply of this most densely peopled state?

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Mercedes Fol-Okamoto

Ms. Kinga Salierno
392 Ridge Rd
Cedar Grove, NJ 07009-1625
(201) 704-2757

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Kinga Salierno

Mr. Scott Sobel
600 Hudson St Apt 3a
Hoboken, NJ 07030-5925

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Scott Sobel

Ms. Linda Rienecker
377 Mohegan Cir
Lafayette, NJ 07848-4005

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Linda Rienecker

Mrs. Kim Hood
167 Buttermilk Bridge Rd
Asbury, NJ 08802-1011

Jan 4, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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Sincerely,
Mrs. Kim Hood

Ms. Julie Laub
Lincoln Drive
Voorhees, NJ 08043

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Julie Laub

Ms. Joanne Margiotta
11 Valley Rd
Denville, NJ 07834-1219

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Joanne Margiotta

Mr. thomas boghosian
4794 Andorea Dr
Mays Landing, NJ 08330-2817
(609) 625-0878

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. thomas boghosian

Mr. Cliff Radlauer
48 Joyce Pl
Parlin, NJ 08859-1902

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Cliff Radlauer

Mrs. joanne angiolini
38 Virginia Rd
Montville, NJ 07045-9748

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Sincerely,
Mrs. joanne angiolini

Ms. Janet Martucci
2891 Northview Dr SW
Roanoke, VA 24015-3933

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Janet Martucci

Mr. John Nandor
325 Marshall St
Elizabeth, NJ 07206-1642

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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I've spent years photographing just about every sensitive region named above that this project plans to threaten with the hopes of being part of it's preservation. Considering that the Highlands Act was put in place to protect the Garden State and the wealth of it's natural landscapes and resources in the northeast of the state, what good would a volatile pipeline serve cutting through all of these areas? Let me give you a prime example of why the TENNESSEE pipeline has no business trashing these areas: NJ landowners, NJ local business developers, NJ citizens who held land they planned to sell for retirement, NJ farmers with no one to sell their land to without developers having a reason to purchase, ALL had to suck it up when the Highlands Act was originally instated for the greater good of all the state's citizens. Oh and because it is the law. So now a lobbyist with the right size wallet comes along and this Act goes out the window?

Shut this ludicrous idea down now and vote NO. Considering that the Poconos, Catskills and Northeast NJ are all reachable by just about everyone in state within an hour or two drive, where do you suggest we go to enjoy the last bastions of nature? Tennessee?

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. John Nandor

Ms. A Napolitano
46 Perri Rd
Freehold, NJ 07728-4153

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Protect our precious resource, our water.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. A Napolitano

Dr. Alfred Schweikert
90 Mine Rd
High Bridge, NJ 08829-1525

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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There is a reason to have a Highlands Commission. This is one of those times where you need to make a difference and perform your intended duty to protect our water.

Thank you,
Dr Alfred Schweikert

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Dr. Alfred Schweikert

Dr. Sarah Wald
15 Madison Ave Apt 4
Madison, NJ 07940-1471

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Dr. Sarah Wald

Mr. David Budd
80 Overlook Rd
Morristown, NJ 07960-5807
(973) 829-0808

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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The Tennessee Gas Pipeline Company will likely resort to the exceptional powers granted to Utility Companies to disregard the environmental degradation that will inevitably result from their planned route. Kindly do not facilitate their project. Instead join us in protesting it and force them to either reconsider the planned route or to resort to the lengthy and expensive prospect of resorting to their utility powers. Time and delay could result in a route change, a redesign of the inadequate remediation plan or a completely new solution that is not obvious to any of the participants now. Please vote NO on January 19th.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. David Budd

Ms. Kimberly Turiano
682 Morris Ave
Newfield, NJ 08344-5149

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Kimberly Turiano

Mr. Boris Kofman
28 Riverside Ave
Apt 8m
Red Bank, NJ 07701-1054

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Sincerely,
Mr. Boris Kofman

Mr. Timothy Carbone
PO Box 158
Shawnee ON Delaware, PA 18356-0158
(570) 236-1320

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.
Please do your job and prevent this from happening. - Tim Carbone

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Timothy Carbone

Mr. James Shuster
305 Langley Rd
Pittsgrove, NJ 08318-4612

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. James Shuster

Dr. Marion M. Kyde Ph.D.
the tulgey wood
Ottsville, PA 18942

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

As President of the Delaware River Greenway Partnership, whose mission involves both sides of the Lower Delaware Wild and Scenic River, I ask on behalf of all of those who work to protect the river and its watershed, that you vote no on this project. Time after time it has been shown that fracking cannot be done safely. The power companies have shown that they cannot be trusted to do the job in a non-destructive manner, nor even to police themselves.

This project is designed to destroy forests, wetlands, public lands that belong to all of us, (not the gas company), and priority conservation areas.

There are safer alternatives.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Dr. Marion M. Kyde Ph.D.

Ms. Wendy Jewell
302 Playhouse St E
Cologne, MN 55322-9679

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

The Highlands is a Preservation Area. The definition of Preservation is 1) protection from harm, 2) maintenance unchanged, 3) upholding of something- to keep intact. Bringing a pipeline through a preserve defies logic. This is the very sort of thing that people feared would destroy such a natural place unless it were protected. It is time to do the right thing and protect the area.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Wendy Jewell

Ms. April Kelley
31 Peters Ln
Apt H11
Blackwood, NJ 08012-4650

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. April Kelley

Mr. walter rothaug
558 Hillcrest Rd
Ridgewood, NJ 07450-1526

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. walter rothaug

Miss holly taylor
20 W Holly St
Apt 12
Cranford, NJ 07016-2162
(732) 644-8142

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Miss holly taylor

Mr. John Olivo
14 White Birch Ct
Wayne, NJ 07470-3850

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. John Olivo

Mr. Walter Waldman
783 Saint Judes Dr N
Longboat Key, FL 34228-1813

Jan 4, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Walter Waldman

Mr. Paul Ostermayer
35 Alexander Ave
Montclair, NJ 07043-2628

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Paul Ostermayer

Mr. Carlo Popolizio
160 9th Ave
Estell Manor, NJ 08319-1704

Jan 4, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Carlo Popolizio

Ms. barbara kerner
9 Tilden Ct
Livingston, NJ 07039-2418
(973) 740-0447

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. barbara kerner

Mrs. Jennifer Carlson
90 Warren Rd
Sparta, NJ 07871-2740

Jan 4, 2012

Highlands Councilmembers

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Please do not let Tennessee Gas Pipeline Company destroy the Highlands again. The mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Jennifer Carlson

Miss Rachel LaForgia
56 Lindbergh Pkwy
Waldwick, NJ 07463-1329

Jan 4, 2012

Highlands Councilmembers

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

We need to protect NJ before its too late.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Miss Rachel LaForgia

Dr. MORTON ROSENTHAL
50 Lexington Dr
Pennington, NJ 08534-5168
(609) 737-5154

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Dr. MORTON ROSENTHAL

Ms. Lynn Uhrig
1 Sunset Rd
Mountain Lakes, NJ 07046-1512
(973) 335-0878

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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I want to add my plea to others who want you to vote NO to allowing this pipeline to be built on public lands. You have been appointed to the Council to protect the Highlands. This pipeline will cause untold environmental damage to forests and water supplies. If you for for the pipeline, instead of protecting the Highlands you will be voting to destroy critical conservation priority areas and threaten water supplies.

I have spent some time looking into fracking. There is no way fracking can be regulated to insure that ground water supplies are not contaminated. We have seen problems occur in the western part of this country. This pipeline encourages fracking and should be denied on this basis alone.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Lynn Uhrig

Ms. JUDY PIZARRO
55 E Kings Hwy
Maple Shade, NJ 08052-2056

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Sincerely,
Ms. JUDY PIZARRO

Ms. Gail Solomon
93 Stone Run Rd
Bedminster, NJ 07921-1711

Jan 4, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Gail Solomon

Ms. Ellen Foose
1004 Larchmont Pl
Mount Laurel, NJ 08054-5920

Jan 4, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Ellen Foose

Ms. Alexandra Sola
14 Sulak Ln Apt 3
Park Ridge, NJ 07656-2142
(201) 307-1155

Jan 4, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Alexandra Sola

Ms. Rita Wolkind
21 Mackenzie Ln
Plainsboro, NJ 08536-1403
(609) 799-3431

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again. Please vote NO on this destructive measure. Thank you.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Rita Wolkind

Mr. Kenneth Johanson
72 Laurel Dr
New Providence, NJ 07974-2421

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Kenneth Johanson

Mrs. Thana iridhar
132 Liberty St
Ridgewood, NJ 07450-4549

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Thana iridhar

Ms. Hannah Suthers
4 Viewpoint Dr
Hopewell, NJ 08525-2112

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

As a biologist studying bird populations I am very concerned about the wildlife and their habitat as well as drinking water. We worked hard to create the Highlands Preservation Area, and we cannot let it be destroyed bit by bit.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Hannah Suthers

Mrs. Kim Edelstein
48 Mountain Cir N
West Milford, NJ 07480-3218

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Kim Edelstein

Mrs. Lea Cahill
5 Felch Rd
Florham Park, NJ 07932-2174

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

We all need clean, fresh drinking water to maintain our health and well-being. Please vote NO on this project, which will benefit the Tennessee Gas Corporation but will threaten our health and well-being. Please don't put this corporation and its dirty energy before the health of the people of New Jersey.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Lea Cahill

Ms. Margaret McGarrity
PO Box 538
159 North Shore Rd.
Andover, NJ 07821-0538

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Please make the Highlands Act and RMP mean something; stand up against corporate greed and destructiveness. We cannot destroy everything in the name of money.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Margaret McGarrity

Mrs. Mary Jo Nutt
45 Hillside Ave
Englewood, NJ 07631-3004

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Mary Jo Nutt

Mrs. Laurie Fischer
30 Hillcrest Rd
Whitehouse Station, NJ 08889-3908
(908) 534-2525

Jan 4, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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This project will result in the destruction of environmentally-sensitive lands, including water supply watersheds, wetlands, and even the Monksville reservoir.

It will lead to destruction of critical forest resource areas, habitats of threatened and endangered species, open waters and buffers, and conservation priority areas as designated by the Highlands.

The pipeline will cut through several public lands across the Highlands region: Stokes State Forest, Long Pond Ironworks State Park, the Monksville Reservoir, Ringwood State Park and Ramapo River Reservation.

The scenic beauty of the Highlands and our state forests will be destroyed.

Since gas in the pipeline would come from drilling in the Marcellus Shale in Pennsylvania and New York, it would encourage development of those gas fields, which will hurt the environment in the Poconos and the Catskills, polluting the Delaware River and affecting New Jersey's water supply.

We will see more erosion of important soils and sedimentation of waterways as a result of this company.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Laurie Fischer

Mr. Glenn & Debbie Carson
1356 Stokes Rd
Medford, NJ 08055-8601

Jan 4, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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Sincerely,
Mr. Glenn & Debbie Carson

Mrs. Carol Vreeland
16 Valley Rd
Kinnelon, NJ 07405-2314
(973) 838-5645

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Mrs. Carol Vreeland

Mr. Bill Doan
7 Pine Hollow Ct
Cape May Court House, NJ 08210-1339
(609) 465-7817

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Bill Doan

Mr. Ron Chaplin
72 W Edward St
Iselin, NJ 08830-1149

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Ron Chaplin

Mr. Charles Vreeland
16 Valley Rd
Kinnelon, NJ 07405-2314
(973) 838-5645

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Charles Vreeland

Mr. Eugene Pumphrey
1804 Bayview Ave
Barnegat Light, NJ 08006

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Eugene Pumphrey

Mrs. Sibyll Gilbert
PO Box 601
Pawling, NY 12564-0601
(845) 855-3266

Jan 4, 2012

Highlands Councilmembers

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Here in NY State, the issues are the same. When Iroquois built its gas transmission pipeline tremendous damage to the environment ensued. Iroquois was subjected to heavy court imposed damages, which did not really compensate for the lasting damage that was done.

Drinking water supplies and gas pipelines, or other pipelines, do not mix.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Sibyll Gilbert

Mr. Kevin Pflug
88 S Mountain Ave
Montclair, NJ 07042-1734

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Kevin Pflug

Ms. Linda Mack, Trustee Monmouth
County Audubon Society
PO Box 542
Red Bank, NJ 07701-0542

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Linda Mack, Trustee Monmouth County Audubon Society

Mrs. Susan Pontoriero
495 Don Connor Blvd
Jackson, NJ 08527-3603

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mrs. Susan Pontoriero

Mr. Mark Canright
8 Deboer Farm Ln
Asbury, NJ 08802-2106

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Mark Canright

Dr. Suzanne Day
3 Taylors Ln
Cinnaminson, NJ 08077-1609

Jan 4, 2012

Highlands Councilmembers

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I live right on the Delaware River, downstream in Burlington County. Since the proposed pipeline could affect the Wild and Scenic upper reaches of our River, as well as have adverse effects on the water quality of our and other watersheds, PLEASE VOTE NO.

Because this SAME Tennessee Gas Pipeline company has placed a previous line across northern New Jersey without adequate management of erosion and protection of public forests, PLEASE VOTE NO.

The Highlands Region and Ramapo River and Valley deserve special protections; many parks precious to the economy of NJ for their preserved natural state would be adversely affected SINCE THE MITIGATION PLAN IS INADEQUATE, please VOTE NO>

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Dr. Suzanne Day

Miss Rajdeep Bhathal
135 Hollywood Ave
Englewood Cliffs, NJ 07632-2133

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Miss Rajdeep Bhathal

Mrs. Lois Blake
20 Carriage Hill Dr
Colts Neck, NJ 07722-2114

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mrs. Lois Blake

Ms. Molly McKaughan
6 Carteret St
Upper Montclair, NJ 07043-1304
(973) 744-3628

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Molly McKaughan

Ms. Linda McKillip
5 Farmhouse Rd
Erial, NJ 08081-1613

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Linda McKillip

Mr. Ron & Maria De Stefano
40 Garden Ave
Woodland Park, NJ 07424-3325

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Ron & Maria De Stefano

Ms. nora connolly
41 11th Ave
Hawthorne, NJ 07506-1108

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. nora connolly

Ms. Amy Sprauer
42 Crosby Ave
Edison, NJ 08817-4215

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Amy Sprauer
42 Crosby Ave
Edison, NJ 08817

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Amy Sprauer

Mr. John Kaminski
1517 Wellington Pl
Aberdeen, NJ 07747-1937

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. John Kaminski

Mr. Alex Balboa
1996 Waverly Dr
Bel Air, MD 21015-1100
(410) 420-0982

Jan 4, 2012

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Sincerely,
Mr. Alex Balboa

Mr. JOHN W BAIR
12 Westwood Dr
Mantua, NJ 08051-2101
(856) 468-7636

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. JOHN W BAIR

Ms. Tanya McCabe
150 Gaisler Rd
Blairstown, NJ 07825-9668

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Ms. Tanya McCabe

Mr. Harry Hudson
12 Heritage Ct
Cherry Hill, NJ 08034-3144

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mr. Harry Hudson

Mrs. Sima Greenblat
66 Leabrook Ln
Princeton, NJ 08540-3659
(609) 683-0419

Jan 4, 2012

Highlands Councilmembers

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sincerely,
Sima Greenblat
66 Leabrook Lane
Princeton, NJ, 08540

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mrs. Sima Greenblat

Mrs. Chante Kubs
6
W, NJ 07885

Jan 4, 2012

Highlands Councilmembers

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Sincerely,
Mrs. Chante Kubs

Dr. lynne weiss
30nwoodmere rd
north brunswick, NJ 08902

Jan 4, 2012

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Dr. lynne weiss

Mr. S Ferrando
51 Glen Ave
Fairfield, NJ 07004-2632

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Sincerely,
Mr. S Ferrando

Ms. Rebeca Jimenez
35 Norz Dr
Hillsborough, NJ 08844-3359

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Sincerely,
Ms. Rebeca Jimenez

Mr. Robert Carnevale
29 Brown Rd
Wantage, NJ 07461-3201
(973) 702-7328

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Sincerely,
Mr. Robert Carnevale

Ms. Gina Carola
534 Elberne Ave
West Deptford, NJ 08093-1715

Jan 4, 2012

Highlands Councilmembers

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The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

After working so hard to protect the Highlands region, it is foolish to let pipelines ruin it.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Gina Carola

Mr. Brian LaPaglia
12 Ferndale Pl
Pompton Plns, NJ 07444-1463

Jan 4, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

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Sincerely,
Mr. Brian LaPaglia

Ms. Laurie Pike
3906 Cleveland St
Toms River, NJ 08755-1094

Jan 5, 2012

Highlands Councilmembers

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The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

I am a lifelong New Jersey resident who enjoys the beautiful open spaces the state has to offer. I grew up and spent the first 20 years in Monmouth County and now reside in Ocean County. Please reject this project and preserve the health and well-being of New Jersey residence.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Laurie Pike

Ms. Beth Priday
116 Treetop Ct
Bloomingtondale, NJ 07403-1029

Jan 5, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

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Sincerely,
Ms. Beth Priday

Ms. mary zanetakos
12 Arthur Rd
Lincoln Park, NJ 07035-1203

Jan 5, 2012

Highlands Councilmembers

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Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. mary zanetakos

Ms. Cherie LoPresti
10 Goodale Rd
Newton, NJ 07860-2782

Jan 5, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

The Tennessee Gas Pipeline Company's Northeast Upgrade Project will destroy the critical lands you are entrusted with protecting. This project is not consistent with the goals and purposes of the Highlands Act and should be denied, not granted an exemption from the protective standards of the legislation. This project targets some of our most sensitive resources in the Highlands Preservation Area. This company must not be let off the hook with a mitigation plan that will not work.

We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again. I live near the Delaware Water Gap and am in Sussex county. I use well water. What would I do if my water supply became contaminated? Would you be responsible for supplying alternative sources of water?

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Cherie LoPresti

Mr. Gordon Driscoll
55 International Ave
Piscataway, NJ 08854-5330
(732) 393-1128

Jan 5, 2012

Highlands Councilmembers

Subject: Protect the Highlands: Say No to the TGP Pipeline Project

Dear Highlands Councilmembers,

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This is not a method that works for a sustainable resource reclamation...
in fact, it's a despicable method. Surely our technology is capable of developing ways to obtain resources without threatening the People's and Environment of the World.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Gordon Driscoll

Ms. Judith Murphy
187 Inwood Ave
Montclair, NJ 07043-1946

Jan 5, 2012

Highlands Councilmembers

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Dear Highlands Councilmembers,

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I believe it is very short-sighted to risk destroying more of New Jersey's natural resources by allowing a pipeline to pass through the state. The Highlands Act was passed to prevent things such as this Pipeline; there is no reason to exempt the Pipeline.

As a society we would do better to focus on developing green technologies that reduce our usage of fossil fuels, rather than using more and more dangerous extraction methods.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Ms. Judith Murphy

Mr. Brian Gill
PO Box 287
Mount Arlington, NJ 07856-0287

Jan 5, 2012

Highlands Councilmembers

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Sincerely,
Mr. Brian Gill

Mr. SALVATORE DIMAURO
556 Compton Ave
Perth Amboy, NJ 08861-3007

Jan 5, 2012

Highlands Councilmembers

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Sincerely,
Mr. SALVATORE DIMAURO

Ms. Anne Siebecker
5 Foxhill Ln
Ringwood, NJ 07456-2717

Jan 5, 2012

Highlands Councilmembers

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Sincerely,
Ms. Anne Siebecker

Dr. Juliet Lamont
2249 Glen Ave
Berkeley, CA 94709-1420

Jan 5, 2012

Highlands Councilmembers

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Sincerely,
Dr. Juliet Lamont

Mr. Eric White
11 Zinnia Dr
Glenwood, NJ 07418-1632

Jan 5, 2012

Highlands Councilmembers

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We know the mitigation measures proposed by this company are inadequate as we have watched them destroy Lake Lookover and we have seen increased flooding along the right of way. Once was too much, do not let this company destroy the Highlands again.

Moreover, since gas in the pipeline would come from drilling in the Marcellus Shale in Pennsylvania and New York, it would encourage development of those gas fields, which will hurt the environment in the Poconos and the Catskills, polluting the Delaware River and affecting New Jersey's water supply. There has not been enough scientific research into the impact of hydrofracking on our environment and drinking water. Recently, earthquakes in Ohio have been potentially attributed to the exhaust liquid from these hydrofracking wells. We're certainly in uncharted waters here and we should not be supporting a company that transports products from such a potentially dangerous enterprise.

Instead, New Jersey should be focused on renewable clean energy sources. It's clear that relying on natural gas and oil is no longer a sustainable option for our country, and the time to bypass that era of our civilization has come.

Please stand up to protect our drinking water supply and vote NO on this dirty energy, environmentally destructive project. We need you to ensure that the Highlands continues to provide clean drinking to millions of state residents by stopping this pipeline.

Sincerely,
Mr. Eric White

Mr. Donald Walden
290 Ramapo Valley Rd
Mahwah, NJ 07430-1604
(201) 252-2067

Jan 5, 2012

Highlands Councilmembers

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Climatic Change (2011) 106:679–690
DOI 10.1007/s10584-011-0061-5

LETTER

Methane and the greenhouse-gas footprint of natural gas from shale formations

A letter

Robert W. Howarth · Renee Santoro ·
Anthony Ingraffea

Received: 12 November 2010 / Accepted: 13 March 2011 / Published online: 12 April 2011
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Abstract We evaluate the greenhouse gas footprint of natural gas obtained by high-volume hydraulic fracturing from shale formations, focusing on methane emissions. Natural gas is composed largely of methane, and 3.6% to 7.9% of the methane from shale-gas production escapes to the atmosphere in venting and leaks over the lifetime of a well. These methane emissions are at least 30% more than and perhaps more than twice as great as those from conventional gas. The higher emissions from shale gas occur at the time wells are hydraulically fractured—as methane escapes from flow-back return fluids—and during drill out following the fracturing. Methane is a powerful greenhouse gas, with a global warming potential that is far greater than that of carbon dioxide, particularly over the time horizon of the first few decades following emission. Methane contributes substantially to the greenhouse gas footprint of shale gas on shorter time scales, dominating it on a 20-year time horizon. The footprint for shale gas is greater than that for conventional gas or oil when viewed on any time horizon, but particularly so over 20 years. Compared to coal, the footprint of shale gas is at least 20% greater and perhaps more than twice as great on the 20-year horizon and is comparable when compared over 100 years.

Keywords Methane · Greenhouse gases · Global warming · Natural gas · Shale gas · Unconventional gas · Fugitive emissions · Lifecycle analysis · LCA · Bridge fuel · Transitional fuel · Global warming potential · GWP

Electronic supplementary material The online version of this article (doi:10.1007/s10584-011-0061-5) contains supplementary material, which is available to authorized users.

R. W. Howarth (✉) · R. Santoro
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e-mail: rwh2@cornell.edu

A. Ingraffea
School of Civil and Environmental Engineering, Cornell University, Ithaca, NY 14853, USA

Many view natural gas as a transitional fuel, allowing continued dependence on fossil fuels yet reducing greenhouse gas (GHG) emissions compared to oil or coal over coming decades (Pacala and Socolow 2004). Development of “unconventional” gas dispersed in shale is part of this vision, as the potential resource may be large, and in many regions conventional reserves are becoming depleted (Wood et al. 2011). Domestic production in the U.S. was predominantly from conventional reservoirs through the 1990s, but by 2009 U.S. unconventional production exceeded that of conventional gas. The Department of Energy predicts that by 2035 total domestic production will grow by 20%, with unconventional gas providing 75% of the total (EIA 2010a). The greatest growth is predicted for shale gas, increasing from 16% of total production in 2009 to an expected 45% in 2035.

Although natural gas is promoted as a bridge fuel over the coming few decades, in part because of its presumed benefit for global warming compared to other fossil fuels, very little is known about the GHG footprint of unconventional gas. Here, we define the GHG footprint as the total GHG emissions from developing and using the gas, expressed as equivalents of carbon dioxide, per unit of energy obtained during combustion. The GHG footprint of shale gas has received little study or scrutiny, although many have voiced concern. The National Research Council (2009) noted emissions from shale-gas extraction may be greater than from conventional gas. The Council of Scientific Society Presidents (2010) wrote to President Obama, warning that some potential energy bridges such as shale gas have received insufficient analysis and may aggravate rather than mitigate global warming. And in late 2010, the U.S. Environmental Protection Agency issued a report concluding that fugitive emissions of methane from unconventional gas may be far greater than for conventional gas (EPA 2010).

Fugitive emissions of methane are of particular concern. Methane is the major component of natural gas and a powerful greenhouse gas. As such, small leakages are important. Recent modeling indicates methane has an even greater global warming potential than previously believed, when the indirect effects of methane on atmospheric aerosols are considered (Shindell et al. 2009). The global methane budget is poorly constrained, with multiple sources and sinks all having large uncertainties. The radiocarbon content of atmospheric methane suggests fossil fuels may be a far larger source of atmospheric methane than generally thought (Lassey et al. 2007).

The GHG footprint of shale gas consists of the direct emissions of CO₂ from end-use consumption, indirect emissions of CO₂ from fossil fuels used to extract, develop, and transport the gas, and methane fugitive emissions and venting. Despite the high level of industrial activity involved in developing shale gas, the indirect emissions of CO₂ are relatively small compared to those from the direct combustion of the fuel: 1 to 1.5 g C MJ⁻¹ (Santoro et al. 2011) vs 15 g C MJ⁻¹ for direct emissions (Hayhoe et al. 2002). Indirect emissions from shale gas are estimated to be only 0.04 to 0.45 g C MJ⁻¹ greater than those for conventional gas (Wood et al. 2011). Thus, for both conventional and shale gas, the GHG footprint is dominated by the direct CO₂ emissions and fugitive methane emissions. Here we present estimates for methane emissions as contributors to the GHG footprint of shale gas compared to conventional gas.

Our analysis uses the most recently available data, relying particularly on a technical background document on GHG emissions from the oil and gas industry (EPA 2010) and materials discussed in that report, and a report on natural gas losses on federal lands from the General Accountability Office (GAO 2010). The

EPA (2010) report is the first update on emission factors by the agency since 1996 (Harrison et al. 1996). The earlier report served as the basis for the national GHG inventory for the past decade. However, that study was not based on random sampling or a comprehensive assessment of actual industry practices, but rather only analyzed facilities of companies that voluntarily participated (Kirchgessner et al. 1997). The new EPA (2010) report notes that the 1996 “study was conducted at a time when methane emissions were not a significant concern in the discussion about GHG emissions” and that emission factors from the 1996 report “are outdated and potentially understated for some emissions sources.” Indeed, emission factors presented in EPA (2010) are much higher, by orders of magnitude for some sources.

1 Fugitive methane emissions during well completion

Shale gas is extracted by high-volume hydraulic fracturing. Large volumes of water are forced under pressure into the shale to fracture and re-fracture the rock to boost gas flow. A significant amount of this water returns to the surface as flow-back within the first few days to weeks after injection and is accompanied by large quantities of methane (EPA 2010). The amount of methane is far more than could be dissolved in the flow-back fluids, reflecting a mixture of fracture-return fluids and methane gas. We have compiled data from 2 shale gas formations and 3 tight-sand gas formations in the U.S. Between 0.6% and 3.2% of the life-time production of gas from wells is emitted as methane during the flow-back period (Table 1). We include tight-sand formations since flow-back emissions and the patterns of gas production over time are similar to those for shale (EPA 2010). Note that the rate of methane emitted during flow-back (column B in Table 1) correlates well to the initial production rate for the well following completion (column C in Table 1). Although the data are limited, the variation across the basins seems reasonable: the highest methane emissions during flow-back were in the Haynesville, where initial pressures and initial production were very high, and the lowest emissions were in the Uinta, where the flow-back period was the shortest and initial production following well completion was low. However, we note that the data used in Table 1 are not well documented, with many values based on PowerPoint slides from EPA-sponsored workshops. For this paper, we therefore choose to represent gas losses from flow-back fluids as the mean value from Table 1: 1.6%.

More methane is emitted during “drill-out,” the stage in developing unconventional gas in which the plugs set to separate fracturing stages are drilled out to release gas for production. EPA (2007) estimates drill-out emissions at 142×10^3 to 425×10^3 m³ per well. Using the mean drill-out emissions estimate of 280×10^3 m³ (EPA 2007) and the mean life-time gas production for the 5 formations in Table 1 (85×10^6 m³), we estimate that 0.33% of the total life-time production of wells is emitted as methane during the drill-out stage. If we instead use the average life-time production for a larger set of data on 12 formations (Wood et al. 2011), 45×10^6 m³, we estimate a percentage emission of 0.62%. More effort is needed to determine drill-out emissions on individual formation. Meanwhile, in this paper we use the conservative estimate of 0.33% for drill-out emissions.

Combining losses associated with flow-back fluids (1.6%) and drill out (0.33%), we estimate that 1.9% of the total production of gas from an unconventional shale-gas

Table 1 Methane emissions during the flow-back period following hydraulic fracturing, initial gas production rates following well completion, life-time gas production of wells, and the methane emitted during flow-back expressed as a percentage of the life-time production for five unconventional wells in the United States

	(A) Methane emitted during flow-back (10^3 m^3) ^a	(B) Methane emitted per day during flow-back ($10^3 \text{ m}^3 \text{ day}^{-1}$) ^b	(C) Initial gas production at well completion ($10^3 \text{ m}^3 \text{ day}^{-1}$) ^c	(D) Life-time production of well (10^6 m^3) ^d	(E) Methane emitted during flow-back as % of life-time production ^e
Haynesville (Louisiana, shale)	6,800	680	640	210	3.2
Barnett (Texas, shale)	370	41	37	35	1.1
Piceance (Colorado, tight sand)	710	79	57	55	1.3
Uinta (Utah, tight sand)	255	51	42	40	0.6
Den-Jules (Colorado, tight sand)	140	12	11	?	?

Flow-back is the return of hydraulic fracturing fluids to the surface immediately after fracturing and before well completion. For these wells, the flow-back period ranged from 5 to 12 days

^aHaynesville: average from Eckhardt et al. (2009); Piceance: EPA (2007); Barnett: EPA (2004); Uinta: Samuels (2010); Denver-Julesburg: Bracken (2008)

^bCalculated by dividing the total methane emitted during flow-back (column A) by the duration of flow-back. Flow-back durations were 9 days for Barnett (EPA 2004), 8 days for Piceance (EPA 2007), 5 days for Uinta (Samuels 2010), and 12 days for Denver-Julesburg (Bracken 2008); median value of 10 days for flow-back was assumed for Haynesville

^cHaynesville: <http://shale.typepad.com/haynesvilleshale/2009/07/chesapeake-energy-haynesville-shale-decline-curve.html> 11/7/2011 and <http://oilshalegas.com/haynesvilleshalestocks.html>; Barnett: <http://oilshalegas.com/barnettshale.html>; Piceance: Kruuskraa (2004) and Henke (2010); Uinta: <http://www.epmag.com/archives/newsComments/6242.html>; Denver-Julesburg: <http://www.businesswire.com/news/home/20100924005169/en/Synergy-Resources-Corporation-Reports-Initial-Production-Rates>

^dBased on averages for these basins. Haynesville: <http://shale.typepad.com/haynesvilleshale/decline-curve/>; Barnett: http://www.aapg.org/explorer/2002/07jul/barnett_shale.cfm and Wood et al. (2011); Piceance: Kruuskraa (2004); Uinta: <http://www.epmag.com/archives/newsComments/6242.htm>

^eCalculated by dividing column (A) by column (D)

Table 2 Fugitive methane emissions associated with development of natural gas from conventional wells and from shale formations (expressed as the percentage of methane produced over the lifecycle of a well)

	Conventional gas	Shale gas
Emissions during well completion	0.01%	1.9%
Routine venting and equipment leaks at well site	0.3 to 1.9%	0.3 to 1.9%
Emissions during liquid unloading	0 to 0.26%	0 to 0.26%
Emissions during gas processing	0 to 0.19%	0 to 0.19%
Emissions during transport, storage, and distribution	1.4 to 3.6%	1.4 to 3.6%
Total emissions	1.7 to 6.0%	3.6 to 7.9%

See text for derivation of estimates and supporting information

well is emitted as methane during well completion (Table 2). Again, this estimate is uncertain but conservative.

Emissions are far lower for conventional natural gas wells during completion, since conventional wells have no flow-back and no drill out. An average of 1.04×10^3 m³ of methane is released per well completed for conventional gas (EPA 2010), corresponding to 1.32×10^3 m³ natural gas (assuming 78.8% methane content of the gas). In 2007, 19,819 conventional wells were completed in the US (EPA 2010), so we estimate a total national emission of 26×10^6 m³ natural gas. The total national production of onshore conventional gas in 2007 was 384×10^9 m³ (EIA 2010b). Therefore, we estimate the average fugitive emissions at well completion for conventional gas as 0.01 % of the life-time production of a well (Table 2), three orders of magnitude less than for shale gas.

2 Routine venting and equipment leaks

After completion, some fugitive emissions continue at the well site over its lifetime. A typical well has 55 to 150 connections to equipment such as heaters, meters, dehydrators, compressors, and vapor-recovery apparatus. Many of these potentially leak, and many pressure relief valves are designed to purposefully vent gas. Emissions from pneumatic pumps and dehydrators are a major part of the leakage (GAO 2010). Once a well is completed and connected to a pipeline, the same technologies are used for both conventional and shale gas; we assume that these post-completion fugitive emissions are the same for shale and conventional gas. GAO (2010) concluded that 0.3% to 1.9% of the life-time production of a well is lost due to routine venting and equipment leaks (Table 2). Previous studies have estimated routine well-site fugitive emissions as approximately 0.5% or less (Hayhoe et al. 2002; Armendariz 2009) and 0.95% (Shires et al. 2009). Note that none of these estimates include accidents or emergency vents. Data on emissions during emergencies are not available and have never, as far as we can determine, been used in any estimate of emissions from natural gas production. Thus, our estimate of 0.3% to 1.9% leakage is conservative. As we discuss below, the 0.3% reflects use of best available technology.

Additional venting occurs during “liquid unloading.” Conventional wells frequently require multiple liquid-unloading events as they mature to mitigate water intrusion as reservoir pressure drops. Though not as common, some unconventional wells may also require unloading. Empirical data from 4 gas basins indicate that 0.02

to 0.26% of total life-time production of a well is vented as methane during liquid unloading (GAO 2010). Since not all wells require unloading, we set the range at 0 to 0.26% (Table 2).

3 Processing losses

Some natural gas, whether conventional or from shale, is of sufficient quality to be “pipeline ready” without further processing. Other gas contains sufficient amounts of heavy hydrocarbons and impurities such as sulfur gases to require removal through processing before the gas is piped. Note that the quality of gas can vary even within a formation. For example, gas from the Marcellus shale in northeastern Pennsylvania needs little or no processing, while gas from southwestern Pennsylvania must be processed (NYDEC 2009). Some methane is emitted during this processing. The default EPA facility-level fugitive emission factor for gas processing indicates a loss of 0.19% of production (Shires et al. 2009). We therefore give a range of 0% (i.e. no processing, for wells that produce “pipeline ready” gas) to 0.19% of gas produced as our estimate of processing losses (Table 2). Actual measurements of processing plant emissions in Canada showed fourfold greater leakage than standard emission factors of the sort used by Shires et al. (2009) would indicate (Chambers 2004), so again, our estimates are very conservative.

4 Transport, storage, and distribution losses

Further fugitive emissions occur during transport, storage, and distribution of natural gas. Direct measurements of leakage from transmission are limited, but two studies give similar leakage rates in both the U.S. (as part of the 1996 EPA emission factor study; mean value of 0.53%; Harrison et al. 1996; Kirchgessner et al. 1997) and in Russia (0.7% mean estimate, with a range of 0.4% to 1.6%; Lelieveld et al. 2005). Direct estimates of distribution losses are even more limited, but the 1996 EPA study estimates losses at 0.35% of production (Harrison et al. 1996; Kirchgessner et al. 1997). Lelieveld et al. (2005) used the 1996 emission factors for natural gas storage and distribution together with their transmission estimates to suggest an overall average loss rate of 1.4% (range of 1.0% to 2.5%). We use this 1.4% leakage as the likely lower limit (Table 2). As noted above, the EPA 1996 emission estimates are based on limited data, and Revkin and Krauss (2009) reported “government scientists and industry officials caution that the real figure is almost certainly higher.” Furthermore, the IPCC (2007) cautions that these “bottom-up” approaches for methane inventories often underestimate fluxes.

Another way to estimate pipeline leakage is to examine “lost and unaccounted for gas,” e.g. the difference between the measured volume of gas at the wellhead and that actually purchased and used by consumers. At the global scale, this method has estimated pipeline leakage at 2.5% to 10% (Crutzen 1987; Cicerone and Oremland 1988; Hayhoe et al. 2002), although the higher value reflects poorly maintained pipelines in Russia during the Soviet collapse, and leakages in Russia are now far less (Lelieveld et al. 2005; Reshetnikov et al. 2000). Kirchgessner et al. (1997) argue against this approach, stating it is “subject to numerous errors including gas theft, variations in

temperature and pressure, billing cycle differences, and meter inaccuracies.” With the exception of theft, however, errors should be randomly distributed and should not bias the leakage estimate high or low. Few recent data on lost and unaccounted gas are publicly available, but statewide data for Texas averaged 2.3% in 2000 and 4.9% in 2007 (Percival 2010). In 2007, the State of Texas passed new legislation to regulate lost and unaccounted for gas; the legislation originally proposed a 5% hard cap which was dropped in the face of industry opposition (Liu 2008; Percival 2010). We take the mean of the 2000 and 2007 Texas data for missing and unaccounted gas (3.6%) as the upper limit of downstream losses (Table 2), assuming that the higher value for 2007 and lower value for 2000 may potentially reflect random variation in billing cycle differences. We believe this is a conservative upper limit, particularly given the industry resistance to a 5% hard cap.

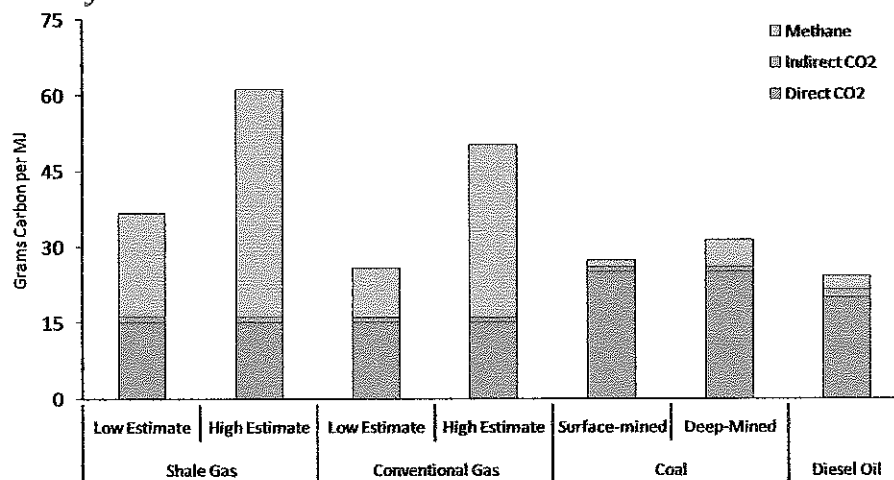
Our conservative estimate of 1.4% to 3.6% leakage of gas during transmission, storage, and distribution is remarkably similar to the 2.5% “best estimate” used by Hayhoe et al. (2002). They considered the possible range as 0.2% and 10%.

5 Contribution of methane emissions to the GHG footprints of shale gas and conventional gas

Summing all estimated losses, we calculate that during the life cycle of an average shale-gas well, 3.6 to 7.9% of the total production of the well is emitted to the atmosphere as methane (Table 2). This is at least 30% more and perhaps more than twice as great as the life-cycle methane emissions we estimate for conventional gas, 1.7% to 6%. Methane is a far more potent GHG than is CO₂, but methane also has a tenfold shorter residence time in the atmosphere, so its effect on global warming attenuates more rapidly (IPCC 2007). Consequently, to compare the global warming potential of methane and CO₂ requires a specific time horizon. We follow Lelieveld et al. (2005) and present analyses for both 20-year and 100-year time horizons. Though the 100-year horizon is commonly used, we agree with Nisbet et al. (2000) that the 20-year horizon is critical, given the need to reduce global warming in coming decades (IPCC 2007). We use recently modeled values for the global warming potential of methane compared to CO₂; 105 and 33 on a mass-to-mass basis for 20 and 100 years, respectively, with an uncertainty of plus or minus 23% (Shindell et al. 2009). These are somewhat higher than those presented in the 4th assessment report of the IPCC (2007), but better account for the interaction of methane with aerosols. Note that carbon-trading markets use a lower global-warming potential yet of only 21 on the 100-year horizon, but this is based on the 2nd IPCC (1995) assessment, which is clearly out of date on this topic. See Electronic Supplemental Materials for the methodology for calculating the effect of methane on GHG in terms of CO₂ equivalents.

Methane dominates the GHG footprint for shale gas on the 20-year time horizon, contributing 1.4- to 3-times more than does direct CO₂ emission (Fig. 1a). At this time scale, the GHG footprint for shale gas is 22% to 43% greater than that for conventional gas. When viewed at a time 100 years after the emissions, methane emissions still contribute significantly to the GHG footprints, but the effect is diminished by the relatively short residence time of methane in the atmosphere. On this time frame, the GHG footprint for shale gas is 14% to 19% greater than that for conventional gas (Fig. 1b).

A. 20-year time horizon



B. 100-year time horizon

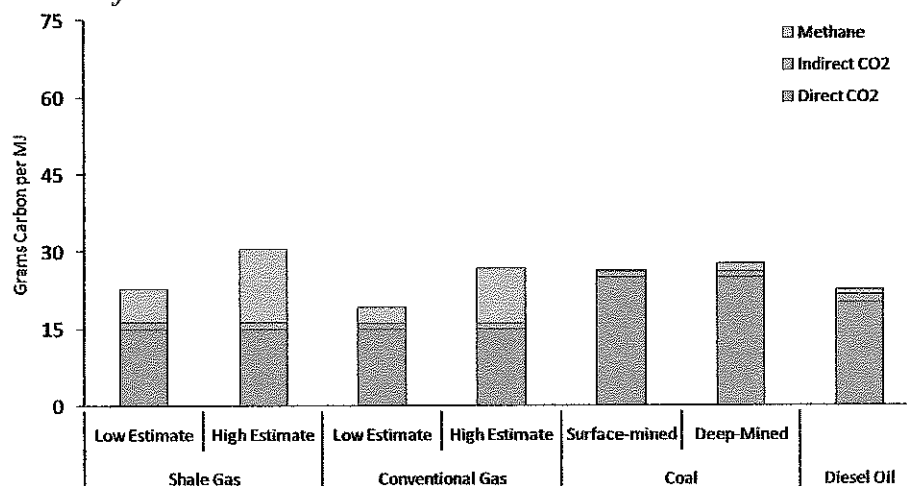


Fig. 1 Comparison of greenhouse gas emissions from shale gas with low and high estimates of fugitive methane emissions, conventional natural gas with low and high estimates of fugitive methane emissions, surface-mined coal, deep-mined coal, and diesel oil. **a** is for a 20-year time horizon, and **b** is for a 100-year time horizon. Estimates include direct emissions of CO₂ during combustion (*blue bars*), indirect emissions of CO₂ necessary to develop and use the energy source (*red bars*), and fugitive emissions of methane, converted to equivalent value of CO₂ as described in the text (*pink bars*). Emissions are normalized to the quantity of energy released at the time of combustion. The conversion of methane to CO₂ equivalents is based on global warming potentials from Shindell et al. (2009) that include both direct and indirect influences of methane on aerosols. Mean values from Shindell et al. (2009) are used here. Shindell et al. (2009) present an uncertainty in these mean values of plus or minus 23%, which is not included in this figure

6 Shale gas versus other fossil fuels

Considering the 20-year horizon, the GHG footprint for shale gas is at least 20% greater than and perhaps more than twice as great as that for coal when expressed per quantity of energy available during combustion (Fig. 1a; see Electronic Supplemental Materials for derivation of the estimates for diesel oil and coal). Over the 100-year frame, the GHG footprint is comparable to that for coal: the low-end shale-gas emissions are 18% lower than deep-mined coal, and the high-end shale-gas emissions are 15% greater than surface-mined coal emissions (Fig. 1b). For the 20 year horizon, the GHG footprint of shale gas is at least 50% greater than for oil, and perhaps 2.5-times greater. At the 100-year time scale, the footprint for shale gas is similar to or 35% greater than for oil.

We know of no other estimates for the GHG footprint of shale gas in the peer-reviewed literature. However, we can compare our estimates for conventional gas with three previous peer-reviewed studies on the GHG emissions of conventional natural gas and coal: Hayhoe et al. (2002), Lelieveld et al. (2005), and Jamarillo et al. (2007). All concluded that GHG emissions for conventional gas are less than for coal, when considering the contribution of methane over 100 years. In contrast, our analysis indicates that conventional gas has little or no advantage over coal even over the 100-year time period (Fig. 1b). Our estimates for conventional-gas methane emissions are in the range of those in Hayhoe et al. (2002) but are higher than those in Lelieveld et al. (2005) and Jamarillo et al. (2007) who used 1996 EPA emission factors now known to be too low (EPA 2010). To evaluate the effect of methane, all three of these studies also used global warming potentials now believed to be too low (Shindell et al. 2009). Still, Hayhoe et al. (2002) concluded that under many of the scenarios evaluated, a switch from coal to conventional natural gas could aggravate global warming on time scales of up to several decades. Even with the lower global warming potential value, Lelieveld et al. (2005) concluded that natural gas has a greater GHG footprint than oil if methane emissions exceeded 3.1% and worse than coal if the emissions exceeded 5.6% on the 20-year time scale. They used a methane global warming potential value for methane from IPCC (1995) that is only 57% of the new value from Shindell et al. (2009), suggesting that in fact methane emissions of only 2% to 3% make the GHG footprint of conventional gas worse than oil and coal. Our estimates for fugitive shale-gas emissions are 3.6 to 7.9%.

Our analysis does not consider the efficiency of final use. If fuels are used to generate electricity, natural gas gains some advantage over coal because of greater efficiencies of generation (see Electronic Supplemental Materials). However, this does not greatly affect our overall conclusion: the GHG footprint of shale gas approaches or exceeds coal even when used to generate electricity (Table in Electronic Supplemental Materials). Further, shale-gas is promoted for other uses, including as a heating and transportation fuel, where there is little evidence that efficiencies are superior to diesel oil.

7 Can methane emissions be reduced?

The EPA estimates that 'green' technologies can reduce gas-industry methane emissions by 40% (GAO 2010). For instance, liquid-unloading emissions can be greatly

reduced with plunger lifts (EPA 2006; GAO 2010); industry reports a 99% venting reduction in the San Juan basin with the use of smart-automated plunger lifts (GAO 2010). Use of flash-tank separators or vapor recovery units can reduce dehydrator emissions by 90% (Fernandez et al. 2005). Note, however, that our lower range of estimates for 3 out of the 5 sources as shown in Table 2 already reflect the use of best technology: 0.3% lower-end estimate for routine venting and leaks at well sites (GAO 2010), 0% lower-end estimate for emissions during liquid unloading, and 0% during processing.

Methane emissions during the flow-back period in theory can be reduced by up to 90% through Reduced Emission Completions technologies, or REC (EPA 2010). However, REC technologies require that pipelines to the well are in place prior to completion, which is not always possible in emerging development areas. In any event, these technologies are currently not in wide use (EPA 2010).

If emissions during transmission, storage, and distribution are at the high end of our estimate (3.6%; Table 2), these could probably be reduced through use of better storage tanks and compressors and through improved monitoring for leaks. Industry has shown little interest in making the investments needed to reduce these emission sources, however (Percival 2010).

Better regulation can help push industry towards reduced emissions. In reconciling a wide range of emissions, the GAO (2010) noted that lower emissions in the Piceance basin in Colorado relative to the Uinta basin in Utah are largely due to a higher use of low-bleed pneumatics in the former due to stricter state regulations.

8 Conclusions and implications

The GHG footprint of shale gas is significantly larger than that from conventional gas, due to methane emissions with flow-back fluids and from drill out of wells during well completion. Routine production and downstream methane emissions are also large, but are the same for conventional and shale gas. Our estimates for these routine and downstream methane emission sources are within the range of those reported by most other peer-reviewed publications inventories (Hayhoe et al. 2002; Lelieveld et al. 2005). Despite this broad agreement, the uncertainty in the magnitude of fugitive emissions is large. Given the importance of methane in global warming, these emissions deserve far greater study than has occurred in the past. We urge both more direct measurements and refined accounting to better quantify lost and unaccounted for gas.

The large GHG footprint of shale gas undercuts the logic of its use as a bridging fuel over coming decades, if the goal is to reduce global warming. We do not intend that our study be used to justify the continued use of either oil or coal, but rather to demonstrate that substituting shale gas for these other fossil fuels may not have the desired effect of mitigating climate warming.

Finally, we note that carbon-trading markets at present under-value the greenhouse warming consequences of methane, by focusing on a 100-year time horizon and by using out-of-date global warming potentials for methane. This should be corrected, and the full GHG footprint of unconventional gas should be used in planning for alternative energy futures that adequately consider global climate change.

Acknowledgements Preparation of this paper was supported by a grant from the Park Foundation and by an endowment funds of the David R. Atkinson Professorship in Ecology & Environmental Biology at Cornell University. We thank R. Alvarez, C. Arnold, P. Artaxo, A. Chambers, D. Farnham, P. Jamarillo, N. Mahowald, R. Marino, R. McCoy, J. Northrup, S. Porder, M. Robertson, B. Sell, D. Shrag, L. Spaeth, and D. Strahan for information, encouragement, advice, and feedback on our analysis and manuscript. We thank M. Hayn for assistance with the figures. Two anonymous reviewers and Michael Oppenheimer provided very useful comments on an earlier version of this paper.

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IN PRESS: Accepted for publication in the *International Journal of Human and Ecological Risk Assessment*, September 4, 2010.

Expected publication: September-October 2011.

Natural Gas Operations from a Public Health Perspective

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Running Head: Natural Gas Operations from a Public Health Perspective

Received 8 June 2010; revised manuscript accepted 4 September 2010-

ABSTRACT

The technology to recover natural gas depends on undisclosed types and amounts of toxic chemicals. A list of 944 products containing 632 chemicals used during natural gas operations was compiled. Literature searches were conducted to determine potential health effects of the 353 chemicals identified by Chemical Abstract Service (CAS) numbers. More than 75% of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems. Approximately 40-50% could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37% could affect the endocrine system; and 25% could cause cancer and mutations. These results indicate that many chemicals used during the fracturing and drilling stages of gas operations may have long-term health effects that are not immediately expressed. In addition, an example was provided of waste evaporation pit residuals that contained numerous chemicals on the CERCLA and EPCRA lists of hazardous substances. The discussion highlights the difficulty of developing effective water quality monitoring programs. To protect public health we recommend full disclosure of the contents of all products, extensive air and water monitoring, coordinated environmental/human health studies, and regulation of fracturing under the U.S. Safe Drinking Water Act.

Key Words: drilling, health, hydraulic fracturing, natural gas, ozone, pollution.

INTRODUCTION

Over the past two decades, in an effort to reduce dependence on imported fossil fuels, the U.S. government has supported increased exploration and production of natural gas. The responsibility for overseeing the nation's underground minerals lies with the U.S. Department of Interior, Bureau of Land Management (BLM) with some oversight from the U.S. Environmental Protection Agency (USEPA). Attempting to meet the government's need for energy self-sufficiency, the BLM has auctioned off thousands of mineral leases and issued permits to drill across vast acreages in the U.S. Rocky Mountain West. Since 2003, natural gas operations have increased substantially, with annual permits in Colorado alone increasing from 2,249 to 8,027 in 2008 (Colorado Oil and Gas Conservation Commission 2010).

In tandem with federal support for increased leasing, legislative efforts have granted exclusions and exemptions for oil and gas exploration and production from a number of federal environmental statutes, including the Clean Water Act, the Clean Air Act, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, better known as the Superfund Act), the Resource Conservation and Recovery Act (RCRA), the Toxic Release Inventory under the Emergency Planning and Community Right-to-Know Act (EPCRA), and the National Environmental Policy Act (NEPA) (Oil and Gas Accountability Project 2007). The most recent of these efforts was an amendment included in the 2005 Energy Policy Act that prevented the use of the Safe Drinking Water Act to regulate certain activities, known as hydraulic fracturing, which are involved in 90% of natural gas drilling.

The cumulative effect of these exemptions and exclusions has been to create a federal void in environmental authority over natural gas operations, leaving the responsibility primarily up to the states. Although some states have oil and gas commissions to watch over natural gas production activity, the primary mission of these agencies has been to facilitate natural gas extraction and increase revenues for the states. In addition, when states issue permits to drill, they have not traditionally required an accounting of how the resulting liquid and solid waste would be handled. In short, their focus has not typically been on health and the environment.

The Need for Chemicals

In keeping with the rush to produce more natural gas, technological advances have permitted the industry to drill deeper and expand wider, tapping into gas reserves with greater facility and profitability. While these advances have allowed the mining of vast, newly discovered gas deposits, the new technology depends heavily on the use of undisclosed types and amounts of toxic chemicals.

Chemicals are used throughout operations to reach and release natural gas. First, combinations of chemicals are added to the “muds” used to drill the bore hole. Chemicals are added to increase the density and weight of the fluids in order to facilitate boring, to reduce friction, to facilitate the return of drilling detritus to the surface, to shorten drilling time, and to reduce accidents. After drilling, hydraulic fracturing (also known as fracking, frac’ing, or stimulation) is done to break up the zone in which the gas is trapped and make it easier for the methane to escape, increasing a well’s productivity. In the U.S. West, approximately a million or more gallons of fluid containing toxic chemicals are injected underground during this operational stage. As with drilling, chemicals are used in fracking fluids for many purposes (Table 1). One well can be fracked 10 or more times and there can be up to 30 wells on one pad. An estimated 10% to 90% of the fracking fluid is returned to the surface during well completion and subsequent production (BC Oil and Gas Commission 2010; New York State Department of Environmental Conservation Division of Mineral Resources 2009), bringing with it toxic gasses, liquids, and solid material that are naturally present in underground oil and gas deposits. Under some circumstances, none of the injected fluid is recovered.

In most regions of the country, raw natural gas comes out of the well along with water, various liquid hydrocarbons including benzene, toluene, ethylbenzene, and xylene (as a group, called BTEX), hydrogen sulfide (H_2S), and numerous other organic compounds that have to be removed from the gas. When the gas leaves the well it is passed through units called heater treaters that are filled with triethylene glycol and/or ethylene glycol that absorbs the water from the gas. Once the glycol solution becomes saturated with water, the heaters turn on and raise the temperature enough to boil off the water, which is vented through a closed system and upon cooling, ends up in a nearby tank labeled “produced water”. The glycol fluid, which has a higher boiling point than water, cools and is reused. During the heating process at critical temperatures the oily substances that came up with the gas become volatile and then re-condense into a separate holding tank. This is known as “condensate” water. The contaminated water can be re-injected underground on the well pad or off site, common practices in the eastern U.S., or hauled off the well pad to waste evaporation pits in the U.S. West. Temporary pits are also constructed during drilling to hold the cuttings, used drilling mud which is often re-used, and any other contaminated water that comes to the surface while drilling. These reserve pits on well pads are supposed to be drained and covered with top soil or other suitable material within a month after drilling stops.

An Unexpected Side Effect: Air Pollution

In addition to the land and water contamination issues, at each stage of production and delivery tons of toxic volatile compounds (VOCs), including BETX, other hydrocarbons, and fugitive natural gas (methane), can escape and mix with nitrogen oxides (NOx) from the exhaust of diesel-fueled, mobile, and stationary equipment, to produce ground-level ozone (CH2MHILL 2007; Colorado Department of Public Health and Environment [CDPHE] 2007; URS 2008; U.S. Congress, Office of Technology Assessment 1989). One highly reactive molecule of ground level ozone can burn the deep alveolar tissue in the lungs, causing it to age prematurely. Chronic exposure can lead to asthma and chronic obstructive pulmonary diseases (COPD), and is particularly damaging to children, active young adults who spend time outdoors, and the aged (Islam *et al.* 2007; Tager *et al.* 2005; Triche *et al.* 2006). Ozone combined with particulate matter less than 2.5 micrometers produces smog (haze) that has been demonstrated to be harmful to humans as measured by emergency room admissions during periods of elevation (Peng *et al.* 2009). Gas field ozone has created a previously unrecognized air pollution problem in rural areas, similar to that found in large urban areas, and can spread up to 200 miles beyond the immediate region where gas is being produced (U.S. Congress, Office of Technology Assessment 1989; Roberts 2008). Ozone not only causes irreversible damage to the lungs, it is similarly damaging to conifers, aspen, forage, alfalfa, and other crops commonly grown in the western U.S. (Booker *et al.* 2009; Reich 1987; U.S. Congress, Office of Technology Assessment 1989). Adding to this air pollution is the dust created by fleets of diesel trucks working around the clock hauling the constantly accumulating condensate and produced water to large waste facility evaporation pits on unpaved roads. Trucks are also used to haul the millions of gallons of water from the source to the well pad.

PROJECT DESIGN

The following project grew from a year 2004 request by OGAP (Oil and Gas Accountability Project) to TEDX (The Endocrine Disruption Exchange) to explore the potential health effects of chemicals used during drilling, fracking, processing, and delivery of natural gas. OGAP, a project of Earthworks, is a national non-profit organization established in 1999 to watchdog the oil and natural gas industry. TEDX is a non-profit organization dedicated to compiling and disseminating technical information on chemicals that affect health and the environment.

Data Sources

In order to find out what chemicals were being used to extract natural gas, we took advantage of the information on the Material Safety Data Sheets (MSDSs) that accompany each product used during natural gas operations. MSDSs detailing specific products in use were provided by multiple sources including the BLM, U.S. Forest Service, state government departments, and the natural gas industry. MSDSs are designed to inform those who handle, ship, and use products that contain dangerous chemicals. They provide information about the physical and chemical characteristics of the chemicals in a product, and the immediate and chronic health effects, in order to prevent injury while working with the products. They are also designed to inform emergency response crews in case of accidents or spills. In addition to the MSDSs, we also used State Tier II Reports that must be filed by storage facilities under EPCRA. This Act sets a minimum amount above which a product that contains a hazardous substance in a storage facility has to be reported. We also supplemented our analysis with product information from disclosures in Environmental Impact Statements, Environmental Assessment Statements, and accident and spill reports. At first we looked only at what was taking place in Colorado and over the course of several years we acquired information from Wyoming, New Mexico, Texas, Washington, Montana, Pennsylvania, and New York. The list of products and chemicals quickly grew, making it apparent that hundreds of different products serving many purposes were being used in natural gas operations across the country. The number of chemical products manufacturers has also grown, making this a highly competitive industry.

It should be clear that our list of products is not complete, but represents only products and chemicals that we were able to identify, through a variety of sources, as being used by industry during natural gas operations. For most products, we cannot definitively say whether they were used during drilling or during fracking. However, an accidental blow-out of the Crosby well in Wyoming provided a unique opportunity to analyze the chemicals used during drilling, as fracking had not yet begun on that well. When the blow-out occurred, methane and other gases, petroleum condensates, and drilling fluids (muds) were released from fissures in the ground adjacent to the well. During the 58 hours the eruption took place, 25,000 square feet of soil surface in the area were contaminated. The driller released copies of the MSDSs for the products used during the blow-out and later we found the names of several more products from remedial action work plans to clean up the site (Terracon 2007).

On another occasion we were provided data from a 2007 New Mexico study, sponsored by 19 oil and gas companies and conducted by a third party consultant and analytical laboratory. This

gave us the opportunity to explore the health effects of chemicals in samples of pit solids drawn from six evaporation pits where gas operations were ceasing.

Data Limitations

MSDSs and Tier II reports are fraught with gaps in information about the formulation of the products. The U.S. Occupational Safety and Health Administration (OSHA) provides only general guidelines for the format and content of MSDSs. The manufacturers of the products are left to determine what information is revealed on their MSDSs. The forms are not submitted to OSHA for review unless they are part of an inspection under the Hazard Communication Standard (U.S. Department of Labor 1998). Some MSDSs report little to no information about the chemical composition of a product. Those MSDSs that do may only report a fraction of the total composition, sometimes less than 0.1%. Some MSDSs provide only a general description of the content, such as “plasticizer”, “polymer”, while others describe the ingredients as “proprietary” or just a chemical class. Under the present regulatory system all of the above “identifiers” are permissible. Consequently, it is not surprising that a study by the U.S. General Accounting Office (1991) revealed that MSDSs could easily be inaccurate and incomplete.

Tier II reports can be similarly uninformative, as reporting requirements vary from state to state, county to county, and company to company. Some Tier II forms include only a functional category name (*e.g.*, “weight materials” or “biocides”) with no product name. The percent of the total composition of the product is rarely reported on these forms.

The most critical limiting factor in our research was that Chemical Abstract Service (CAS) numbers were often not provided on MSDSs. The American Chemical Society has established the CAS number system to identify unique chemical substances. A single substance can have many different names, but only one CAS number. CAS numbers identify substances that may be a single chemical, an isomer of a chemical, a mixture of isomers, polymers, biological sequences, or a mixture of related chemicals. For purposes of accuracy, our research into the health effects of chemicals used in natural gas operations was restricted to only chemicals for which a CAS number was available.

Health Effects

Information on the health effects associated with identified chemicals was obtained from MSDSs, as well as government toxic chemical databases such as TOXNET and the Hazardous

Substances Database, and through literature searches of biomedical studies. Information available for some chemicals is limited due to lack of access to studies performed on the toxicity of the substance. For example, many laboratory studies submitted to USEPA for the registration of chemicals are not accessible on the basis that the information is proprietary to the industry.

Health effects were divided into 14 health categories, focusing on the main target organs or systems that are identified on MSDSs, government toxicological reports, and in medical literature. The categories include all seven priority health conditions identified by the Agency for Toxic Substances and Disease Registry (ATSDR 2010) associated with uncontrolled hazard waste sites listed as required by CERCLA, 1984, as amended (U.S. Environmental Protection Agency 1984). We reduced these to 12 categories by combining developmental and reproductive health impacts under endocrine disruption. The resulting 12 categories included: skin, eye and sensory organ, respiratory, gastrointestinal and liver, brain and nervous system, immune, kidney, cardiovascular and blood, cancer, mutagenic, endocrine disruption, other, and ecological effects.

Data Analysis

Using the data sources described above, we entered the names of all the products and chemicals into a spreadsheet. Initially, chemicals were separated according to the state in which the data source originated. Analysis of the profiles of health effects revealed minimal differences across states, thus for this report we combined all the data into one multi-state analysis. Using only the chemicals on the multi-state list for which CAS numbers were available, we produced a profile based on how often each of the 12 possible health effects were associated with the chemicals. We created separate profiles for the water soluble chemicals alone, and the volatile chemicals alone. We also did an analysis of the drilling chemicals from the Wyoming well-blowout and an analysis of the chemicals found in the New Mexico evaporation pits. Finally, we tested the utility of the spreadsheet for providing guidance for water quality monitoring, focusing on the most potentially harmful and frequently used chemicals.

RESULTS

Product Information

As of May, 2010, TEDX identified 944 products used in natural gas operations in the U.S. Of these, between 95 and 100% of the ingredients were available for 131 (14%) of the products (Figure 1). For 407 (43%) of the products, less than 1% of the total product composition was available. For

those 407 products, only the name of the product with no identifiable chemical name or percent composition was reported. A total of 632 chemicals were reported in the products and we were able to locate CAS numbers for 353 (56%) of them.

Health Effects Profile

Using the health effect information for the 353 chemicals with CAS numbers, we created a profile of possible health effects that depicts the percentage of chemicals associated with each of the 12 health effect categories (Figure 2). Viewing the profile from left to right, more than 75% of the chemicals on the list can affect the skin, eyes, and other sensory organs, the respiratory system, the gastrointestinal system, and the liver. More than half the chemicals show effects on the brain and nervous system. These first four categories represent effects that would likely be expressed upon immediate exposure, such as eye and skin irritation, nausea and/or vomiting, asthma, coughing, sore throat, flu-like symptoms, tingling, dizziness, headaches, weakness, fainting, numbness in extremities, and convulsions. Products containing chemicals in powder form, irritants, or highly corrosive and volatile chemicals would all come with MSDS warnings in one or more of these categories. In all probability, none of the chemicals in these categories would normally be ingested during natural gas operations, but immediate eye, nasal, dermal contact, and inhalation could lead to rapid absorption and cause direct exposure to the brain and other vital organ systems.

Health categories that reflect chronic and long-term organ and system damage comprise the middle portion of Figure 2. These included the nervous system (52%), immune system (40%), kidney (40%), and the cardiovascular system and blood (46%). More than 25% of the chemicals can cause cancer and mutations. Notably, 37% of the chemicals can affect the endocrine system that encompasses multiple organ systems including those critical for normal reproduction and development. The category of 'other' is more common, and includes effects on weight, teeth, and bone and the ability of a chemical to cause death. More than 40% of the chemicals have been found to have ecological effects, indicating that they can harm aquatic and other wildlife.

Volatile and Soluble Chemicals

Organization of the data by pathway of exposure, separate health category profiles are shown in Figure 3 for the volatile and water soluble chemicals. Approximately 37% of the chemicals are volatile and can become airborne. More than 89% of these chemicals can harm the eyes, skin, sensory organs, respiratory tract, gastrointestinal tract, or liver. Compared with the soluble chemicals, far more of the volatile chemicals (81%) can cause harm to the brain and nervous system. Seventy

one percent of the volatile chemicals can harm the cardiovascular system and blood, and 66% can harm the kidneys. Overall, the volatile chemicals produce a profile that displays a higher frequency of health effects than the water soluble chemicals. In addition, because they vaporize, not only can they be inhaled, but also ingested and absorbed through the skin, increasing the chance of exposures.

Drilling Chemicals

The profile for the 22 drilling chemicals identified from the well blow-out in Wyoming are shown in Figure 4. The profile was unique in the following ways. All the chemicals used in the drilling fluids were associated with respiratory effects. Nearly 60% were associated with 'other' effects, a category that includes outright mortality as an end point. A relatively high percentage of chemicals that affect the immune system were used.

Evaporation Pit Chemicals

Shown in Figure 5 are the health effects of the 40 chemicals and metals reported in the New Mexico evaporation pits. These chemicals produced a health profile even more hazardous than the pattern produced by the drilling and fracking chemicals. Upon further investigation, we discovered that 98% of the 40 chemicals found in the pits are listed on USEPA's 2005 CERCLA (Superfund) list and 73% are on the 2006 EPCRA List of Lists of reportable toxic chemicals. Of the nine chemicals found to exceed the New Mexico state limits, all are on the CERCLA list and all but one are on the EPCRA List of Lists.

Analyses for Water Quality Monitoring

For the purpose of water quality monitoring guidance, we analyzed the data according to the most potentially harmful chemicals and the most frequently used chemicals. In Table 2 is provided a list of the most egregious chemicals, those with 10 or more health effects. Roughly half of these chemicals are used in only one product on our list, making it impractical and a waste of time and money to try to test water for the most harmful chemicals. A more practical approach would be to test for the most frequently used chemicals. Although we do not know how often each product is used, we assume that the more products that contain a given chemical, the more likely it is to be detected in a water sample. Shown in Table 3 are all the chemicals on our list that were found in at least seven different products. Many of these chemicals are relatively harmless. The most frequently cited chemical was crystalline silica (quartz), which was reported in 125 different products. Note that petroleum distillates and a variety of alcohols are found in numerous products, as are several forms

of potassium, which is a relatively easy and inexpensive chemical to detect in water. This list may prove useful in devising a water monitoring program. Regardless of how many health effects a chemical has, elevated levels of frequently used chemicals found in a water source could provide evidence of communication between natural gas operations and water resources.

DISCUSSION

Industry representatives have said there is little cause for concern because of the low concentrations of chemicals used in their operations. Nonetheless, pathways that could deliver chemicals in toxic concentrations at less than one part-per-million are not well studied and many of the chemicals on the list should not be ingested at any concentration. Numerous systems, most notably the endocrine system, are extremely sensitive to very low levels of chemicals, in parts-per-billion or less. The damage may not be evident at the time of exposure but can have unpredictable delayed, life-long effects on the individual and/or their offspring. Effects of this nature would be much harder to identify than obvious impacts such as skin and eye irritation that occur immediately upon contact. Health impairments could remain hidden for decades and span generations. Specific outcomes could include reduced sperm production, infertility, hormone imbalances, and other sex-related disorders. Further compounding this concern is the potential for the shared toxic action of these contaminants, especially those affecting the same and/or multiple organ systems.

It was difficult to arrive at a 'short list' of chemicals that would be informative for water quality monitoring because of the vast array of products constantly being developed, and the wide selection of chemicals used in those products. We can, however, provide some guidance by pointing out four types of chemicals that are used in a relatively high number of products. These include (1) the silicas, which appear frequently as product components; (2) potassium based chemicals, which are also found in numerous products, although with relatively low toxicity; (3) petroleum derived products, which take on many different forms (including some without CAS numbers), and some of which are toxic at low concentrations and might be detected with diesel or gasoline range organics tests; and (4) the alcohols for which new detection technology is being developed, and because they are among the chemicals with the most health effects.

Detection of increasing or elevated concentrations of these chemicals near gas operations could indicate that communication between natural gas activities and a water resource such as a domestic well, creek, pond, wetland, *etc.*, is occurring. If a longitudinal monitoring program were to reveal any increase in concentration in one of these target groups, even if the concentrations were well below any water quality standards, it should trigger more testing immediately.

For many years, drillers have insisted that they do not use toxic chemicals to drill for gas, only guar gum, mud, and sand. While much attention is being given to chemicals used during fracking, our findings indicate that drilling chemicals can be equally, if not more dangerous. What we have learned about the chemicals used in the Crosby well blowout provides insight into why citizens living nearby suffered severe respiratory distress, nausea, and vomiting and had to be evacuated from their homes for several days. It might also shed light on why other individuals living near gas operations have experienced similar symptoms during the gas drilling phase (prior to fracking).

From the first day the drill bit is inserted into the ground until the well is completed, toxic materials are introduced into the borehole and returned to the surface along with produced water and other extraction liquids. In the western U.S. it has been common practice to hold these liquids in open evaporation pits until the wells are shut down, which could be up to 25 years. These pits have rarely been examined to ascertain their chemical contents outside of some limited parameters (primarily metals, chlorides, and radioactive materials). Our data reveal that extremely toxic chemicals are found in evaporation pits and indeed, these and other similar sites may need to be designated for Superfund cleanup. In the eastern U.S., and increasingly in the west, these chemicals are being re-injected underground, creating yet another potential source of extremely toxic chemical contamination. In other words, what ends up in evaporation pits in the West, will in other parts of the country be injected underground.

RECOMMENDATIONS

TEDX has collected the names of nearly a thousand products used in natural gas operations in the U.S. We have no idea how many more products are in use. We have health data on only a small percentage of the chemicals in use because CAS numbers are often not provided on MSDSs and without a CAS number it is impossible to search for health data. Working under the assumption that our results underestimate the consequences of the health impacts to the labor force, residents living in close proximity to the wells, and those dependent upon potable and agricultural water that could be affected by natural gas operations, we make the following recommendations:

(1) Product labels and/or MSDSs must list the complete formulation of each product, including the precise name and CAS number and amount of every chemical, as well as the composition of the vehicle used to fill the product container. To prevent serious injury and mortality the products used during natural gas operations should be exempt from confidentiality.

(2) If an ingredient does not have a CAS number it must be clearly defined, leaving no doubt about its possible health impact(s).

3) Records should be kept for each drilling and fracking operation, listing the total volume of fluid injected, the amount of each product used, the depth at which the products were introduced, and the volume of fluid recovered.

4) The volume and concentration of all liquids and solids removed from the work sites should be made available to the public. Without this information the full health and environmental hazards posed by natural gas production cannot be predicted.

(5) Air quality monitoring for individual VOCs as well as ozone must become standard procedure in any region where natural gas activity is taking place and must commence prior to initiation of operations to establish baseline levels. Estimating tonnage of VOCs and NOx released and ignoring ozone should no longer be the practice.

(6) Comprehensive water monitoring programs should be established in every gas play across the U.S. both prior to and after gas production commences, that include new chemical species indicators based on toxicity and mobility in the environment, and pollution of sub-surface and above-surface domestic and agricultural water resources, and all domestically-used aquifers and underground sources of drinking water.

(7) We recommend the development of labeled isotopic fingerprints of the chlorinated compounds in products used to drill and fracture. Each manufacturer would have its own fingerprint. A plot of this isotopic data found down gradient of a hydraulically fractured well would aid a state or federal regulator in identifying the contamination source.

(8) Given the general consistency of reported adverse health effects by citizens and laborers across many gas plays, public health authorities should establish an epidemiological monitoring program that merges at the state and national level in order to increase power and be able to reach conclusions early on. The design of the study should include environmental monitoring of air and water as well as any health changes in those living and working in regions of natural gas operations. The health monitoring should be able to detect early trends in parameters, such as asthma, hypertension, chemical sensitization, chronic skin and eye irritation, and neurological alterations, to mention a few.

(9) As underground injection of waste is becoming the most frequent choice for waste disposal, rigid accounting of the date, volume, and source of all materials, and the exact location in the geological formation(s) in which it is injected should become a part of permanent government records that will be publicly available for future generations.

(10) Before a permit is issued to drill for natural gas, complete waste management plans should be reviewed and approved and become part of the permit.

(11) The injection of hydraulic fracturing fluids should be regulated under the Safe Drinking Water Act. This is needed to assure mechanical integrity of the injection wells and isolation of the injection zone from underground sources of drinking water.

ACKNOWLEDGMENTS

We thank The New York Community Trust, the Winslow Foundation, and the U.S. Environmental Protection Agency (Grant No. EQ-97838701) for their support. This data collection and analyses were partially funded through a USEPA grant. USEPA makes no claims regarding the accuracy or completeness of the information in this article. Competing interest declaration: The authors have no conflicts of interest.

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Table 1. Functional categories of hydraulic fracturing chemicals.

Acids	To achieve greater injection ability or penetration and later to dissolve minerals and clays to reduce clogging, allowing gas to flow to the surface.
Biocides	To prevent bacteria that can produce acids that erode pipes and fittings and break down gellants that ensure that fluid viscosity and proppant transport are maintained. Biocides can produce hydrogen sulfide (H ₂ S) a very toxic gas that smells like rotten eggs.
Breakers	To allow the breakdown of gellants used to carry the proppant, added near the end of the fracking sequence to enhance flowback.
Clay stabilizers	To create a fluid barrier to prevent mobilization of clays, which can plug fractures.
Corrosion inhibitors	To reduce the potential for rusting in pipes and casings.
Crosslinkers	To thicken fluids often with metallic salts in order to increase viscosity and proppant transport.
Defoamers	To reduce foaming after it is no longer needed in order to lower surface tension and allow trapped gas to escape.
Foamers	To increase carrying-capacity while transporting proppants and decreasing the overall volume of fluid needed.
Friction reducers	To make water slick and minimize the friction created under high pressure and to increase the rate and efficiency of moving the fracking fluid.
Gellants	To increase viscosity and suspend sand during proppant transport.
pH control	To maintain the pH at various stages using buffers to ensure maximum effectiveness of various additives.
Proppants	To hold fissures open, allowing gas to flow out of the cracked formation, usually composed of sand and occasionally glass beads.
Scale control	To prevent build up of mineral scale that can block fluid and gas passage through the pipes.
Surfactants	To decrease liquid surface tension and improve fluid passage through pipes in either direction.

Table 2. Chemicals with CAS numbers that have 10 or more adverse health effects.

Chemical	CAS #	Number of Products
(2-BE) Ethylene glycol monobutyl ether	111-76-2	22
2,2',2''-Nitrilotriethanol	102-71-6	3
2-Ethylhexanol	104-76-7	7
5-Chloro-2-methyl-4-isothiazolin-3-one	26172-55-4	2
Acetic acid	1186-52-3	1
Acrolein	107-02-8	1
Acrylamide (2-propenamide)	79-06-1	6
Acrylic acid	79-10-7	2
Ammonia	7664-41-7	3
Ammonium chloride	12125-02-9	2
Ammonium nitrate	6484-52-2	2
Aniline	62-53-3	1
Benzyl chloride	100-44-7	2
Boric acid	10043-35-3	4
Cadmium	7440-43-9	1
Calcium hypochlorite	7778-54-3	1
Chlorine	7782-50-5	1
Chlorine dioxide	10049-04-4	2
Dibromoacetone	3252-43-5	1
Diesel 2	68476-34-6	19
Diethanolamine	111-42-2	4
Diethylenetriamine	111-40-0	1
Dimethyl formamide	68-12-2	1
Epidian	25068-38-6	1
Ethanol (acetylenic alcohol)	64-17-5	8
Ethyl mercaptan	75-08-1	1
Ethylbenzene	100-41-4	7
Ethylene glycol	107-21-1	17
Ethylene oxide	75-21-8	2
Ferrous sulfate	7720-78-7	1
Formaldehyde	50-00-0	4
Formic acid	64-18-6	8
Fuel oil #2	68476-30-2	9
Glutaraldehyde	111-30-8	11
Glyoxal	107-22-2	2
Hydrosulfurized kerosene	64742-81-0	1
Hydrogen sulfide	7783-06-4	1
Iron	7439-89-6	3
Isobutyl alcohol (2-methyl-1-propanol)	78-83-1	3
Isopropanol (propan-2-ol)	67-63-0	47
Kerosene	8008-20-6	3
Light naphthenic distillates, hydrotreated	64742-53-6	2

Mercaptoacidic acid	68-11-1	2
Methanol	67-56-1	74
Methylene bis(thiocyanate)	6317-18-6	2
Monoethanolamine	141-43-5	5
NaHCO ₃	144-55-8	5
Naphtha, petroleum medium aliphatic	64742-88-7	2
Naphthalene	91-20-3	18
Natural gas condensates	68919-39-1	1
Nickel sulfate	7786-81-4	1
Paraformaldehyde	30525-89-4	2
Petroleum distillate naptha	8002-05-9	7
Petroleum distillate/ naphtha	8030-30-6	1
Phosphonium, tetrakis(hydroxymethly)-sulfate	55566-30-8	2
Propane-1,2-diol	57-55-6	6
Sodium bromate	7789-38-0	1
Sodium chlorite (chlorous acid, sodium salt)	7758-19-2	1
Sodium hypochlorite	7681-52-9	1
Sodium nitrate	7631-99-4	3
Sodium nitrite	7632-00-0	3
Sodium sulfite	7757-83-7	1
Styrene	100-42-5	1
Sulfur dioxide	7446-09-5	1
Sulfuric acid	7664-93-9	1
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (Dazomet)	533-74-4	3
Titanium dioxide	13463-67-7	2
Tributyl phosphate	126-73-8	1
Triethylene glycol	112-27-6	1
Urea	57-13-6	3
Xylene	1330-20-7	11

Table 3. Chemicals with CAS numbers found in the highest number of products.

Chemical	CAS #	Number of products	Number of health effects
Crystalline silica, quartz	14808-60-7	125	7
Methanol	67-56-1	74	11
Isopropanol (propan-2-ol)	67-63-0	47	10
Petroleum distillate hydrotreated light	64742-47-8	26	6
(2-BE) Ethylene glycol monobutyl ether	111-76-2	22	11
Bentonite	1302-78-9	20	6
Diesel 2	68476-34-6	19	10
Naphthalene	91-20-3	18	12
Aluminum oxide	1344-28-1	17	3
Ethylene glycol	107-21-1	17	10
Sodium hydroxide	1310-73-2	17	5
Barite (BaSO ₄)	7727-43-7	15	5
Heavy aromatic petroleum naphtha (aromatic solvent)	64742-94-5	15	5
Crystalline silica, cristobalite	14464-46-1	14	5
Mica	12001-26-2	14	3
Sodium chloride	7647-14-5	14	9
Crystalline silica, tridymite	15468-32-3	13	3
Hydrochloric acid (HCl)	7647-01-0	13	7
Glutaraldehyde	111-30-8	11	11
Xylene	1330-20-7	11	10
Guar gum	9000-30-0	10	3
Iron oxide (Fe ₂ O ₃ , diiron trioxide)	1309-37-1	10	5
Potassium chloride	7447-40-7	10	8
Potassium hydroxide	1310-58-3	10	7
Xanthan gum	11138-66-2	10	4
Fuel oil #2	68476-30-2	9	11
Hydrotreated heavy petroleum naphtha	64742-48-9	9	8
Limestone (calcium carbonate)	1317-65-3	9	2
Polyacrylamide/polyacrylate copolymer	25085-02-3	9	3
Sodium carboxymethylcellulose (polyanionic cellulose)	9004-32-4	9	5
Calcium hydroxide	1305-62-0	8	8
Crystalline silica (silicon dioxide)	7631-86-9	8	4
Ethanol (acetylenic alcohol)	64-17-5	8	12
Formic acid	64-18-6	8	11
Graphite	7782-42-5	8	4
2-Ethylhexanol	104-76-7	7	11
Acetic acid	64-19-7	7	9
Asphaltite (gilsonite, hydrocarbon black solid)	12002-43-6	7	4
Butanol (n-butyl alcohol, butan-1-ol, 1-butanol)	71-36-3	7	8
Calcium carbonate (sized)	471-34-1	7	6
Calcium chloride	10043-52-4	7	8
Ethoxylated nonylphenol	9016-45-9	7	6
Ethylbenzene	100-41-4	7	11
Petroleum distillate naphtha	8002-05-9	7	12

Propargyl alcohol (prop-2-yn-1-ol)	107-19-7	7	9
Tetramethylammonium chloride	75-57-0	7	8

Figure 1. Percent of composition disclosed for 944 products used in natural gas operations.

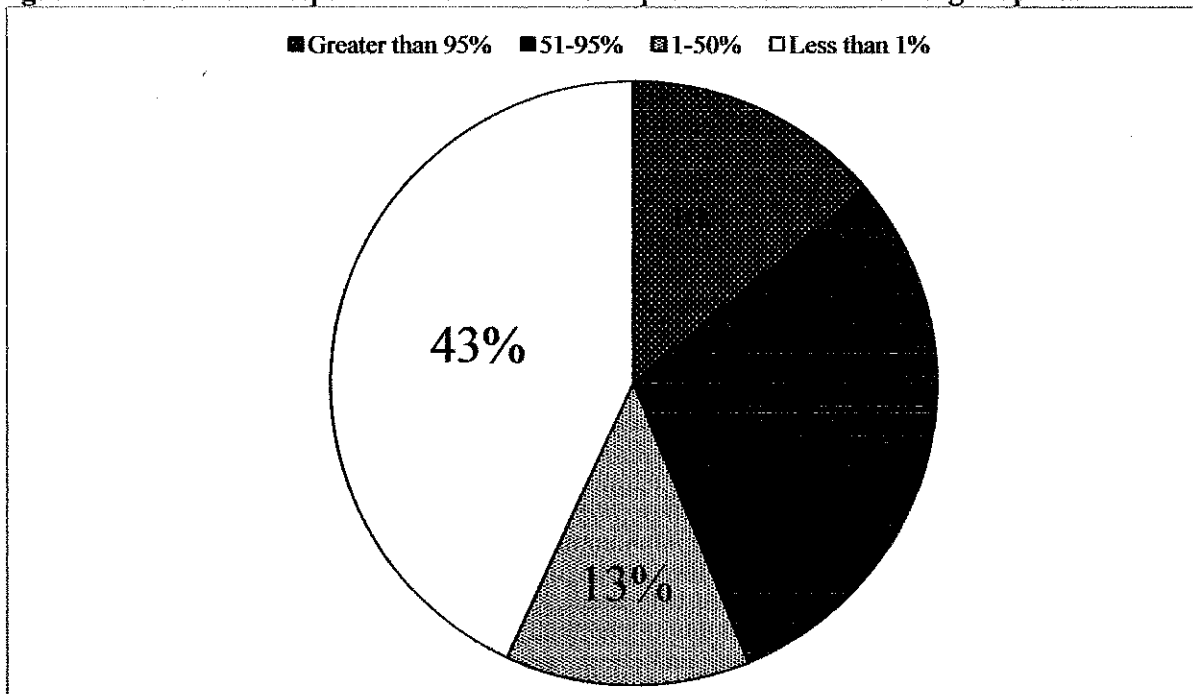


Figure 2. Profile of possible health effects of chemicals with CAS numbers used in natural gas operations

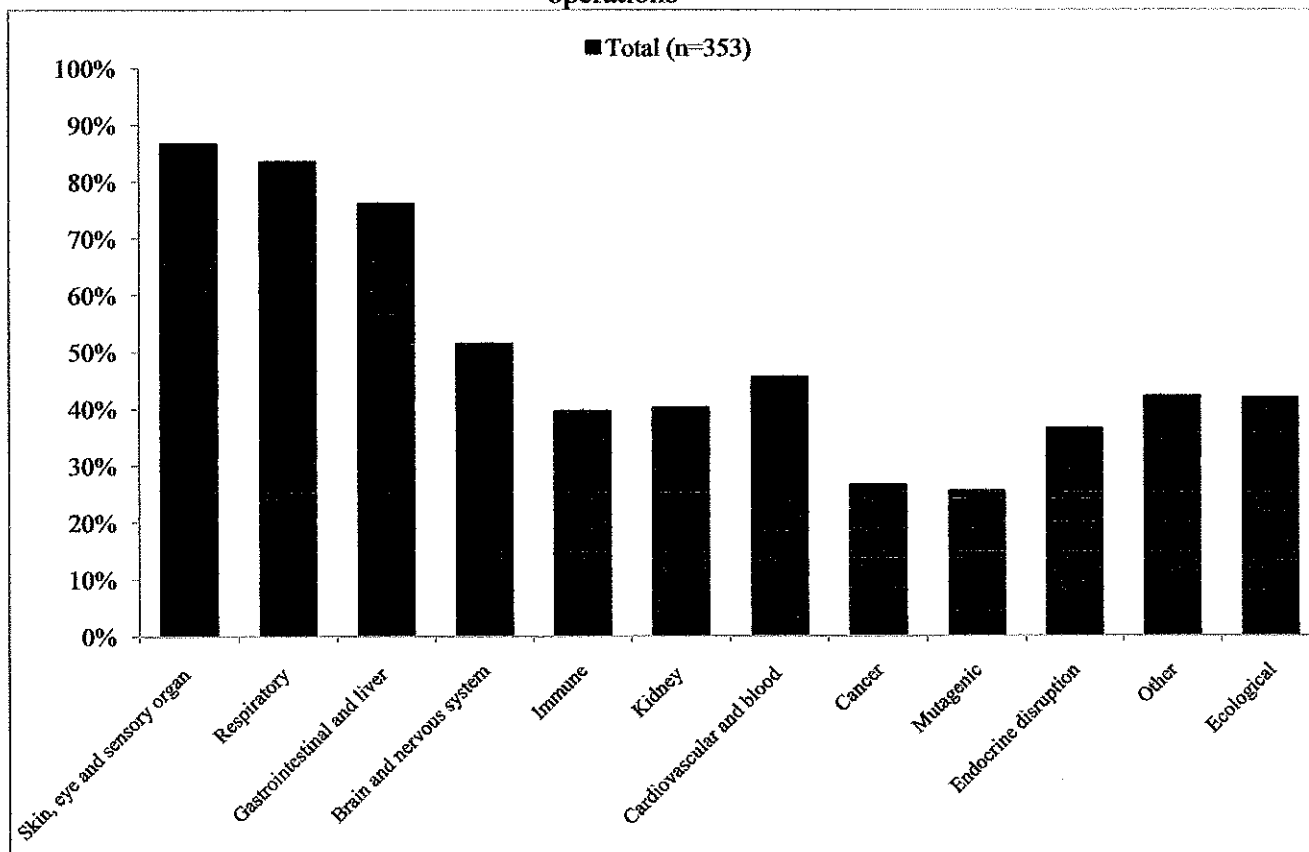


Figure 3. Profile of possible health effects of soluble and volatile chemicals with CAS numbers used in natural gas operations.

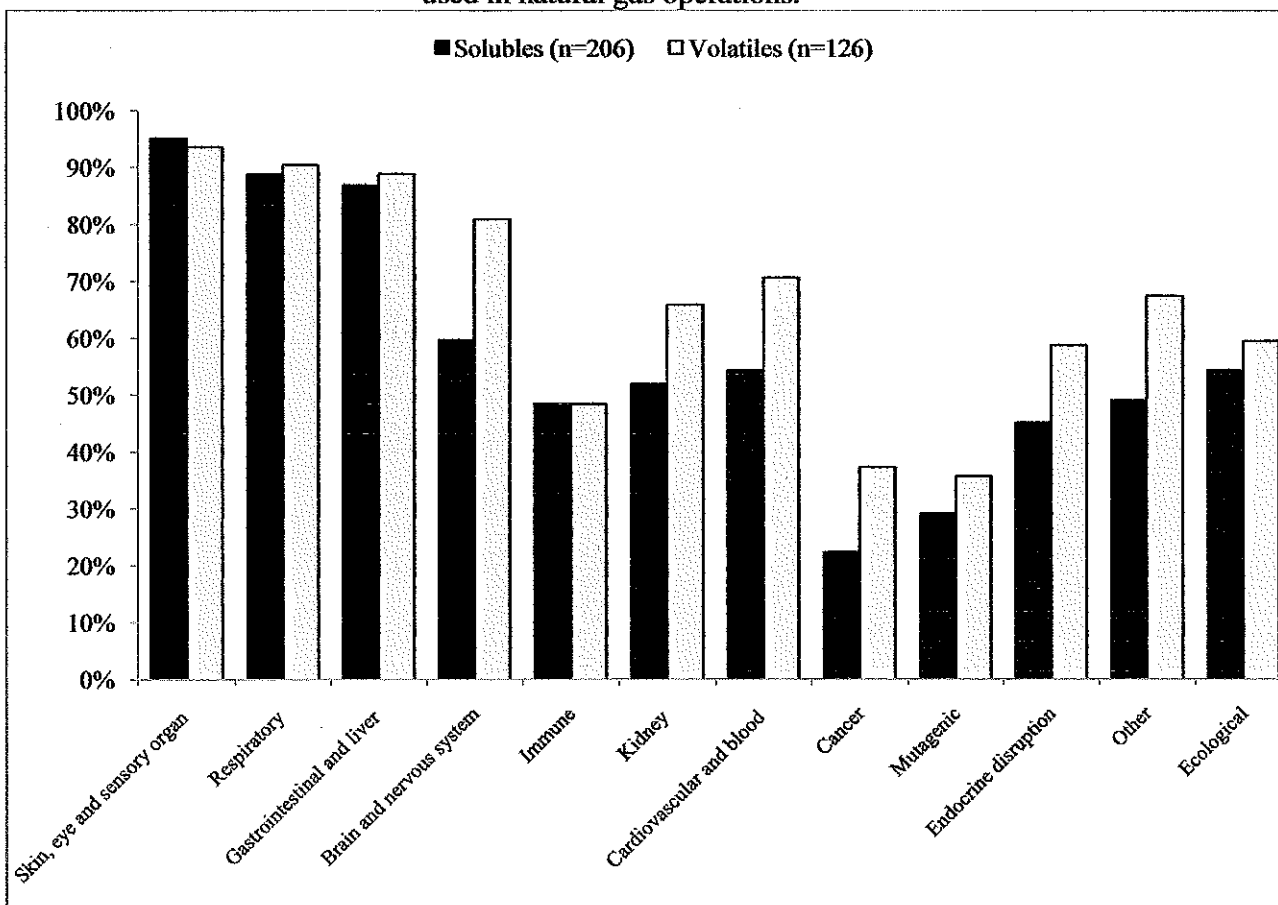


Figure 4. Profile of possible health effects of chemicals with CAS numbers used to drill the Crosby 25-3 well, Wyoming.

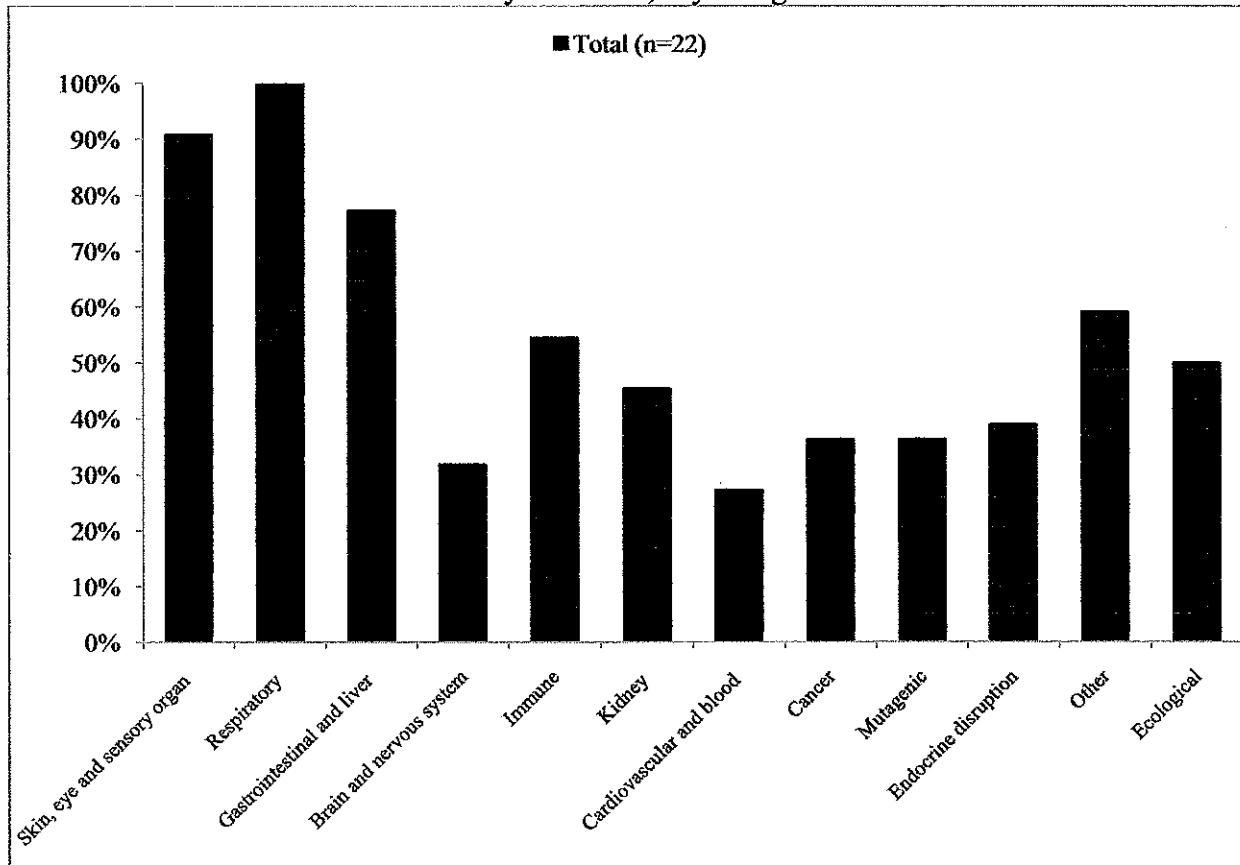
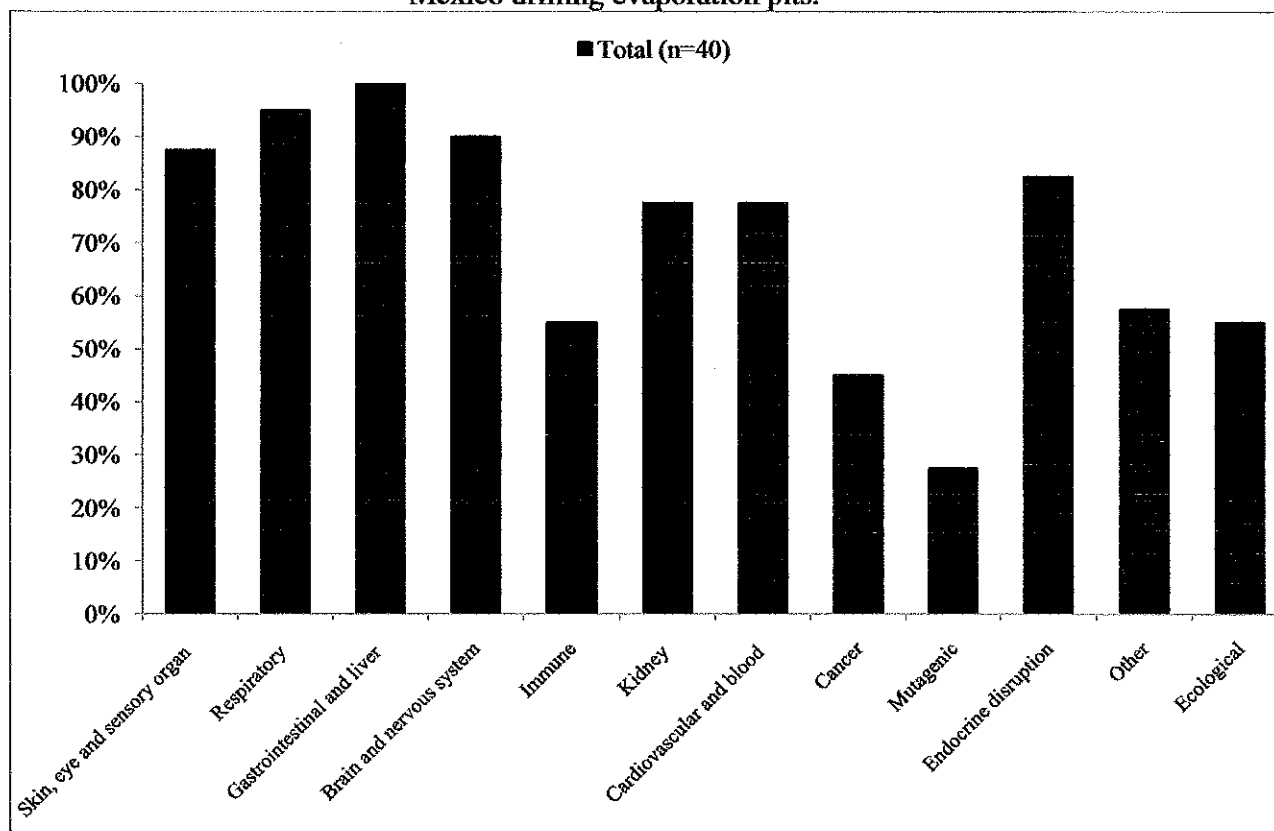
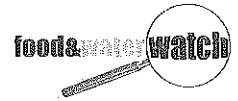


Figure 5. Profile of possible health effects of chemicals with CAS numbers found in six New Mexico drilling evaporation pits.



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Date: January 6, 2012

To: New Jersey Highlands Water Protection and Planning Council

c/o chris.ross@highlands.state.nj.us

From: Erica Van Auken, Campaign and Grassroots Coordinator for NJ Highlands Coalition in coordination with the NJ Chapter of the Sierra Club, the Association for NJ Environmental Commissions, and Food and Water Watch

Comments on Tennessee Gas Pipeline Company's 300 Line Project and Northeast Upgrade Project

The New Jersey Highlands Coalition, the New Jersey Chapter of the Sierra Club, the Association of New Jersey Environmental Commissions, and Food and Water Watch are of the opinion that Tennessee Gas Pipeline Company's (TGP) pipeline projects (both the 300 Line Project and the Northeast Upgrade Project) through the Highlands region do not fulfill the goals and purposes of the Highlands Water Protection and Planning Act and the Highlands Regional Master Plan (RMP). We continue to object to the exemption granted from the Highlands Council for the 300 Line Project, but if the Council is going to reach the same conclusion based on a few minor changes in TGP's most recent application, our comments herein will focus on the Northeast Upgrade Supply Link Project.

We would like to better understand the process used to determine when a project is eligible or ineligible for Exemption #11. For instance, how many aspects of a project would need to be inconsistent with the RMP for the Highlands Council to deny an exemption? Are some aspects of the RMP weighted differently so that the Council would consider some sections more important than others? We believe every project should be held to the strictest standards set forth by the RMP, but it is clear that the Highlands Council does not consider the same standards for Exemption #11 when determining approvals. Currently, the decision-making process of the Highlands Council contradicts the standards set forth in the RMP. This Consistency Determination for the Northeast Upgrade Project is clearly inconsistent with the guidance set forth in the RMP Objective 7F1f which states:

"Activities authorized under exemptions #9 and #11, which require a finding that the activity is consistent with the goals and purposes of the Highlands Act, shall be based upon a finding that the proposed activities are consistent with Highlands Act, the RMP, any rules or regulations adopted by the NJDEP pursuant to the Highlands Act, or any amendments to a master plan, development regulations, or other regulations adopted by a local government unit specifically to conform them with the RMP."

A consistency determination must be evaluated against not only the Highlands Act but the NJDEP's Preservation Area Rules *and* the RMP if it is to be consistent with its own requirements. Approvals of large-scale linear projects, based on an insufficient method for determining consistency, will have a chilling effect on municipalities looking to the Council to protect their natural resources through the conformance process. To date, thirty-seven towns

have been approved by the Highlands Council for basic conformance and they should be assured that their hard work completing the process will not be undermined by unwanted development projects, such as pipeline construction, through their municipalities and their region.

In addition, an applicant's past record should be taken into consideration when determining whether or not an exemption will be granted. In this case, the Highlands Council should review the multitude of well-documented problems TGP created in 2011 while constructing pipeline segments in the Highlands. There have been major erosion and sedimentation issues impacting waterways along the construction route of TGP's most recent project, the 300 Line Project. Erosion problems are mounting at Lake Lookover in West Milford, which was heavily polluted after erosion control mechanisms failed during Hurricane Irene. The applicant claims to be doing its best to address the problems, but they are so severe that no mitigation or restoration has been possible. We are concerned since vast portions of both projects are in steep slope areas where erosion is hardest to control. Best Management Practices established by the Soil Conservation District only cut erosion impacts by 50% on flat land, and this percentage declines as the terrain becomes steeper. Siltation entering our water is the single largest source of the parasite *Cryptosporidium* in water supply, and now TGP is proposing to go through the Monksville Reservoir on steep slopes. This could result in serious, widespread public health problems, as the parasite causes intestinal infections and has resulted in deaths. How is this Comprehensive Mitigation Plan's "Water Resources Quality Protection Plan" an improvement on or any different from the previous plan that has resulted in the devastation of Lake Lookover? Were any changes made in the Plan and why were they not clearly outlined, considering the major water quality issues that resulted from the company's last project in the region? Some of our worst fears have come true about the impacts of the 300 Line Project to waterways in the Highlands, and now TGP is asking to go through the most environmentally sensitive and largest water supply reservoir system in New Jersey. The Highlands Council must deny this exemption request.

We recognize that the applicant has attempted to address "improbable but foreseeable" weather events and has planned what we believe to be inadequate mitigation in the form of replacement lands. However, replacement land agreements must be finalized and compensation parcels selected before this project is considered by the Council in order to ensure the best mitigation possible. Earlier, the Highlands Council permitted TGP to cap the amount of money the company may spend on these mitigation lands for the 300 Line Project. For that project, TGP negotiated with the Council to spend no more than \$7500 an acre on replacement land and could cash out at \$7500 an acre if land is not purchased within 2-3 years of the company's lease agreement. Recent Green Acres purchases in the area of the TGP project have cost well over \$7500 an acre. The Woggish parcel next to the pipeline and Long Pond Ironworks State Park was purchased for \$41,000 per acre in 2009. TGP will not be able to purchase high-quality upland forests to mitigate the impacts of this project with a \$7500 per acre cap in place. We urge the Highlands Council to remove such a monetary cap from mitigation commitments and require the company to identify parcels for purchase prior to Council's consideration of this project. The Council needs the information on the mitigation lands proposed if it is to determine if those lands will truly compensate for the destruction that will be caused by the project, and to assess whether the mitigation proposed could potentially bring the project into compliance with the Act.

Further, the majority of TGP's Right Of Way is in critical wildlife habitat and the company is claiming these impacts will be offset by their mitigation land purchases, but we do not know what or where those tracts will be or what type of habitat values they will have. We have to assume their upland forest habitat values will be low if the company is staying below the \$7500 per acre cap. TGP cannot adequately mitigate for the destruction of Highlands Forest Resource Areas, Open Waters and Buffers, high and moderate integrity riparian areas and critical habitat because these lands cannot be replaced. There is nothing else like these lands in the state and buying other pieces of properties that are forested helps protect those tracts but does not make up for the natural resource values being destroyed along the pipeline. In order to make up for these inadequacies, replacement should be considered only at a minimum of a seven to one ratio of lands acquired to lands degraded.

Regardless of all our other concerns, there are two issues that should take precedence over the Highlands Council's determination of an exemption at this time. The Environmental Law Clinic of Columbia University Law School has filed comments (See Attached) on behalf of the New Jersey Highlands Coalition, the New Jersey Chapter of the Sierra Club, and the Delaware Riverkeeper Network requesting that Federal Energy Regulatory Commission (FERC) require that TGP conduct a full Environmental Impact Statement instead of the Environmental Assessment that was released. It is illogical for the Highlands Council to review a project that has not been fully vetted.

In addition, the FERC has not approved this project and demand in natural gas markets either remains flat or is decreasing. The U.S. Energy Information Administration found that, between 1999 and 2009, total natural gas consumption for all sectors decreased by 13.3% in New Jersey and 10.4% in New York. Rather this project is being pushed by gas drillers in the Marcellus Shale to carry the glut of natural gas produced through hydraulic fracturing (or fracking) from Pennsylvania to eastern markets. This project is not necessary to meet consumer demand and is therefore not in the public need, provides no public benefit, and should not qualify for a diversion of public parklands.

The above mentioned inconsistencies and lack of proposed mitigation must be addressed before any approvals can be granted for this project as it is not consistent with the goals and purposes of the Highlands Act. We urge the Highlands Council, as the body charged with protecting the resources of the Preservation Area, to declare the project inconsistent. We request that the Highlands Council take all of our concerns into consideration and deny Tennessee Gas Pipeline Company any approvals or exemptions, and require Tennessee Gas to comply with *all* aspects of the Highlands Act and the RMP before they can move forward with this project.

We thank you for this opportunity to submit comments.

Statement before the New Jersey Highlands Water Protection and Planning Council
Re: Consideration of Resolution – Request for a Highlands Act Exemption –
Tennessee Gas Pipeline Company Northeast Upgrade Project, Bergen and Passaic Counties
By Wilma E. Frey, Senior Policy Manager
New Jersey Conservation Foundation
January 19, 2012

Chairman Rilee and Members of the Highlands Council:

I stand before you here today ~~is~~ to ask you to table consideration of approval of an exemption for the Tennessee Gas Pipeline Northeast Upgrade Project at this time. What is the rush? What is the incentive to approve?

I doubt that local mayors are clamoring to have this project slashing and tunneling its way through their communities. I doubt that local residents are hoping for it to go through their backyards. Who will gain, other than the pipeline company?

This huge commercial project embodies the antithesis of the goals in the Highlands Water Protection and Planning Act. It will destroy critical natural resources -- water, forests and wildlife habitat; it will degrade cultural, historic, scenic and recreational resources – all of which the Act seeks to protect. It will despoil our precious public lands in the Highlands: Long Pond Ironworks and Ringwood State Parks and Ramapo State Forest. Why would you want to hasten this process?

There is strong evidence that consideration of an exemption for this project at this time is highly premature. Tennessee Gas requests approval based on a “mitigation plan.” However, neither the project nor the mitigation plan is clearly and precisely described; nor are the project’s impacts accurately and clearly documented and quantified. No clear basis is presented upon which to identify appropriate mitigation for impacts, as the impacts themselves have yet to be clearly determined. It is all based on “trust us.” How can one identify appropriate mitigation without knowing precisely what it is that needs to be mitigated? One cannot.

It is inappropriate for the Council to vote to approve the mitigation plan provided by the Tennessee Gas Pipeline Company proposal at this time, given the level of uncertainty and lack of specificity incorporated in the project submission.

I refer you to two recent documents that describe numerous omissions and problems with the applicant's current project submission: 1) NJDEP Comments on the Environmental Assessment, Tennessee Gas Pipeline Company, North East Upgrade Project, Docket No. CP11-161-00, December 20, 2011; and 2) Columbia Environmental Law Clinic, Comments on Environmental Assessment of the Northeast Upgrade Project, December 21, 2011.

Both documents are comments to FERC that evaluate the Tennessee Gas Pipeline Draft Environmental Assessment, and both were completed in late December, at the same time as the Council staff released its consistency determination. Thus, the project being reviewed was essentially at the same stage for all these reviews. Both the DEP and Law Clinic comments

resource survey reporting...When that identification effort is completed, we will be in a position to assist FERC in assessing project effects on historic properties with the proposed undertaking's area of potential effects..."

There are problems with the air quality submission, including direct and indirect emissions.

The DEP Division of Land Use Regulation (Division) stated first, that it "does not believe that the [Applicant's] proposed schedule can be met based on the previous submittal for TGP's 300 Project, including the number of revisions required during the permit process and the timing restrictions required to safeguard threatened and endangered species. In addition, there are many outstanding components and approvals needed from multiple State and Federal Agencies prior to the issuance of any type of construction approval."

(Read from page 16 and 17 of the DEP comments.)

Read from Columbia comments.

I request that the following attachments be incorporated as part of my testimony today and that they be included with the minutes of this meeting:

NJDEP Comments on the Environmental Assessment, Tennessee Gas Pipeline Company, North East Upgrade Project, Docket No. CP11-161-00, December 20, 2011.
Columbia Environmental Law Clinic, Comments on Environmental Assessment of the Northeast Upgrade Project, December 21, 2011.

Thank you for the opportunity to provide comments.

Wilma Frey, Senior Policy Manager
New Jersey Conservation Foundation



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW

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CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

December 20, 2011

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

**RE: Tennessee Gas Pipeline Company
North East Upgrade Project
Docket No. CP11-161-00**

Comments on the Environmental Assessment

Dear Secretary Bose:

The New Jersey Department of Environmental Protection's (Department) Office of Permit Coordination and Environmental Review (PCER) distributed, for review and comment, the Environmental Assessment (EA) for the proposed Tennessee Gas Pipeline Company North East Upgrade Project (Docket No. CP11-161-00). On behalf of the Department, we offer the following comments for the consideration of the Federal Energy Regulatory Commission.

New Jersey Geological Survey

The EA has been reviewed by the Department's New Jersey Geological and Water Survey office with regard to the geologic and paleontologic issues. The document on page 2-1, Section 2.1.1.2 Mineral Resources, the last sentence of the first paragraph indicates that the project does not cross any underground mines, but the pipeline in fact does cross a few abandoned iron mines. Within the first two miles of the western end of Loop 325 there are nine groupings of pre-1900 mine workings which consist of numerous pits and depressions of unknown extent. Some pits are water filled and some show more recent collapse features within the depressions. Before construction begins the applicant should do an onsite investigation with some drilling and possibly geophysics since some of the abandoned workings are within a couple hundred feet of the actual pipe. Also there is a strong possibility that some of the old workings may be directly under the pipe at a shallow depth of a few tens to a hundred feet or so. These are the workings are identified as the Monks and Board mines. At Mile 7 of Loop 325, about 1,000 feet northeast of the pipeline within the 0.25 mile corridor is a small iron prospect, the Pierson Mine.

The rest of the section on geology notes the possibility of slope or land failure and sets outlines how they would address any problems. They also indicate Section 2.1.1.5 Paleontological

8. Posting of a bond by TG to ensure sufficient funds for ROW monitoring, management and invasive species control, as well as potential unintended or unanticipated biological impacts, throughout the term of the lease.
9. Alternatives analysis that will avoid the destruction or modification of identified biodiversity elements and critical habitat (wetlands, ridgetop barrens) both during the construction phase and throughout the term of the lease, with priority on preservation of these elements *in situ*.
10. Employment of an independent botanist/community ecologist to monitor construction and restoration activities and having the power to halt construction if construction, restoration or mitigation proceeds in a manner that deviates from final work plans or is deleterious to rare or critical biodiversity resources or habitats.

In its Volume II Environmental Report (March 2011) Tennessee agreed to most of the ONLM recommendations regarding surveys and inventories to be performed on State-owned lands and Natural Heritage Priority Sites traversed by the pipeline ROW, including surveys within 150 feet laterally from the ROW and any permanently or temporarily impacted lands (1, 2 and 4 above). Tennessee has agreed to utilize Natural Heritage Program documents and reporting forms as part of their survey and reporting protocols (3 above).

The EA does not include the results of this environmental inventory and no new information concerning vegetation, rare plant species or rare ecological communities documented to date. **The ONLM will not be able to assess the potential direct and indirect impacts on endangered plant species and rare ecological communities resulting from the NEUP until it receives and reviews the pre-construction survey and inventory results. This must include a complete list of all plants observed on the ROW as well as other areas surveyed.**

Previously, the ONLM noted that all survey results and documentation be submitted to the Department within two months following the field inventory except for documented occurrences of the rarest species tracked by the New Jersey Natural Heritage Program (with a ranking of SH (historic), SX (extirpated) or S1), which are to be reported to the ONLM via phone call or e-mail within one week of their discovery (5 above). On June 14, 2011 consultants for Tennessee provided documentation to the Department of a new occurrence of *Trollius laxus* ssp. *laxus* (spreading globe flower) along the proposed pipeline route. *Trollius* is a State Endangered and globally rare (< 50 occurrences worldwide) plant species with a rank of G4T3/S1. Information provided by Tennessee consultants indicates that the proposed construction will impact a portion of the rare fen community that supports the *Trollius* population, but that the plant population will not be directly impacted. Because this community type is associated with many additional endangered and rare NJ plant species, Heritage botanist David Snyder and Land Use botanist Dave Kunz requested the opportunity to examine the fen, which is located on private property, since modification of the route or construction methods may avoid direct and indirect impacts to this wetland and associated endangered species. **No response to this request was received and NJDEP still supports this request.**

The Volume II Environmental Report indicated Tennessee's agreement to most but not all of ONLM's recommendations related to the threat of invasive plant species (6 above). Tennessee agreed to revise its Invasive Species Management Plan to address the 27 (should be 29) most

feet wide permanent easement (25 feet between old and new pipes and 25 feet of cleared vegetation/trees to the “outside edge” of the pipes where the forest would not be permitted to re-establish itself). It is unclear according to previous information provided by Tennessee Gas and the following statements:

- a. Pg. 1-10, Paragraph 1: “... TGP would use a 25-foot-wide portion of the existing 300 Line operational right-of-way as part of the construction rights-of-way for the proposed loops, thus reducing construction-related impacts. The permanent right-of-way would typically be 50 feet wide, consisting of 25 feet of existing right-of-way already retained for operation of the 300 Line and 25 feet of new right-of-way for the loop.”
 - b. Pg. 1-10, Paragraph 3: “Construction of the proposed 30-inch-diameter natural gas pipeline loops would typically require a 100-foot-wide construction right-of-way in upland areas, which would generally consist of 25 feet of existing, permanently maintained right-of-way, 25 feet of new permanent right-of-way, and 50 feet of temporary construction workspace.”
 - c. Pg. 2-57, 1st complete paragraph: “The permanent right-of-way would typically be 50 feet wide, consisting of 25 feet of existing right-of-way already retained for operation of the 300 Line and 25 feet of new right-of-way for the loop.”
4. Tennessee Gas should be required to submit a work plan and schedule which they will be accountable for implementing. Example of what should be included in the work plan is coordination with regard to which crews need to be in specific locations per day and then enter the ROW/workspace as such could help alleviate some of the timeline stressors.
 5. Tennessee Gas implements a form of restoration they call “contouring” whereby they shape the edge of the TWS to “meet” the adjacent topography/contour. The Division of Fish and Wildlife’s Endangered and Nongame Species Program (ENSP) required a mix of rock and soil, mostly soil, and for the 323 and 325 loops, will also require a slope with no more than a 60% grade in order to allow for reptile and amphibian dispersal, prevent small animals from becoming trapped/injured from falling/dropping into holes.
 6. Ensure all sightings of state Endangered, Threatened, and Special Concern species are documented and submitted to the ENSP.
 7. TGP needs to coordinate with Spectra Energy on their proposed improvements to the Mahwah Metering station and specifically, possible impacts to Bear Swamp Road. TGP indicates that there will be no improvements to Bear Swamp Road but Spectra is indicating that they will need road improvements to access their ROW for improvements to the metering station.

2.3 VEGETATION AND WILDLIFE

2.3.1 Vegetation

2.3.1.1 Existing Vegetation Resources

Pg 2-35, Paragraph 2: Discusses the future construction on the Mahwah Metering Station. Is Tennessee Gas proposing that the construction on the metering station occur at the same time as the pipeline? What are the precise plans for the metering station? This will impact rare snakes.

certain percentage (to be determined by County and State) of rock embedded within the soil to minimize soil erosion during maintenance procedures (i.e., vehicles along the ROW in the future).

2.3.2.2 General Impacts and Mitigation

Pg. 2-44, Paragraph 1: "Approximately 1.8 acres of wildlife habitat would be permanently converted to commercial/industrial or developed land use by compressor or meter stations modifications."

This is significant as surveys associated with Spectra Energy's proposed work at the Mahwah Metering Station revealed significant use of the surrounding area by timber rattlesnakes and northern copperheads; results not identified during surveys conducted for the Tennessee Gas Pipeline's Northeast Upgrade.

Pg. 2-44, Paragraph 3: "In conclusion, construction and operation of the Project would result in short- and long-term impacts on wildlife and wildlife habitat. These impacts are expected to be minor given the mobile nature of most wildlife in the area, the availability of similar habitat adjacent and near the Project, and the compatible nature of the restored right-of-way with species occurring in the area."

How can Tennessee Gas determine that either the short- or long-term impacts will be "minor" to New Jersey's wildlife. Reptiles and amphibians show strong site fidelity to critical habitats and home ranges. Destruction of such habitats and/or the widening of the right-of-way (potentially increasing the risk of traveling across the right-of-way) could impact local populations. For rare species and species with delayed maturation and/or low fecundity, this could be detrimental to those local populations; the loss or decline of which could then contribute to genetic isolation.

2.3.3.2 Federal Threatened and Endangered Species

Indiana Bat

2-49, Paragraph 3: Language in the EA states that the NJFO of the USFWS recommends a seasonal restriction for tree clearing, among other recommendations, only for the eastern 2.5 miles of proposed Loop 325 that is within foraging range of a known maternity colony of Indiana bat. This recommendation is based on the negative capture results of a summer mist net survey conducted by ESI, Inc. However, it has been the past policy of the NJDEP's ENSP that negative survey results alone do not serve as adequate proof that the target species does not exist on a project site. In most cases ENSP requires a detailed description of the habitat present on a project site that shows that no suitable habitat for the target species exists. Survey efforts often are not successful at identifying species that may be present on a site. Mist net sampling often fails to detect bat species that are present due to foraging habits and other variables. Demonstrating that no suitable habitat exists in combination with negative mist net survey results provides a better indication that the target species is not likely to be present in an area. Given the situation with bat populations in the NE, resulting from high mortality associated with White-nose Syndrome, many species, including Indiana bats, occur at lower densities now than they did just a few years ago. Therefore, the ENSP recommends that a seasonal restriction on tree clearing for suitable

Under what guidance would they “restore” gestation habitat? There are no published documents of studies demonstrating that such efforts have been successful. TGP must provide proposals of such efforts for approval by NJDEP prior to the commencement of construction.

Pg. 2-55, Paragraph 3: “TGP would conduct vegetative clearing between September 1 and March 31 in Pennsylvania and between August 1 and March 14 in New Jersey to minimize impacts on migratory birds and raptors. TGP would also restrict seasonal tree clearing from March 15 to July 31.”

“Seasonal tree clearing...” should be considered with regard to the rare species’ presence and level of use of the area. For example, winter construction (including tree/vegetation cutting and clearing/clean-up) would be most appropriate along most of the 325 loop within Ringwood State Park and Ramapo Reservation in order to protect timber rattlesnakes given their expansive use of the forest, proposed access roads and the right-of-way as documented by radio-telemetry research. It will be extremely difficult to minimize harm to the snakes during their active season given their camouflage along forested (sun/shade mix) access roads and the level of construction activity required to complete this project.

Tree clearing should be conducted during the snakes’ (and most turtles’) inactive period (November 1 – March 31) to minimize the impacts on reptiles (and amphibians). Clearing debris during the winter months will minimize the impact to snakes as tree and vegetation cutting and subsequent debris piles and slash create snake habitat. Clearing debris on the 300-loop in 2011 was extremely dangerous for snakes as construction vehicles drove over debris piles, large piles were forced into the ground as workers attempted to lift the piles, and debris piles were removed in clumps (rather than pieces), potentially removing (or killing) any snakes (and turtles and amphibians) within.

Resource Reports/ Wildlife Surveys

Indiana Bat (and other tree bat species)

See comments regarding EA above.

Timber Rattlesnakes and Northern Copperheads

Pg. 5, Section 3.0, Methods:

For the record, it should be noted that NJDEP exempted Tennessee Gas from conducting den surveys along sections of the 325 loop due to the topography, land features (natural and man-made) and limited and/or absent data (i.e., public reports of snakes) from the area.

Woodland Raptors (Barred Owl and Red-shouldered Hawk)

Pg. 21, Section 5.3, Conclusion: “...presence/absence surveys were not performed along the new Proposed Route (TGP Alt B)...”

This matter is still under review by the National Park Service. If the Service determines that the proposed activity constitutes a conversion of federally-protected parkland, then NPS approval will be required.

2. Properties that may require approvals or exemptions from the Watershed Property Review Board which oversees designated watershed lands within the State.

Comment

A jurisdictional determination has not yet been provided to the NJDEP by the Board. Therefore, an approval or exemption from the Board may still be required for certain lands within the NEUP project area.

3. Properties owned by the New Jersey Department of Environmental Protection will require approval from the State House Commission and the Commissioner of the Department. The taking or disturbance of more than 1 acre of Department owned land, and a lease of 25-years or more must comply with the requirements of the Ogden-Rooney Statute (*N.J.S.A. 13:1D-52*).

Comment

A requirement of the Ogden-Rooney Statute for the DEP to consider the conveyance of land is that the NJDEP must conduct two public hearings on the proposed conveyance at least 14 days apart and at least 90 days in advance of the date of the State House Commission. The NJDEP's Green Acres Program conducted a first public hearing in Montague on August 18th, and a first public hearing in Ringwood Borough on August 19th. A second public hearing was held in Trenton on September 7th, 2011. These hearings were in compliance with the Ogden-Rooney Statute. The transcripts of these public hearings can be found at the Program's website at <http://www.nj.gov/dep/greenacres/neup.html>. The NJDEP is in the process of responding to the public comments received at the hearings and in writing through the close of the public comment period on September 30, 2011. TGP has requested that the NJDEP obtain all necessary approvals under this process by the end of March 2011, but the NJDEP has not made a final determination on this request.

4. Properties held by the Department that are also designated as Natural Areas are subject to the same approvals listed in the item above as well as special legislation to allow for any disturbance. See the New Jersey Natural Areas Act *N.J.S.A. 13:1B-15.4*.

Comment

Based on the block and lot information provided by TGP for the project as filed with the FERC; the NJDEP agrees that the project as proposed is not within a natural area.

5. Any properties with a conservation restriction/easement on them will be required to adhere to the process outlined in the New Jersey Conservation Restriction and Historic Preservation Act. This process includes but is not limited to public notices for a public hearing, holding a public hearing and approval from the Department's Commissioner for the release or amendment of the

pursuant to Section 106 of the National Historic Preservation Act. The HPO is currently providing comment on the deficiencies within the identification level cultural resource survey reporting. We are requesting that FERC and the Tennessee Gas Pipeline Company address the historic and archaeological resources identified by members of the public and the Ramapough Lenape Nation that were not included, and not yet acted upon, in identification level survey efforts to date. When that identification effort is completed, we will be in a position to assist FERC in assessing project affects on historic properties within the proposed undertaking's area of potential effects (APE). If historic and archaeological resources are adversely affected by the project, FERC, through consultation with SHPO and the interested parties, must work to avoid, minimize, and/or mitigate those effects.

Air Quality

1. General Comment

On November 10, 2011, the Office of Permit Coordination and Environmental Review sent comments to the Federal Energy Regulatory Commission concerning the August 2011 Supplemental Filing. The Department's Bureau of Air Quality Planning is hereby incorporating the November 10, 2011 comments by reference into this comment letter.

2. 1.10 Environmental Compliance Inspection and Mitigation Monitoring

The EA includes Table 1.9-1, Permits, Licenses, Approvals, and Certificates required for Construction , Operation, and Maintenance of the Project. This table includes all Federal and State permits, licenses, approvals and certificates required for this project.

Comment

Table 1.9-1 Permits, Licenses, Approvals, and Certificates does not include the Federal General Conformity regulation (40 CFR Part 93, Subpart B, Determining Conformity of General Federal Actions to State or Federal Implementation Plans). Please include the Federal General Conformity regulation in this table.

3. 1.7 Construction Procedures

The EA states, "TGP proposes to begin some of its proposed pipeline loop segment preparation and construction activities in 2012..." Other construction activities would occur during 2013. TGP would go into service November 2013."

Comment

Section 93.150(b) (Prohibition) of the Federal General Conformity regulation (40 CFR Part 93) states, "A Federal agency must make a determination that a Federal action conforms to the applicable implementation plan in accordance with the requirements of this subpart before the

"permanent". The emissions should be identified as "direct" or "indirect" in the Applicability Analysis.

Water Allocation

The Department's Bureau of Water Allocation and Well Permitting notes that it appears that for this section of piping (Loop 323) no dewatering permits were applied for in Montague Township.

Based on the information on other dewatering permits for Loop 325 (1289D, 1290D, and 1291D) that they have in Wantage Township, Vernon Township, and West Milford Township, a dewatering permit is needed for this portion of the project. It also appears that the Township and miles/mileposts for Loop 325 were also changed. The original applications that were approved lists Loop 325 beginning at milepost 0:0 and ending at milepost 15.98 and crossing Wantage and Vernon Townships in Sussex County and West Milford Township in Passaic County.

The supplemental data submitted on the now shows Loop 325 beginning at milepost 0 in West Milford Township and ending at milepost 7.59 in Mahwah Township with the loop crossing West Milford and Ringwood Township in Passaic County and ending in Mahwah Township Bergen County.

Land Use Regulations

The Department's Division of Land Use Regulation (Division) offers the following comments:

1. The Division does not believe that the proposed schedule can be met based on the previous submittal for Tennessee Gas Pipeline Company's (TGP) 300 Line project, including the number of revisions required during the permit process and the timing restrictions required to safeguard threatened and endangered species. In addition, there are many outstanding components and approvals needed from multiple State and Federal Agencies prior to the issuance of any type of construction approval. To date a permit application for only one section (323 loop) of NEUP has been submitted to the Division and was subsequently administratively rejected and has yet to be resubmitted for an application review to commence. In addition, no application has been received for Loop 325, also approvals for this portions from the NJ Highlands Council and NJDEP's Division of Watershed Management are required for this section and have yet to be received.
2. It is unclear why TGP's submittals to FERC and to the State of New Jersey are inconsistent between State and Federal jurisdictions, instead of designing and proposing a project that would adequately address both federal and state regulations. Examples include narrowing additional temporary workspaces at riparian zones and transition areas as it does and is required to do at wetlands and stream crossings by FERC. Additional alterations to the original route and alterations in construction techniques have been proposed, but are not reflected in the EA. FERC can not clearly understand the full environmental impact of the proposed project and should not approve the application until TGP rectifies the discrepancies

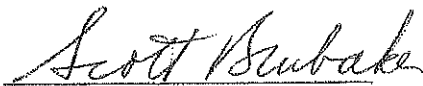
8. A mitigation plan is required for in kind restoration, enhancement, reforestation, and a proposal to create/restore wetlands and riparian zones prior to the issuance of any state permits. To date no information regarding a proposed mitigation plan has been submitted to the Division. FERC can not clearly understand if the environmental impact of the proposed project is being adequately mitigated for and should not approve the application until TGP submits a mitigation proposal for the proposed environmental impacts in New Jersey.
9. In order to protect threatened and endangered species the Department and the Division must review all surveys and survey protocols for such species. However, several surveys or survey protocols have yet to be received by the Division for the Northeast Upgrade project. Furthermore, some surveys are proposed to be conducted in the Spring of 2012, results of which will not be determined until well into 2012. FERC can not clearly understand the full impact of the proposed project on threatened and endangered species populations and habitat and should not approve the application until TGP submits all surveys and survey protocols for threatened and endangered species and until that information verified by the Division.
10. The Division has conducted a preliminary screening for threatened and endangered species habitat of areas of the proposed Northeast Upgrade project under the jurisdiction of the Flood Hazard Area Control Act and the Freshwater Wetlands Protection Act. This preliminary screening indicates the presence of regulated watercourses which feature suitable habitat on the project site or within 1 mile downstream for wood turtle (*Glyptemys insculpta*), bog turtle (*Glyptemys muhlenbergii*) and brook floater (*Alasmidonta varicosa*), which are designated as species "critically dependant upon the regulated watercourse." All such watercourses will require a 150' riparian zone. Also this preliminary screening indicates the presence of wetland habitats which are documented and suitable for State or federally listed species. Any such wetlands would require an Exceptional resource value and would require 150' transition areas adjacent to any such wetlands. FERC can not clearly understand the full environmental impact of the proposed project on threatened and endangered species populations and habitat and should not approve the application until TGP submits detailed construction plans and survey information of the proposed area to be impacted by the Northeast Upgrade project and a detailed review is completed by the Division.
11. The Division's preliminary screening for threatened and endangered species habitat has indicated that suitable habitat for a variety of species is present within the general vicinity of the proposed Northeast Upgrade project. Without a more detailed set of construction plans and field verification the Division can only determine that the following preliminary timing restrictions may be required on one or more sections of the proposed Northeast Upgrade project. These timing restrictions may conflict with TGP's proposed schedule and the presence of threatened or endangered species may require a reroute of sections of the project as both occurred during the approved 300 Line project. FERC can not clearly understand the full environmental impact of the proposed project on threatened and endangered species populations and habitat and should not approve the application until TGP submits detailed construction plans and threatened and endangered species survey information of the proposed area to be impacted by the Northeast Upgrade project and a detailed review is completed by the Division. In addition, the implementation of the following timing restrictions in one or

13. The Division may determine that additional species and/or habitats are found within the proposed Northeast Upgrade project depending on the outcome of required threatened and endangered species survey work or through field inspections of the proposed project area. As occurred during the 300 Line project discoveries of species and/or habitat can have impacts on the location of proposed impacts, such as required rerouting of sections of pipeline or complex timing restrictions, which may change TGP's proposed schedule. As was determined during the 300 Line project, preliminary survey information is required to be submitted to the Division and verified prior to any permit issuance. FERC can not clearly understand the full environmental impact of the proposed project on threatened and endangered species populations and habitat and should not approve the application until TGP submits detailed construction plans and threatened and endangered species survey information of the proposed area to be impacted by the Northeast Upgrade project and a detailed review is completed by the Division.

It should be noted that these comments are based on limited information and are thus preliminary in nature and not a NJDEP's Division of Land Use Regulation decision or approval and should not be construed as such now or during any future permit applications or submissions. Should you have any questions regarding the comments of the Division, please contact Patrick Ryan at (609) 292-9542.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the Draft Environmental Impact Statement. If you have any additional questions, please contact our office at 609-292-3600.

Sincerely,



Scott Brubaker, Director
Office of Permit Coordination
and Environmental Review

C: Richard Dalton, NJDEP-New Jersey Geological Survey
Donna Mahon, NJDEP- Natural & Historic Resources
Angela Skowronek, NJDEP – Air Quality Planning
Kelly Davis, NJDEP – Fish & Wildlife
Erin Schumacher, NJDEP - Water Allocation and Well Permitting
Patrick Ryan, NJDEP - Division of Land Use Regulation
Judith Yeany, NJDEP - Green Acres
Vincent Maresca, NJDEP – Historic Preservation Office

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December 21, 2011

Via Electronic Mail: efiling@ferc.gov

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

Re: Comments on Environmental Assessment of the Northeast Upgrade Project,
Docket No. CP11-161-000

Dear Ms. Bose:

On behalf of the intervenors, the New Jersey Highlands Coalition, the New Jersey Chapter of the Sierra Club, and the Delaware Riverkeeper Network, we respectfully submit the following comments on the environmental assessment ("EA") of the Northeast Upgrade Project ("Project") proposed by Tennessee Gas Pipeline Company ("TGP"). For the reasons explained below, the EA cannot serve as the basis for an adequate hard look at the Project's environmental impacts or support a finding of no significant impact ("FONSI"). To the contrary, available evidence demonstrates that the Project will significantly affect the quality of the human environment and that a full environmental impact statement ("EIS") should be prepared to ensure that the Federal Energy Regulatory Commission (the "Commission" or "FERC") satisfies its obligations under the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321 *et seq.*

I. The Northeast Upgrade Project Will Significantly Affect the Quality of the Human Environment.

FERC's conclusion that the Project will have no significant environmental impacts is unsupportable in the face of evidence demonstrating the potential severity of the Project's impacts. The determination of whether a project will "significantly affect[] the quality of the human environment," depends on considerations of "both context and intensity." 40 C.F.R. § 1508.27.¹ As is set forth below, both the context and intensity of the Project's impacts mandate a finding of significant impacts and the preparation of an EIS. *See* 42 U.S.C. § 4332(2)(C) (an EIS must be prepared for all "major Federal actions significantly affecting the

¹ The Council on Environmental Quality is authorized "to establish regulations setting forth environmental review procedures to be followed by federal agencies." *Advocates for Transp. Alternatives, Inc. v. U.S. Army Corps of Eng'rs*, 453 S. Supp.2d 289, 299 (D. Mass. 2006) (citing 42 U.S.C. §§ 4342, 4344).

Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

- (9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
- (10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

40 C.F.R. § 1508.27. Consideration of each of these factors indisputably leads to a finding that a FONSI cannot be supported in this case. The Project will have significant impacts and FERC must therefore prepare an EIS.

While NEPA regulations do not contain page limits for EA's, the Council has generally advised agencies to keep the length of EA's to not more than approximately 10-15 pages. Some agencies expressly provide page guidelines (e.g., 10-15 pages in the case of the Army Corps). To avoid undue length, the EA may incorporate by reference background data to support its concise discussion of the proposal and relevant issues. CEQ itself has addressed the appropriateness, or lack thereof, of an EA for a complex project resulting in voluminous documentation:

36b. Under what circumstances is a **lengthy EA** appropriate?

A. Agencies should avoid preparing lengthy EAs except in unusual cases, where a proposal is so complex that a concise document cannot meet the goals of Section 1508.9 and where it is extremely difficult to determine whether the proposal could have significant environmental effects. **In most cases, however, a lengthy EA indicates that an EIS is needed.**^{2*}

Consistent with CEQ's guidance, intervenors' expert John A. Thonet, PE, PF, of Thonet and Associates, Inc., *Environmental Planning & Engineering Design Consultants* concluded:

The Environmental Assessment (EA) provided is voluminous, rather than being a brief and concise document as intended by NEPA. The document consists of about 250 pages of text, tables, maps, and appendices that clearly document that the project will result in environmental impacts to over 800 acres of land over the 40-mile long project area The environmental impacts described in the EA are sufficient to support a finding that the project is likely to have significant environmental impacts, contrary to the EA's "Finding of No Significant Impact" (FONSI).

John A. Thonet, PE, PF, Comments on Environmental Assessment (hereinafter "Thonet Comments") at 17-18 (annexed as Exhibit A hereto).

² <http://ceq.hss.doe.gov/nepa/regs/40/30-40.HTM#36>.

* All online materials are readily available on the internet; intervenors will submit them to FERC upon request.

almost continually since 1984, additional hazardous material continues to be discovered on site.⁷ Because the proximity of these sites to the Project area raises significant public health and safety concerns, FERC must conduct an EIS to fully assess these risks.

B. The Project Will Affect Numerous Unique Geographic Areas And May Cause Destruction of Significant Scientific, Cultural, and Historical Resources.

The “[u]nique characteristics of the geographic area” strongly favor a finding of significant impacts requiring the preparation of an EIS in this case, as does “[t]he degree to which the action . . . may cause loss or destruction of significant scientific, cultural, or historical resources.” 40 C.F.R. § 1508.27(b)(3), (b)(8). Each of the five pipeline loops will pass through or near one or more of the six categories of unique geographic characteristics identified by CEQ regulations as pertinent to a significance determination, including “historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.” *Id.* Numerous courts have required the preparation of an EIS when a proposed major federal action has the potential to significantly impact sensitive and protected resources such as those in proximity to the Northeast Upgrade Project. *See, e.g., Anglers of the Au Sable v. U.S. Forest Serv.*, 402 F.Supp.2d 826, 832 (E.D. Mich. 2005) (determining that plaintiffs raised a substantial question as to whether an EIS should have been prepared in a proceeding for a preliminary injunction where the proposed action could “cause significant impacts to old-growth and other forest stands and the wildlife they harbor” and was located within the nesting area of an endangered species and close to a state “Natural Area” and a state “Natural River”); *Patterson v. Exon*, 415 F. Supp. 1276, 1281–82 (D. Neb. 1976) (holding that the agency should have prepared an EIS where the proposed project would entail “considerable grading and tree removal” in area “rich in scenic beauty”); *Concerned Residents of Buck Hill Falls v. Grant*, 388 F. Supp. 394, 398 (M.D. Pa. 1975) (holding that the Soil Conservation Service erred in failing to prepare an EIS because it “did not explore in depth all the adverse impacts to the aquatic life” in a high value trout stream that would be impacted by the proposed Project).

An astounding number of unique resource areas that will be adversely affected by the Project. Each of the five pipeline loops will cross through sensitive and unique vegetative communities. EA at 2-38, 2-39. Loop 317 will cross the Susquehanna River Trail, a Nationwide Rivers Inventory waterbody, and the U.S. Route 6 Grand Army of the Republic Highway Trail. EA at 2-71, 2-72. Loop 323 will cross the Delaware State Forest, High Point State Park, the Appalachian National Scenic Trail, and the Clove Brook Road Corridor Important Bird Area. EA at 2-73, 2-74, 2-45. Loop 323 will also cross the Delaware River, a National Wild and Scenic River. EA at 2-13. Loop 325 is located entirely within the Highlands Region, and will cross the Long Pond Ironworks State Park, the Monksville Reservoir, and Ringwood State Park. EA at 2-75, 2-76, 2-78, 2-79. The pipeline loops will also cross more than seven miles of prime farmland, EA at 2-4, dozens of high quality and exceptional waterbodies that serve as coldwater and warmwater fisheries, EA at 2-19, and almost fifty acres of wetlands, EA at 2-25.

⁷ See *Ringwood Mines/Landfill Site*, U.S. ENVTL. PROT. AGENCY, www.epa.gov/region2/superfund/npl/ringwood/ (last visited Dec. 18, 2011).

the aforementioned collocation and the large expanse of forested land available in the Project area” and baseless conclusion that “[i]t is not likely that the addition of 25 feet of permanently cleared right-of-way would impede the movement of most [though not all] forest interior species” does not satisfy FERC’s duty to take a hard look at the impacts of this Project on the many unique and sensitive areas noted above. EA at 2-43 (insert added). The ecological importance of these areas demands further study beyond that contained in the EA.

C. The Environmental Impacts of the Project Are Highly Controversial

Pursuant to NEPA, a major federal action is controversial when “a substantial dispute exists as to the size, nature, or effect of the . . . action.” *See, e.g., LaFlamme v. FERC*, 852 F.2d 389, 400–01 (9th Cir. 1988) (citations and quotations omitted). As the appended statements of independent experts and the comments from NJDEP demonstrate, many of the impacts of the Project and the conclusions reached in the EA are highly disputed. For example, environmental consultant Kevin Heatley took issue with FERC’s conclusion in Section 2.3.2.2 regarding wildlife impacts. Heatley found that “ROW expansion will decrease soil moisture levels in the adjacent forest floor and leaf litter resulting in fundamental changes in soil chemistry and biota. **The ROW expansion, coupled with the associated edge effects, is likely to present a barrier to movement of sensitive species.**” Keven Heatley, Comments on the EA at 7 (annexed as Exhibit B hereto). He also found that “the creation of additional edge habitat, in combination with a linear corridor, is likely to result in chronic, localized infestations of undesirable species . . .” *Id.* at 9. Heatley concluded that the “failure to address these areas of concern will assure undesirable, cascading impacts which will eventually undermine the ecological integrity of forested systems adjacent to the project area.” *Id.* at 13.

Additionally, the EA does not take into account serious impacts of the construction on important natural and cultural resource values that are outside of and beyond the construction site itself. Such impacts include increased forest fragmentation that destroys critical interior forest habitat conditions adjacent to the ROW and degrades habitat conditions for hundreds or thousands of feet perpendicular to the ROW. Construction noise adversely affecting wildlife behavior hundreds of feet or more away from the actual construction is not considered. Scenic and historic resources and viewsheds at some distance from the construction site itself can be permanently degraded.

There are long-term impacts of access route and ROW construction that are permanent and irreversible – soil compaction, the spread of invasive, non-native species of plants, pathogens and animals, and the permanent loss of public trust resources of native flora and fauna that can never recover within the permanently altered habitat.

Agencies cannot assume that restorative measures will succeed, as the record on restorative practices proves that restorative measures fail due to poor design and planning, poor follow-up, insufficient resources, deer browse, off-road vehicle impacts, drought, and weed invasive species capturing the site, ultimately resulting in a complete loss of the sensitive natural resource components that were originally present.

Offsite impacts currently reported include that heavy precipitation on Tennessee Gas

identify which areas of the Project will necessitate the use of blasting during construction, including wetlands, which is of particular concern because “[82 percent] of the proposed pipeline loops would cross shallow bedrock.” EA at 2-3, 2-24.

The EA further indicates that the revegetation potential of much of the Project is unknown. According to the EA, “[a]pproximately 55 percent (22.3 miles) of the proposed loops would be underlain by stony/rocky soils[,] . . . [a]bout 19 percent (7.6 miles) of the proposed pipeline loops would cross droughty soils,” and “[a]n additional 60 percent (24.2 miles) of the soils that would be crossed have an average slope of greater than 8 percent.” EA at 2-6. All of these factors “may make the establishment of vegetation difficult.” *Id.*

The potential for the Project to harm water resources is similarly uncertain. Of particular concern, the EA discloses that TGP has not yet developed a mitigation plan for the construction and operation of Loop 325 through the Highlands Region, “which provides the majority of potable water used in northern and central New Jersey.” EA at 2-11 (“TGP *would* develop a Comprehensive Mitigation Plan during construction and operation of the Project . . .” (emphasis added)). Further, the EA notes that blasting “could potentially impact the water quality and capacity of nearby water supply wells.” EA at 2-12. However, it is clear that the scope of this potential impact has not been assessed because, as noted above, TGP has not yet determined where blasting will occur. Moreover, while the EA acknowledges that dry crossings of the Susquehanna River and the Monksville Reservoir could be necessary if the proposed horizontal directional drilling (HDD) fails, it offers no assessment of what impacts an alternative crossing method would have on these waterbodies, nor does it indicate that information on any potential impacts has even been collected. EA at 2-17.

As described *infra* in Part II.G, TGP has thus far failed to submit numerous required surveys and final reports regarding federal threatened and endangered species, including reports for the federally threatened bog turtle, EA at 2-48, and surveys for the federally endangered dwarf wedgemussel, EA at 2-51, the small whorled pogonia, EA at 2-51, and the bald eagle, EA at 2-53. The EA indicates that TGP has also failed to complete or submit surveys for state-listed rare plants, EA at 2-53, timber rattlesnakes, EA at 2-54, mussels, EA at 2-55, and blue-spotted salamanders, EA at 2-55.

TGP has also failed to complete cultural resource surveys on portions of the Project area in Pennsylvania and New Jersey. EA at 2-90. Likewise, Phase II archaeological surveys for the Project have not been completed. EA at 2-91. Further, the Ramapough Lenape Nation has informed FERC that the Phase IA background information report “miss[ed] some local sources of information, including some known sites” of importance to the tribe, calling into question the adequacy of those reports presently completed. EA at 2-89.

Environmental consultant John Thonet summarizes all of the EIS-type environmental, historic preservation and cultural resource studies that need to be completed to ensure that the natural and human environment is adequately protected. With all of the following survey results still outstanding, the degree of uncertainty is immense:

- Examination of the increase in forest edge effects resulting from the expansion of the ROW.
- Analysis of potential impacts to interior forest species.
- Spatial analysis of the landscape level configuration of the forest system.
- Analysis of potential increases in tree mortality associated with increased edge.
- Analysis of the impact of increased edge effect on long term forest successional trajectory and associated biodiversity.
- Evaluation of the effect on species of the loss of structural and functional diversity of tree canopy.
- Analysis of the impact that expansion of the ROW will have on white-tailed deer herbivory.
- Discussion of the threat of invasive species incursions and its threat to forest health.
- Evaluation of the cumulative impact of Marcellus Shale development.
- Identification of abandoned iron mines within the Project area.
- Vegetation inventory and documented rare plant species or ecological communities.
- Direct and indirect emissions estimates for Volatile Organic Compounds and Oxides of Nitrogen for contractor and pipe yards.
- Location of all proposed access roads and culvert crossings.
- Surveys and survey protocols for several threatened and endangered species.

NEPA does not permit agencies to “act first and study later.” *NPCA*, 241 F.3d at 734. The missing information discussed above, in addition to the missing information regarding cumulative impacts identified in Part II.F, “is precisely the information and understanding that is required *before* a decision that may have a significant adverse impact on the environment is made.” *Id.* at 733 (emphasis in original). In order to fully identify the true direct, indirect, and cumulative impacts of the Project, FERC must collect and assess the identified missing information in an EIS.

E. The Project Is Likely to Establish a Precedent for Future Actions With Significant Effects.

“The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration,” 40 C.F.R. § 1508.27(b)(6), further supports a finding that the Project will have significant impacts. The inquiry here is whether “approval of a single action will establish a precedent for other actions which may cumulatively have a negative impact on the environment.” *Anderson v. Evans*, 371 F.3d 475, 493 (9th Cir. 2004) (holding that federal agencies erred in failing to consider the precedential effect of approving an incidental take quota for whale hunting). For instance, in finding this factor to weigh in favor of significance and concluding that an EIS was required before the permitting of three casinos on the Mississippi coast, the District Court for the District of Columbia noted: “With the proliferation of casinos along the Mississippi coast, the [USACE] may feel bound to the conclusions reached in the FONSIs issued in these cases, thereby allowing the FONSI to serve as precedent for future casino projects.” *Friends of the Earth v. U.S. Army Corps of Eng’rs*, 109 F. Supp. 2d 30, 43 (D.D.C. 2000). Here, the rapid pace of pipeline development in the Marcellus Shale region necessarily will entail the construction of numerous federally regulated facilities, including the New Jersey-New York Expansion Project (Docket

population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” *Id.* 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.

40 C.F.R. § 1508.7. In preparing an EA adequate to support a FONSI, agencies must adhere to the CEQ standards outlined above. *See Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1076 (9th Cir. 2002) (discussing CEQ guidance and broad consensus among Circuit courts that EAs must address cumulative impacts).

The EA states that its cumulative impacts analysis considers actions that:

- impact a resource area potentially affected by the Project;
- cause this impact within all, or part of, the Project area; and
- cause this impact within all, or part, of the time span for the potential impact of the Project.

EA at 2-121. FERC staff also represent that they have “considered existing or reasonably foreseeable actions expected to affect similar resources during similar time periods with the Project.” *Id.* In fact, however, the EA fails to consider the full scope of connected and similar actions as well as the cumulative impacts arising from the full scope of actions.

Remarkably, the EA fails to assess the additive effect of the Project together with the effects of existing or reasonably foreseeable gas development activities in the Project area, including the impacts of gas exploration and production and the construction and operation of well pads, access roads, gathering lines, compressor stations, and other infrastructure. Instead, the Commission staff merely acknowledges “general development of the Marcellus Shale” upstream activities, specifically but inadequately addresses existing wells and gathering systems, and ultimately dismisses upstream activities as “outside the scope of [the cumulative impacts] analysis because the exact location, scale, and timing of future facilities are unknown.” EA at 2-125. Additionally, Commission staff argues that “the potential cumulative impacts of Marcellus Shale drilling activities are not sufficiently causally related to the Project to warrant the comprehensive consideration of those impacts in this EA.” *Id.*

As a preliminary matter, Commission staff is misguided when it argues, as it did in the Marc I issuance, that because “the Commonwealth of Pennsylvania regulates the siting, permitting, construction and operation of Marcellus Shale wells in Pennsylvania” and “[t]he Commission plays no role, or retains any control over them,” it is “not required to consider the wells’ correlative environmental impacts.” *Cent. N.Y. Oil and Gas Co.*, 137 FERC ¶ 61,121 (Nov. 14, 2011). Commission staff appears to rely on *U.S. Dep’t of Transp. v. Public Citizen*, 541 U.S. 752 (2004), which held:

Marcellus Shale development in the area of the Project will be ongoing for twenty to forty years. *Id.* at 2-131. Thus, by the EA's own terms, 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 is the broad geographic scope of Marcellus shale development dispositive as to whether it has a reasonably close causal relationship to the Project. The EA admits that the geographic scope of the cumulative impacts analysis should encompass consideration of actions that "impact a resource area potentially affected by the proposed project" and "cause this effect within all or part of the proposed project area." EA at 2-121. 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 newly-permitted well sites.¹⁰ By simply stating, in general terms, how many wells will be drilled in the entire state of Pennsylvania, and failing to provide more detail or analysis, particularly where such details are available from publicly available sources, the Commission falls far short of its obligations under NEPA. *See* EA at 2-125. 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.

Moreover, the Commission can ascertain with reasonable certainty and specificity the locations of existing and future wells that the Project itself will directly facilitate. The EA states that the Project is intended to provide Chesapeake Energy Marketing, Inc. and Statoil Natural Gas, LLC with 636,000 dekatherms per day of capacity. EA at 1-1. Maps prepared by the Bradford County Planning Commission, for example, offer a wealth of information the Commission has ignored, including the precise location of Chesapeake-owned permits and active wells along a proposed gathering pipeline that would connect with the TGP pipeline system of which the Project is an expansion.¹¹ Because Chesapeake would have no incentive to drill such wells or propose such a gathering line without the access to market provided by the Project, the cumulative impacts of such wells have a reasonably close causal relationship to the Project. That the Commission made no attempt to consider such specific, publicly available information further indicates the inadequacy of the EA.

Though the Commission need not know the "exact location, scale, and timing" of upstream Marcellus development to include its impacts in the EA, information about the "exact location [and] scale" of existing upstream facilities is available. Nevertheless, nowhere in the EA does the Commission acknowledge such information, let alone analyze it. Moreover, knowledge of future upstream activities is sufficiently certain to compel consideration of their cumulative impacts. The instant case is analogous to *Thomas v. Peterson*, where the Ninth Circuit considered whether an EA prepared by the Forest Service for a forest road had to consider possible timber sales facilitated by the road that might occur in the future. 753 F.2d 754

¹⁰ *See* Pennsylvania Dep't of Env'tl. Prot., Permits Issued & Wells Drilled Maps, *available at* <http://www.dep.state.pa.us/dep/deputate/minres/oilgas/2011PermitDrilledmaps.htm> (last visited Dec. 4, 2011) (providing links to Pennsylvania state maps showing location of wells drilled 2008 - 2011 and wells for which permits have been issued during 2011).

¹¹ Maps of Natural Gas Development in Bradford County, *available at* <http://www.bradfordcountypa.org/Natural-Gas.asp?specifTab=2> (last visited Dec. 4, 2011) (containing links to various maps, including "Overall Gas Activity Map," "Company Gas Map," "Gas Line Map," and "Quarterly Progression").

To the extent the Commission staff considers upstream Marcellus activities, it fails to provide any quantified or detailed account of such activities, or consider their cumulative impacts. The EA includes a general acknowledgment that wells exist throughout the region, but fails to provide more specific and relevant information. EA at 2-125. This information is widely available. For example, the Bradford County Planning Commission and the Pennsylvania DEP both provide comprehensive quantitative and geographic data as to the locations of active wells and drilling permits. Given the availability of such and other data, the discussion of this matter in the EA is woefully inadequate when it merely concludes that “it is likely that drilling would continue through the construction of the Project, but the exact extent of such drilling is unknown.” EA at 2-125. Indeed, the Commission staff could use such information to quantify the “increased long-term emissions of criteria pollutants, HAPs, and GHGs within the region,” EA at 2-133, and consider how such emissions might contribute to climate change or impact the public health under 40 C.F.R. § 1508.27(b)(2), instead of disregarding such significant impacts as “outside the scope of our analysis.” EA at 2-133. The EA’s GHG and Climate Change analysis is similarly deficient, as it only considers direct emissions, rather than including the more substantial indirect emissions cumulatively resulting from the Project. *See* NJDEP Comments on the EA, at 14.

Likewise, the EA simply catalogs existing and reasonably foreseeable gathering systems, but without analyzing their cumulative impacts. EA at 2-122. The EA states that such projects will have “similar” impacts as the Project, but perfunctorily concludes that “land requirements for construction would typically be less for gathering systems due to the installation of smaller diameter pipeline.” EA at 2-126. Presumably, the Commission staff reasons that because impacts would be less significant for gathering systems, more comprehensive analysis is unnecessary. But cumulative impact analysis is precisely intended to analyze “individually minor but collectively significant actions,” such as the development of gathering systems in the Project area. 40 C.F.R. § 1508.7. Finally, for the reasons discussed in the preceding section, the EA should also detail and analyze impacts from upstream activities beyond wells and gathering systems, including impacts from other reasonably foreseeable activities such as the construction and operation of access roads, compressor stations, and other infrastructure. Consequently, notwithstanding the completely hollow assertion that the “analysis specifically included the development of natural gas reserves in the Marcellus Shale,” EA at 2-134, the Commission staff’s finding of no significant cumulative impact is unsubstantiated by any detailed or quantified information and is thus inadequate to support a hard look at the full environmental impacts of the Project.

The EA is likewise inadequate in considering the combined environmental impacts of related existing and reasonably foreseeable pipelines within the Commission’s jurisdiction. The EA identifies ten existing or proposed pipelines within fifty miles of the Project area, totaling at least 240 miles of new or improved pipeline construction. EA at 2-123–124. Five of these projects will either connect or be adjacent to the Project. EA at 2-126. However, the EA provides absolutely no detailed information or analysis relating to the additive environmental impacts of these past, present, and proposed actions. Indeed, the discussion of locations, timing, and pipeline lengths concludes, without further explanation, that “all of the above FERC jurisdictional projects would be constructed and maintained in accordance with our approved procedures and other construction, operation, and mitigation measures that may be required by federal, state, or local permitting authorities, further reducing the potential for cumulative

With respect to vegetation and wildlife, the EA provides that “[r]ight-of-way clearing and grading and other construction activities associated with the Project would result in the removal of vegetation; alteration of wildlife habitat; displacement of wildlife; and other potential secondary effects such as increased population stress, predation, and the establishment of invasive plant species.” EA at 2-131. The EA concedes that “[w]hen projects are constructed in the same general location and time frame, they could have a cumulative impact on local vegetation and wildlife communities,” and notes that further Marcellus development would include “clearing for access roads, well pads, gathering systems, and other facilities.” *Id.* But the EA entirely fails to detail or analyze whether Marcellus activities or other related actions might have a cumulatively significant impact on vegetation and wildlife. For example, the EA does not identify the acreage or location of wetlands and forests impacted by related interstate pipelines, or consider how such impacts might have an additive and synergistic impact on vegetation, wildlife habitat, recreation, and aesthetics. Such a discussion is not even perfunctory: it is simply lacking, and is therefore inherently deficient and cannot support the FONSI for this Project.

The EA further concludes, by means of a self-defeating comparison, that the Project will have *no* significant impact on vegetation because Marcellus development will by contrast have an *enormous* impact: “38,000 to 90,000 acres of forest could be cleared in Pennsylvania by 2030 due to Marcellus Shale development activities.” *Id.* This information demonstrates that the EA is inadequate, and it in fact supports interveners’ contention that the Project will have enormously significant cumulative impacts on the environment, as an integral component in the development of upstream Marcellus Shale activities. Notwithstanding its admissions, the EA does not state any conclusion about the actual significance of the Project’s effects on vegetation and wildlife—much less “specific, reasoned conclusions”—nor does it provide hard data justifying a FONSI as to cumulative impacts on those resources.

The absence of reasoned conclusions and quantified data supporting the conclusion of no significant cumulative impacts also is evident in the EA’s cumulative impact analysis of land use, visual resources, and recreation. The EA concedes that “[o]ther projects that we considered in the area would affect land use and result in temporary and long term visual impacts, and could impact recreational activities and special interest areas if crossed by the projects.” *Id.* at 2-132. It goes on to acknowledge that “[t]he impact of Marcellus Shale development activities on land use, recreation, special interest areas, and visual resources would vary widely depending on the location of specific facilities and access roads.” *Id.* However, as in the previous sections, the EA entirely fails to address with even minimal detail or analysis what these varied impacts will likely be, or how they might contribute cumulatively to the Project’s impacts. Likewise, the EA only describes in general and abstract terms how expansion of the ROW from 50 to 75 feet—permanently eliminating 78 acres of forest—might impact land use, visual resources, and recreation. *Id.* But an appropriately quantified cumulative impact analysis requires an evaluation of actual environmental effects, not mere recitation of land use statistics. While “[a] calculation of the total number of acres to be harvested in the watershed is a necessary component of a cumulative effects analysis, . . . it is not a sufficient description of the actual environmental effects that can be expected from logging those acres.” *Klamath-Siskiyou*, 387 F.3d at 995.

that the AEA cannot preclude application of NEPA by implication. The Commission in the case *sub judice* does not maintain that the AEA contains express provisions prohibiting compliance with NEPA, nor does it argue that compliance is impossible.

Id. Commenting on the legislative history further, the Court stated that "as suggested by the legislative history, compliance with NEPA is required unless specifically excluded by statute or existing law makes compliance impossible." *Id.* Finally, 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." *Id.*

To the extent that the EA addresses impacts related to gas development, it does not independently assess the impacts from such activities and only points to compliance with other agencies' permitting requirements as a basis for concluding that no significant cumulative impacts exist. *See, e.g.*, EA at 2-129 (noting concerns about potential impacts of natural gas wells on groundwater, then describing in general terms oil and gas well rules adopted by the Pennsylvania Department of Environmental Protection ("PADEP") without further assessment or reasoned conclusion about the cumulative impacts of gas wells and the Project);¹⁵ *id.* at 2-130 (noting that flowback water from fracking operations could threaten water quality but concluding no cumulative impacts exist on the basis that PADEP promulgated regulations addressing the issue and PADEP required operators to implement [best management practices] during construction and operation of upstream facilities); *id.* at 2-133 (conceding that "[o]peration of the Project, Marcellus Shale drilling activities, and other projects would also contribute cumulatively to existing air emissions" but dismissing these impacts on the grounds that the "[t]he Project's associated operating emissions would be mitigated by federal, state, and local permits and approvals).

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. In *Calvert Cliffs'*, the Atomic Energy Commission ("AEC") promulgated rules governing environmental review in licensing decisions, which similarly would have allowed the AEC to accept a project's compliance with the environmental requirements implemented by other agencies as a showing that the project would have no significant impacts for purposes of NEPA. *See Calvert Cliffs'*, 449 F.2d at 1122. The D.C. Circuit rejected this approach:

¹⁵ Since adoption of the new rules, there have been repeated reports of methane migration into streams and groundwater serving water wells in areas of active gas drilling, including in Bradford and Lycoming Counties. *See, e.g.*, Associated Press, *Pa. Probes Gas in Lycoming Wells* (June 17, 2011) (noting contamination of wells, Little Muncy Creek, and the Susquehanna River), *available at* <http://www.philly.com/philly/business/124054549.html>. Moreover, a cursory review of violations posted on PADEP's website shows that noncompliance with legal requirements is rife within the industry. *See, e.g.*, PADEP, Oil and Gas Inspections, Violations, Enforcement (Jan.–Apr. 2011), *available at* <http://www.dep.state.pa.us/dep/deputate/minres/oilgas/OGInspectionsViolations/2011/2011MarcellusViolations.xls>, (revealing, for example, that an operator named "Alpha Shale Res LP" received a notice of violation on February 18, 2011 for "failure to implement Special Protection BMPs for HQ [High Quality] or EV [Exceptional Value] stream.") Plainly, the regulations alone are inadequate to protect underground sources of drinking water.

Moreover, even if environmental requirements did apply and effectively mitigated impacts from any single project, categorical reliance on compliance with such requirements for a FONSI for the Project would fail to constitute a hard look for the reasons identified by the D.C. Circuit in *Calvert Cliffs*'. The permit requirements of individual agencies establish minimum standards regarding specific resources that typically are applied to specific projects in isolation from each other. Relying on compliance with such requirements, without providing an independent assessment of impacts and quantified information to support a detailed and reasoned conclusion, fails to satisfy NEPA and prevents the public from understanding the full cumulative impacts of the Project.

G. The Project May Adversely Affect Several Endangered and Threatened Species and Their Habitat.

Federal agencies must consider the "degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973" when assessing whether an action is significant. 40 C.F.R. § 1508.27(b)(9). Recognizing that "NEPA cases have generally required agencies to file environmental impact statements when the . . . action would be environmentally 'significant,'" the Supreme Court has linked adverse effects on endangered species with significance under NEPA, concluding that "the loss of *any* endangered species has been determined by Congress to be environmentally 'significant.'" *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 188 (1978) (emphasis added). Therefore, Congress's prioritizing of conservation suggests that an effect on endangered species can be enough in and of itself to constitute a significant action.

Thorough and complete survey data is especially important when assessing an action's impact. The Ninth Circuit has held that incomplete survey information mandates an EIS: "*an EIS is mandated* where uncertainty may be resolved by further collection of data or where the collection of such data may prevent 'speculation on potential . . . effects.'" *NPCA*, 241 F.3d at 734 (emphasis added). Furthermore, surveys should be completed early in the process when possible so that the risk to species may be assessed most effectively. *N. Slope Borough v. Andrus*, 642 F.2d 589, 608 (D.C. Cir. 1980). This is because, "[t]he earlier in the progress of a project a conflict (between a species and the project) is recognized, the easier it is to design an alternative consistent with the requirements of the act, or to abandon the proposed action The relevant statutes-ESA, NEPA . . . all insist on foresight." *Id.* (internal citations omitted). For the Eastern District of California, the absence of updated species survey data was enough to "render[] the overall conclusions uncertain." *Klamath-Siskiyou Wildlands Ctr. v. U.S. Forest Serv.*, 373 F. Supp. 2d 1069, 1080-83 (E.D. Cal. 2004). Without "*updated* . . . survey data" there is no way to know the full effects on the species: "effects of the project [are] highly uncertain and involve unknown risks which could be resolved by updated protocol surveys." *Id.* (emphasis added). The court held that the effect was potentially significant, "particularly in light of the lack of data regarding the current number and dispersal of owls within the project area." *Id.* Therefore, incomplete survey information on the effects for endangered species cannot be relied upon to support a FONSI; instead, a lack of thorough data strongly supports the need for an EIS.

exemptions for natural gas activities) to be exempt from obtaining air permits under this regulation. BUREAU OF AIR QUALITY, PA. DEP'T OF ENVTL. PROTECTION, AIR QUALITY PERMIT EXEMPTIONS, at 6-7 (2003).

analyze any data. Furthermore, the EA repeatedly acknowledges habitat destruction but fails to carefully examine its impact, and where mitigation plans are in place, the EA barely discusses them. Instead, it describes the plan briefly, with no analysis of how much mitigation will be achieved. Therefore, the EA fails to take a hard look at the effect of threatened and endangered species, and it cannot support a FONSI.

1. Indiana Bat

The inadequacy of survey results is particularly apparent for the Indiana bat, a federally endangered species which has been found within the Project area. EA at 2-49. Loop 325 is “within foraging range of a known maternity colony of Indiana bat”; moreover, a bat was captured along Loop 321 in Pike County, Pennsylvania. *Id.* Yet despite the likely presence of bats, the surveys completely avoided the area of the proposed route around the Delaware Water Gap National Recreation Area (“DWGNRA”) and portions of Loop 321. EA at 2-49. The omission of key regions of potential bat habitat from the surveys drastically undercuts their reliability. When considered in conjunction with the fact that additional survey reports are still not pending, the amount of uncertainty in regard to this endangered species is astounding (see Part II.G.D, *supra*). The EA does not discuss mitigation in depth, but recommends that TGP file “final mitigation plans for forest resources in the Highlands Preservation Area and on state-owned lands” to specify trees suitable for the Indiana bat roost habitat. EA at 2-50. It also recommends that FERC complete any necessary section 7 consultation once these surveys are filed. *Id.*

The EA provides absolutely no information about survey methodology, and this lack of transparency generates a certain amount of skepticism. Regardless of the methodology, however, the results of the surveys which have been conducted should be viewed with skepticism because of the dire situation of the species. Dr. DeeAnn Reeder, a prominent bat biologist and professor at Bucknell University, has critiqued other bat surveys because bats in the Northeastern US are “under assault” from both wind turbines and a “deadly emerging infectious disease ‘White Nose Syndrome’ (WNS).” Comments of DeeAnn M. Reeder, Ph.D. (hereinafter “Reeder Comments”), included in Earthjustice Comments on Environmental Assessment of MARC I Hub Line Project, Docket No. CP10-480-000 (hereinafter “EJ Comments”) (annexed as Exhibit C hereto). Even if there had been no bats found in the project area, the failure to detect individual members of an endangered species facing the additional stress of White-Nose Syndrome (“WNS”) would not be surprising and would not support a FONSI on this imperiled species. Reeder Comments. There has been a seventy-two percent decline in the Indiana bat population in recent years, attributable in large part to the spread of WNS, and “detection of this already rare species has become even more difficult.” *Id.* Dr. Reeder calls their decline a “wildlife disaster of unprecedented proportions” and affirms that because of the low numbers of the species, “standard survey methods will be completely inadequate.” *Id.*

The FWS guidelines for netting Indiana bats support Dr. Reeder’s position: “Although the capture of bats confirms their presence, failure to catch bats does not confirm their absence. There are many instances in which the netting effort was as extensive as outlined below and Indiana bats were caught only with additional effort.” United States Fish and Wildlife Service, Guidelines for Netting Indiana Bats 1 (1997). The surveying should not be mistaken to

received complete survey results, nor has it sufficiently addressed habitat destruction or mitigation measures to justify its FONSI.

3. Dwarf Wedgemussel

The dwarf wedgemussel is a federally endangered freshwater mussel which “has been known to inhabit the Delaware River [near the project area and] . . . has *known occurrences* in the location where Loop 317 and Loop 323 cross the Susquehanna River, Wyalusing Creek, and the Delaware River” EA at 2-50 (emphasis added). In New Jersey, the EA cites to “only a few known occurrences including one along a portion of the upper Delaware River and at a location downstream of Big Flat Brook.” *Id.* Despite the EA’s reference to these known occurrences of the dwarf wedgemussel, TGP’s surveys revealed “[n]o live or dead specimens . . . during the survey efforts.” The EA concludes that no additional surveys are needed “as long as the crossing of the Delaware River can be completed using the HDD crossing method.” *Id.* Furthermore, though TGP has thus far failed to complete surveys for a 2.9 mile segment of Loop 323, FERC prematurely concludes that the Project is not likely to adversely affect the dwarf wedgemussel. EA at 2-51.

Without disclosing any methodology for the survey, the EA concludes that there is an absence of dwarf wedgemussel, despite the fact that it refers to known occurrences of the endangered species in the Project area. *See* EA at 2-50-51. Moreover, the reliance on the HDD crossing to justify a lack of additional surveying is premature because “TGP has not developed a contingency crossing method for the Delaware River HDD crossing.” EA at 2-16. Should a problem occur with the HDD crossing, the EA suggests that there could be additional adverse effects on dwarf wedgemussel. Moreover, although the EA acknowledges that a frac-out, the accidental release of drilling mud into the water, could “affect fisheries or other aquatic organisms by settling in and temporarily inundating the[ir] habitats,” it does not discuss any mitigation measures to address and minimize the potential for habitat destruction. EA at 2-18.

The Ninth Circuit has ruled that an EIS is mandated where uncertainty may be resolved by further collection of data. *NPCA*, 241 F.3d at 734. The inadequacy of survey results for the dwarf wedgemussel, as well as the Indiana bat and the bog turtle ignores this circuit court decision. Moreover, courts have encouraged surveys to be completed early in the process. *See N. Slope Borough*, 642 F.2d at 608. The survey deficiencies for each of these endangered species leave a great deal of uncertainty regarding the effect on imperiled species. Therefore, the EA has not sufficiently considered the potential effect of the project on endangered and threatened species.

Not only did the EA fail to provide complete survey data and adequate mitigation plans, but TGP also obscured crucial reports concerning wildlife species of concern. TGP requested privileged and confidential treatment for the following essential wildlife surveys:

- New Jersey Freshwater Mussel Survey
- New Jersey Timber Rattlesnake Survey
- New Jersey Red-Shouldered Hawk and Barred Owl Surveys
- New Jersey Bog Turtle Survey

When considering the possibility that the Project will threaten a violation of legal requirements, it is relevant that TGP is making the same promises and representations in its EA for the Northeast Upgrade Project that it made, and subsequently failed to implement, in the EA for the 300 Line Project. In the 300 Line EA, for example, TGP indicated that it intended to exclusively use dry cut, rather than open-cut, construction methods for waterbody crossings where there was perceptible flow. One of many such claims which were interspersed throughout the EA was that:

[t]he greatest potential impacts of construction on surface waters would result from an increase in sediment loading and turbidity. The highest levels of sediment would be generated by use of the wet open-cut method. However, as noted above, TGP would not utilize the wet open-cut method to cross any waterbodies with perceptible flow at the time of the crossing.

300 Line EA at 2-19. In the EA for the Northeast Upgrade Project, TGP makes an identical promise:

[t]he greatest potential impacts of construction on surface waters would result from an increase in sediment loading and turbidity. The highest levels of sediment would be generated by use of the wet open-cut method. However, as noted above, TGP would not use the wet open-cut method to cross any waterbodies with perceptible flow at the time of the crossing, unless a dry crossing is impractical due to site-specific conditions.

EA at 2-17. Despite the repeated claim that use of the open-cut method would be minimized in the 300 Line Project, TGP did not follow through with that promise, specifically at the West Branch of the Lackwaxen in Pike County, where a wet open-cut crossing method was utilized, thus adversely impacting the ecosystem in ways that were not addressed in the 300 Line EA. NJDEP warns that “FERC should be aware that TGP’s planned crossing methods are know [sic] to change during the review process increasing the likelihood of additional environmental impacts to threatened and endangered species habitat and increased turbidity for aquatic biota, oval water quality, and water supply.” NJDEP Comments on the EA at 16, para. 5. The fact that TGP has made identical guarantees in the past and has failed to adhere to them weighs heavily against its credibility. TGP’s past conduct is particularly relevant in assessing the risk that the Northeast Upgrade Project will violate the Clean Water Act, the Federal Safe Drinking Water Act, and the Pennsylvania Clean Streams Act, discussed in Parts I.H.6-8 *infra*. It is also relevant to the evaluation of the threat to endangered species, such as the dwarf wedgemussel, which depends on the successful implementation of the HDD crossing method. *See* Part II.G.3 *supra*; EA at 2-50 (concluding that no additional surveys for the species are needed “as long as the crossing of the Delaware River can be completed using the HDD crossing method”). TGP’s past conduct, therefore, can be relevant to the consideration of the risk of violating the following federal, state, and local regulations.

treatment of federally petitioned species and their habitats is so cursory that it ignores the threat of a future violation of federal law in relation to these species. The inadequacy of the EA is particularly apparent with regard to the Northern long-eared bat, which was found during mist net surveys. EA at 2-52. Bat biologist and professor Dr. Reeder emphasizes that “[a]t our current population levels, every single bat is important to preserving the species.” Reeder Comments. Considering the decline of bat populations in general, it is essential to consider not only the impact of proposed projects on the Indiana bat, but also all bat species:

Given the extreme declines in bat populations in the northeastern Pennsylvania region, the Mammal Technical Committee of the Pennsylvania Biological Survey has petitioned the Pennsylvania Game Commission to list little brown bats, *northern long-eared bats*, and tricolored bats as endangered. . . . Given the threats facing Indiana bats and other imperiled bat species detected in the Project area, *the welfare of every individual bat is vital to the preservation of these species.*

EJ Comments at 19 (emphasis added). However, the EA ignores the importance of the Northern long-eared bat and provides no evaluation of the expected impact on the species’ habitat. Instead, the EA cites to TGP’s plan to clear between September 1 and March 31 in Pennsylvania and August 1 and March 14 in New Jersey “to avoid impacts on Northern long-eared bats that may roost in the Project area.” EA at 2-52. The EA fails to discuss these habitat impacts or how they will be avoided by the clearing schedule, and it fails to acknowledge the relationship between the Northern long-eared bats and the Indiana bat.

The other petitioned species do not fare any better in terms of the depth of analysis they receive in the EA. For example, impacts on the American eel, which is “known to inhabit the Susquehanna and Delaware Rivers” are dismissed as “not anticipated” because of TGP’s plan to use a HDD crossing method. EA at 2-52. However, a frac-out, which occurred as recently as May 2011, is not unlikely. *See Pipeline Accident*, supra note 18. Therefore, the EA’s failure to evaluate the potential for violating the ESA with regard to currently endangered and petitioned species renders the EA inadequate under NEPA and an EIS should be prepared.

2. The Migratory Bird Treaty Act and the Bald and Golden Eagles Protection Act

The Bald and Golden Eagles Protection Act (“BGEPA”) prohibits the taking of “any bald eagle . . . or any golden eagle, alive or dead” as well as any part, nest or egg. 16 U.S.C. § 668. To “take” is defined not only as to “wound, kill, [or] capture” but also to “molest or disturb.” 16 U.S.C. § 668c. The Migratory Bird Treaty Act (“MBTA”) makes it “unlawful at any time, by any means or in any manner, to . . . take, capture, [or] kill . . . any migratory bird, any part, nest, or egg of any such bird” without a permit. 16 U.S.C.A. § 703. Executive Order No. 13,186 requires agencies to identify “where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse impacts on migratory birds . . . and emphasizes species of concern.” EA at 2-44. Violation of the MBTA for taking or killing a migratory bird is a strict-liability offense. *United States v. Apollo Energies, Inc.*, 611 F.3d 679, 684 (10th Cir. 2010). In *Apollo*, oil drilling operators were found in violation of the

species or subspecies of wildlife which are deemed to be endangered elsewhere.” N.J.S.A. § 23:2A-2.

The Project implicates 46 threatened, endangered, and special concern species in New Jersey. Surveys found timber rattlesnakes and northern copperheads in the Project area. EA at 2-55. Timber rattlesnakes have also been located at the Mahwah Meter Station and are expected to be impacted by the Spectra Pipeline. NJDEP Comments at 8. Therefore, in light of the two projects, the timber rattlesnake population is likely to suffer from cumulative impacts which, as discussed *supra* in Part II.F.1, must be taken into consideration under NEPA. TGP indicates that it will use “route deviations” to avoid impacts on these species. However, the EA provides no analysis of the effects of these deviations, nor is any species-specific data included. The mitigation plans, far from being developed, are mere lists, just as the kind of undeveloped “‘mere listing’ of measures” rejected by the Ninth Circuit. *NPCA*, 241 F.3d at 734. Red-shouldered hawks and barred owls were also observed, with results of the “vernal surveys . . . pending.” Additionally, regarding mussel species of concern, TGP says it will use the HDD crossing method to avoid impacts, but in the event of a frac-out would implement other measures. EA at 2-54. Once again, survey results are incomplete and “TGP stated it would conduct field assessments Results of the habitat assessment are pending.” *Id.* at 2-55. A frac-out from HDD of a pipeline is not an unlikely scenario: in fact, one occurred under a Pennsylvania stream in May 2011.¹⁷ Despite the likelihood of a frac-out or of TGP’s use of a wet open-cut crossing, however, the EA includes neither an impact analysis nor mitigation plans for the potential effect on the mussel species.

In addition to the risk of violating the above regulations, the EA fails to address other requirements as well. During NJDEP’s preliminary screening for threatened and endangered species in the project area, it evaluated areas under the jurisdiction of the Flood Hazard Area control Act and the Freshwater Wetlands Protection Act, which the EA disregards. NJDEP’s screening indicated regulated watercourses with suitable habitat either in the Project area or within 1 mile downstream for wood turtle (*Glyptemys insculpta*), bog turtle (*Glyptemys muhlenbergii*), and brook floater (*Alasmidonta varicose*), which are “critically dependant upon the regulated watercourse” and will require a 150’ riparian zone. The screening also indicated wetland habitats suitable for State or federally listed species which would require an Exceptional resource value and adjacent transition areas.

The EA concludes that “construction and operation of the project would result in short- and long-term impacts on wildlife and wildlife habitat. These impacts are expected to be minor given the mobile nature of most wildlife in the area, the availability of similar habitat adjacent and near the project, and the compatible nature of the restored right of way with species occurring in the area.” EA at 2-44. Heatley rejects this conclusion, finding instead that the project “is likely to present a barrier to movement of sensitive species.” Heatley Comments on the EA at 7. NJDEP agrees with Heatley, questioning:

How can Tennessee Gas determine that either the short- or long-term impacts will be ‘minor’ to New Jersey’s wildlife. Repiles and amphibians show strong site

¹⁷ See *Pipeline Accident, Rain Cited in Buffalo Creek Spill*, PITTSBURGH TRIBUNE-REVIEW (May 12, 2011), http://www.pittsburghlive.com/x/pittsburghtrib/s_736535.html.

along portions of Loop 321,” the EA specifies only that “all gestating snakes” were outside of the workspace. *Id.* However, there is no additional information about the snakes that were not gestating, or what the habitat implications would be. Instead, survey results are still pending, and “TGP stated it would conduct Phase II denning surveys” which have not been completed. EA at 2-54. As for mitigation plans, TGP says only that it will employ snake monitors, conduct daily sweeps, and use route deviations. *Id.* This conclusory treatment of a mitigation plan is far from the level of detail which courts have required under NEPA and again falls under the “mere perfunctory or conclusory language” forbidden by the Fifth Circuit. *Citizen Advocates For Responsible Expansion, Inc. (I-Care) v. Dole*, 770 F.2d at 434.

6. Clean Water Act

Section 401 of the Clean Water Act (“CWA”) requires that proposed dredge and fill activities under Section 404 be reviewed and certified by the state agency so that the project meets state water quality standards. The designated state agencies in question are the PADEP and the NJDEP. EA at 2-22. However, there is no extensive analysis of the proposed dredge and fill activities and whether they met state requirements. Instead, FERC relies on the assumption that all permit requirements will be met.

The project would impact 49.1 acres of wetlands, consisting of 24.09 acres of emergent wetlands, 1.9 acres of scrub-shrub wetland, and 22.4 acres of forested wetlands. 5.55 acres of wetlands would be permanently impacted, 5.5 of them forested. EA at 2-25. While FERC includes a table with sensitive water bodies (EA at 2-13), it does not explain in depth the impact of the Project other than to say that it will be crossing the Monksville Reservoir and Valentine Brook, the public water supply in Milford Township. EA at 2-13.

7. Federal Safe Drinking Water Act

The Project would cross four sole source aquifers (“SSA”). These aquifers supply at least 50 percent of the drinking water consumed in the area, and there are few to no alternative drinking water sources that could supply those who depend on it. EA at 2-9. The Northwest New Jersey 15 Basin SSA, which the project will cross, was designated under the Federal Safe Drinking Water Act in June 1988. *Id.* Additionally, the project will impact the NJ Coastal Plain SSA, a principal source of drinking water for Mercer and Middlesex Counties; Loop 323 will pass over the EPA-designated upstream headwater area. EA at 2-9.

Loop 325 would also cross the New Jersey Highlands Planning and Preservation areas, which provide the majority of potable water used in northern and central New Jersey. Plans for mitigation are not described in detail. Instead, they are discussed prospectively: “TGP *would* develop a comprehensive Mitigation Plan for implementation during construction and operation of the Project through the Highlands Region. The Comprehensive Mitigation Plan *would* be submitted as part of a Highlands Applicability Determination and *would* identify the specific water resources that would be affected by the Project and the measures designed to avoid, minimize, and mitigate adverse impacts on water resources.” EA at 2-11. The lack of a developed mitigation plan and reliance on a hypothetical future scenario interferes with the ability to assess the impact on drinking water.

9. Fisheries in general

In Pennsylvania, the Project would cross 32 water bodies supporting warm water fisheries and 29 water bodies supporting coldwater fisheries, as well as 25 high quality-designated water bodies, 7 exceptional value-designated water bodies, 1 Class A Trout Stream, and 2 Wild trout designated water bodies in Pennsylvania. EA at 2-19. Pennsylvania affords special protections to high quality or exceptional value water bodies and may designate waters to be managed for trout. *Id.* “In New Jersey, the Project would cross 29 water bodies designated for trout production or trout maintenance that are considered to be coldwater fisheries, and 25 water bodies designated as non-trout that are considered to be warmwater fisheries.” *Id.*

FERC identifies the risks to the water from construction, including “direct contact by construction equipment with fish, fish eggs, and other aquatic organisms including fish prey and forage species” as well as the removal of riparian vegetation and the “introduction of pollutants.” EA at 2-21. There is also the possibility that construction would “delay migrating fish from reaching upstream spawning areas or delay downstream movement of juveniles.” *Id.* However, far from discussing any mitigation methods, the EA merely identifies what the greatest risks will be, including “increased sedimentation” which can impact fish eggs and juvenile fish survival, diversity and health, and spawning habitat. *Id.* Furthermore, the “primary impact” that might take place from a HDD is the release of drilling mud during a frac-out, and “in larger quantities the release of drilling mud into a waterbody could affect fisheries or other aquatic organisms by settling in and temporarily inundating the habitats used by these species.” EA at 2-18. Once again, no mitigation measures are discussed sufficiently in the EA.

In Earth Justice’s comments on the 300 Line, Susan Beecher, Executive Director of the Pike County Conservation District, stated that there has not been adequate protection for water resources from the sedimentation caused by transmission line construction. Ms. Beecher indicates:

the transmission line construction process almost guarantees severe water resources impacts because there is too much earth disturbance over prolonged periods to allow for adequate installation and maintenance of erosion and sedimentation controls, timely inspections, and effective enforcement. She notes that standard BMPs are not effective, especially on steep slopes, and that additional protections are needed, such as phased construction of the pipeline. She also has observed that FERC-approved environmental inspectors typically *are inadequate to ensure compliance with Pennsylvania law and regulations*, and she recommends that an *independent* third-party inspector with stop-work authority – ideally CCD staff – be employed to monitor and enforce compliance.

EJ Comments at 18 (first emphasis added).

The EA has done little more than identify the statutes that may apply; it has not indicated whether or not TGP will be in compliance with them. Instead of assuming that TGP will be meeting all permitting requirements, FERC should do a careful investigation of methodology and mitigation measures to ensure not only preservation of important species but also that the project

*Include For minutes of
1/19/2012*



New Jersey Conservation F O U N D A T I O N

Bamboo Brook, 170 Longview Road
Far Hills, NJ 07931
Ph 908.234.1225 Fax 90.234.1189
www.njconservation.org

September 30, 2011

To: Mr. Richard Boornazian, Administrator, Green Acres Program
Ms. Judeth Piccinini Yeany, Esq., Chief, Bureau of Legal Services and Stewardship
c/o Mr. Kevin E. Koslosky
Bureau of Legal Services and Stewardship
NJDEP Green Acres Program Code 501-01
P.O. Box 420
Trenton, New Jersey 08625-0420

Via email kevin.koslosky@dep.state.nj.us

**Re: Tennessee Gas Pipeline Northeast Upgrade Project:
Proposed Conveyance (Lease) of State-owned Lands in High Point State Park, Long
Pond Ironworks State Park, Ringwood State Park, and Ramapo State Forest**

New Jersey Conservation Foundation, the New Jersey Highlands Coalition and the Association of New Jersey Environmental Commissions appreciate the opportunity to comment on the proposed 25-year conveyance (lease) to Tennessee Gas Pipeline of state-owned preserved lands for its proposed Northeast Upgrade Project, for purposes of constructing, installing and operating 30-inch diameter natural gas transmission "loops" for natural gas delivery.

Green Acres stated at the public hearings that "the question before us is whether we [Green Acres] would agree to the company's request to enter into this lease to use this property." Green Acres also stated that "we are not going to take a lease request to be approved by the Commissioner or State House Commission before the other approvals are in place..."

Because of numerous factors, which we address below, we request that Green Acres deny the company's request to lease our state's precious publicly-owned park and forest lands for this extensive commercial project.

purely on the basis of the size of the area to be leased, without criteria or standards which modify the price based on conservation values, is inadequate to determine the appropriate values of this public land to the public.

6. The proposed per acre fee does not take into account serious impacts of the construction on important natural and cultural resource values that are **outside of and beyond the construction site itself**. Such impacts include increased forest fragmentation that destroys critical interior forest habitat conditions adjacent to the ROW and degrades habitat conditions for hundreds or thousands of feet perpendicular to the ROW. Construction noise adversely affecting wildlife behavior hundreds of feet or more away from the actual construction is not considered. Scenic and historic resources and viewsheds at some distance from the construction site itself can be permanently degraded.

There are long-term impacts of access route and ROW construction that are permanent and irreversible – soil compaction, the spread of invasive, non-native species of plants, pathogens and animals, and the permanent loss of public trust resources of native flora and fauna that can never recover within the permanently altered habitat. All this must be factored into the compensation equation.

Agencies cannot assume that restorative measures will succeed, as the record on restorative practices proves that restorative measures fail due to poor design and planning, poor follow-up, insufficient resources, deer browse, off-road vehicle impacts, drought, and weed invasive species capturing the site, ultimately resulting in a complete loss of the sensitive natural resource components that were originally present.

Offsite impacts currently reported include that heavy precipitation on Tennessee Gas Pipeline's recent construction on the steep slopes of Hamburg Mountain State Wildlife Management Area and Bearfort Mountain in Wawayanda State Park, approved earlier by the State, has caused massive erosion, mudslides, siltation and degradation of public and private properties, including Category One waterways, lakes and ponds. Experience shows that attempts to repair this kind of damage are merely cosmetic. The loss of public trust resources can never be recovered, and the soil loss and disturbance will result in an irreversible compositional shift to weedy, unremarkable species characteristic of degraded ecosystems.

7. Tennessee Gas plans are nowhere near complete at this time, therefore it is impossible to accurately evaluate the impacts. The proposal is a moving target. For example, on Sept. 7 (transcript pg. 30), Green Acres states: "not knowing what the temporary work space numbers might be yet...." Also, pg 41, Tennessee Gas states "when our permanent application goes in...." As of September 7, additional permit applications required by the State, e.g. land use regulation, wetlands, stream crossing, flood hazard, stormwater management, State Historic Preservation Office, etc. - had not been submitted. Trails plans are also not yet available.

8. The definition of "temporary" needs to be revised to address the **serious long-term and permanent impacts of access roads and construction sites** that are used for limited periods of time. These impacts include soil compaction, forest fragmentation, degradation of critical habitat, long term impacts on wildlife, vegetation and populations of threatened and endangered species, spread of invasive species, and scenic and recreational impacts.

Disturbance and compaction to pristine soils resulting from the use of heavy equipment simply cannot be recovered by mechanical methods and planting. Soil horizons and pore spaces within the soil which ultimately dictate habitat type and quality, take thousands of years to

well as the “no build” alternative. The price exacted for commercial enterprises to traverse our public parklands should be set high enough that other alternatives are more than competitive.

Thank you for the opportunity to comment.

Sincerely,

Wilma E. Frey
Senior Policy Manager
New Jersey Conservation Foundation
wilma@njconservation.org

Alison E. Mitchell
Director of Policy
New Jersey Conservation Foundation
alison@njconservation.org

Emile D. DeVito, Ph.D.
Manager, Science and Stewardship
New Jersey Conservation Foundation
emile@njconservation.org

Signatories:

New Jersey Highlands Coalition – Julia Somers, Executive Director
Association of New Jersey Environmental Commissions – Sandy Batty, Executive Director

Cc:

Eileen Swan, Executive Director, New Jersey Highlands Coalition
Tom Borden, Deputy Director and Counsel, New Jersey Highlands Coalition
NJDEP Land Use Regulation
NJDEP Endangered and Nongame Species Program
NJDEP Natural Heritage Program
State Historic Preservation Office
North Jersey District Water Supply Commission



New Jersey Conservation

F O U N D A T I O N

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Far Hills, NJ 07931

Ph 908.234.1225 Fax 90.234.1189

wilma@njconservation.org

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Comments of Wilma E. Frey, Senior Policy Manager,
New Jersey Conservation Foundation
Before the
NJ Department of Environmental Protection Green Acres Program
On the Proposed 25-year Conveyance to
Tennessee Gas Pipeline Company, Northeast Upgrade Project
Ringwood NJ, August 18, 2011

New Jersey Conservation Foundation is extremely concerned about the proposed Tennessee Gas Pipeline Northeast Upgrade Project. Tennessee has requested expedited review of its application, with its desired authorizations issued by December 15 of this year. We urge the NJDEP, including the Green Acres Program, the Endangered and Nongame Species Program, the Land Use Program and any other affected programs, to take all the time they need to review the Tennessee Gas proposal, and not to make any determinations until substantial, detailed information on the proposal is received from Tennessee Gas. Green Acres must not be forced by Tennessee Gas and FERC into addressing a moving target.

We are concerned that the NJDEP Report on Proposed Conveyance of Lands to Tennessee Gas Pipeline Company is inadequate as an analysis of the impacts of the proposed pipeline upgrade to State lands and other preserved lands, and the impacts to the natural, cultural and recreational resources held in trust by the State for the people of New Jersey. The facts provided and the analysis are sketchy at best. The enormous impacts are substantially under-represented by the Report. ***The Report is therefore inadequate as a basis for determining the appropriate compensation and mitigation for the project.***

1. The engineering and direct impacts of the construction access routes are not described or evaluated in any detail. It is unlikely that the access routes will be confined "within existing" access routes, paths or logging roads. As a result, the access routes will for all intents and purposes be **new** roads. While 16 or 20 feet may be the width of the travel way (the hardened roadway surface or pavement equivalent), an area **adjacent to** the travel way will clearly be

single mile of access route destroys 72.7 acres of interior forest habitat. For example, the total length of the project within Ringwood State Park is approximately 3.62 miles. Should this be located in core forest, over **263 acres** would be permanently impacted, as opposed to the 59.86 acres noted in the Report on page 9.

4. The Assessment of Environmental Impact and Impact on Plants, Endangered and Non-Game Species is entirely inadequate. The impacts on the ecology of this sensitive area, much of it located in the Highlands region, will be huge. Among other deficiencies, the Report does not acknowledge that the Highlands Act protects RARE, as well as threatened and endangered species, and it does not address impacts on these RARE plant and animal species. It does not address the impacts of construction noise and ground vibration from heavy machinery and proposed tunneling under the earth on behavior of species affected, probably hundreds, if not thousands of feet from the actual construction site.

5. The concept of a “giveback” of 10 ft. of the existing ROW as a way to reduce Tennessee’s obligation for permanent impacts to be mitigated or compensated is without merit, and should be rejected out of hand by the State of New Jersey. It is absurd to equate existing managed ROW to undisturbed natural lands and suggest an equal exchange.

The state parks and forests through which the proposed gas pipeline will run are precious public lands, forests and trails that New Jersey citizens have preserved with their taxes, their toil and their love. These lands are entrusted in Green Acres’ care on our behalf. We hope that our State’s Green Acres Program and the DEP will stand up for this public trust for the citizens of New Jersey and protect and preserve these lands and their multiple resources to the very best of their ability. We will help you in any way that we can.

Thank you for your consideration of our comments.

110711, 172 Red Hill
RD Middle Town
NJ, USA.

Dear, Governor Chris Christie,

There is a very terrible
thing going on, from the Tennessee gas
company.

Believe in your heart, and, you can
save the poor animals and reptiles, from

How? What you can do is
don't let the Tennessee gas company
destroy and ruin the forest.

They are blasting rock 10
miles into the earth! That's 52,800
ft, They are collecting fossil fuels.

The nasty gas trash place
has also ruined a pond with
fish, frogs and toads. I'm afraid
there dead, those poor things.

Now feel you were a
baby fish and that happened
to you!

Here are some facts. The
company is cutting down 200
feet of trees. If the company wins
the bid they will have a 25
year lease and that's what's going to

Spoke to
Hester and
Gardner
at the
State
House

NOT only that, they will destroy 20 Trails remove some of the oldest rocks on our planet.

The parks they will cut down are the ring wood, Long pond Iron works, and the Appin trail.

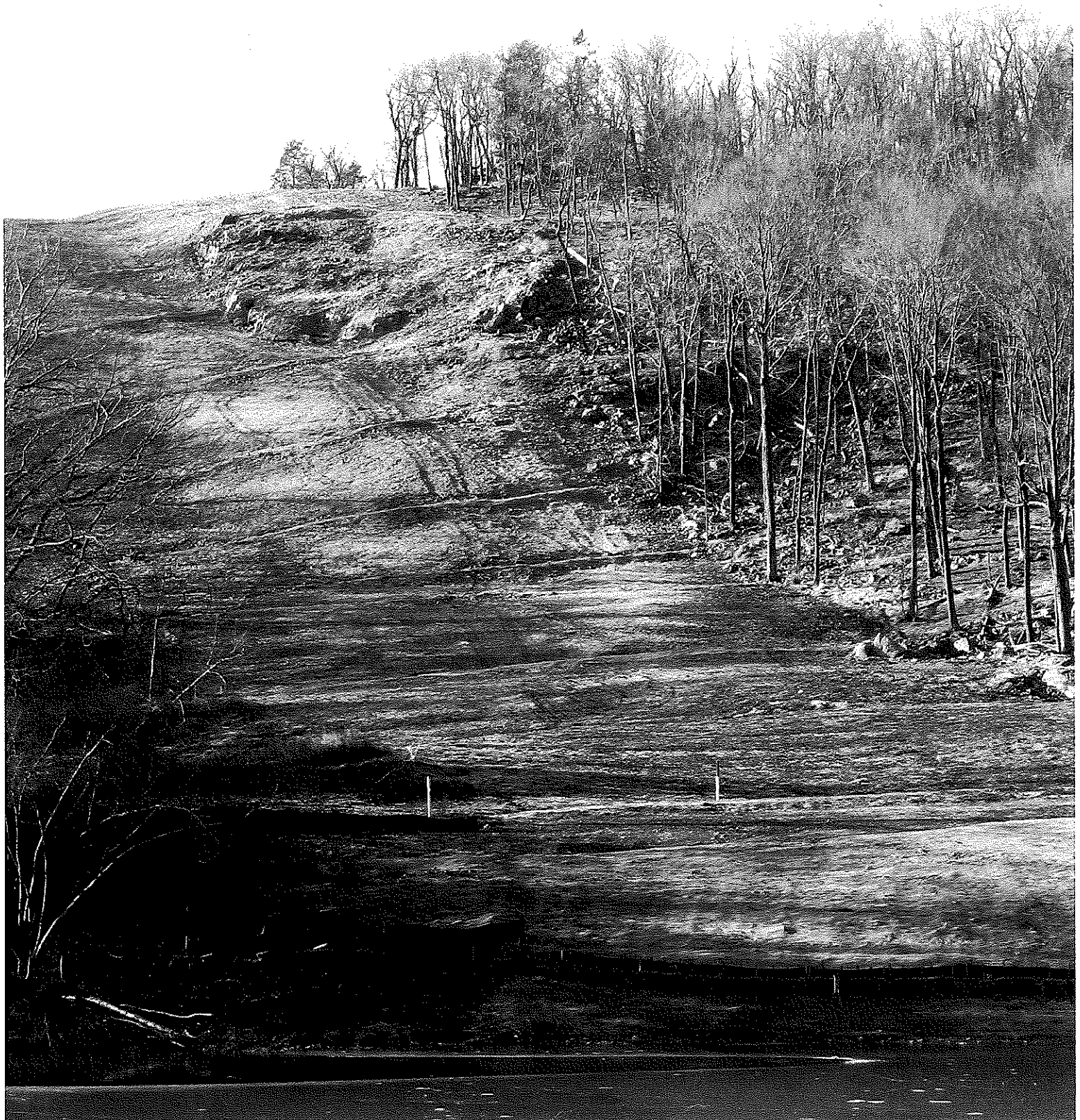
Please don't let them win, what matters as you as a Governor, is that you just have to try to preserve our state.

Sincerely,

Yours Nicholas Stottmire

Respond Back.

Send a letter



Lake Lookover UGL West Milford
Jan 16

Renee Alessio



across Clinton Rd from Lake Lookover UGC
West Milford Jan 16

Renee Alessio

Highlands Council Comments: January 19, 2012

My name is Deborah Post. I own property in Chester Township.

What is so remarkable about this Council is how little has changed. The Christie appointed Council is indistinguishable for the Corzine appointed Council. The Council is busy rubber-stamping conformance plans prepared by staff, delegating to staff, and concerning itself with little else.

Not a word is heard about the Highlands landowners and the \$6 billion of property losses that sit squarely on the shoulders of small farmers and landowners. As always, I see council members look at their shoes, or the clock, when the subject of landowner compensation is raised. Why are all so concerned about protecting the contractual pensions and retirement benefits of unionized people, while the farmer is allowed to watch 100% of his hard-earned retirement savings, stored in his land values, vaporize without a sound of protest? The easy answer? The landowners are statistically invisible at the voting polls. And apparently to this Council.

The Green lobby is here, as always, represented by salaried lobbyists who actually get paid to come spin feel-good but unsubstantiated environmental chatter at you. The Green lobby has lots of money to throw around, some of which actually comes from NJ taxpayers. Love the irony of the greenies getting taxpayers money to come throw stones at the taxpaying landowners who have lost \$6 billion, and to argue that speculating greedy filthy farmers don't deserve to be paid anyway. But nere a penny for the harmed landowners.

To add insult to injury, this Council has delegated all landowner matters to the staff – those same individuals who wield the “punitive and menacing tools” noted by the Authorities Transition Report. You couldn't have been more clear that the landowners concerns are simply not the concerns of this Council, not worthy of your time or attention are we?

I have three envelopes here for the three new Council members that contain my comments from last summer's Council meetings, to avoid being repetitive. I would sincerely appreciate your taking the time to read them as they address some specific items to which this Council should address its attention.

1. The need to reprice the Highlands Development Credit to eliminate the 75% discount applied to meet the needs of the “developers willingness to pay.” In essence, the landowner is to receive 25% of his lost land equity while the remaining 75% of his land equity is transferred to the developer. This is asset redistribution, even worse than income redistribution, and a redistribution that goes backwards - from the not-so-rich to the quite-rich.
2. The need to adopt a deed restriction document that addresses only that for which is being paid...i.e. the sale of the development right...and eliminate the overreach of onerous and burdensome restrictions in a contractual document that the landowners will never sign.

The deed restriction document represents built-in “intent to fail” in the structure of the tdr program.

3. The need for transparency.

This Council is fond of saying that its job is to implement the Highlands Act, love it or leave it. Compensating the landowners is part of the Highlands Act. This Council cannot implement this Act without compensation funding which might include a fair, equitably structured and actively functioning tdr program. What you should do is pass a resolution advising the Governor that you cannot do your job implementing the Highlands Act until the critical issue of funding is addressed, and therefore you resolve to conduct no further business until funding is firmly in place.

①

My name is Hank Klumpp. I am a farmer and own 150 acres in the Highlands Preservation Area in Tewksbury, Hunterdon County.

When I stand in front of the Highlands Council, I always feel like I have to explain why I am standing here to let the many new members understand what I have been going through for going on 8 years. Those of you who know me I'm sure are sick of seeing me. I'm sick of being here.

In The Star Ledger, January 12, 2012, an article was written concerning the confirmation

2

of Richard Vohden. It states that Mr. Vohden is strongly opposed by environmental groups. Is this because he is a Green Township farmer or because he dared to criticize the Highlands Act or because he has challenged aspects of the Act? Now, Jeff Tittel has the nerve, and he does have nerve, to call the Senate confirmation of Mr. Vohden "disgraceful" and "shameful." Tittel predicts Mr. Vohden will "violate" the very law he was

3

appointed to uphold. Mr. Vohden has been criticized by many of the environmentalists because he has looked for information on how the Highlands Act affects landowners. I applaud Mr. Vohden if he dedicates himself to justice for landowners, like me, who are not being justly compensated for loss of land value and equity.

I understand, according to the article, that Michael Sebetich, another new Council member, has won support from environmentalist

4

so I guess I can surmise that he is one more council member that will not help me. I hope some help will prove me wrong.

Forgive me for not being impressed with reports that under the Highlands Transfer of Development Rights program that the Highlands Development Credit Bank received 10 million dollars in initial capital funding to acquire development rights on property - When - prior to the passing of the Highlands Act

5

my property alone was worth
10 million dollars. I was offered
that amount more than once.
Have I been robbed by the
Highlands Act? You bet I have!

If Tittel can use these
words, please let me. The Act
is shameful, disgraceful, and
violates me. There was never
and still is no money in place to
compensate property owners for the
estimated 15 billion dollar
land theft.

I can only hope that

(6)

it is true that Mr. Vohden has
been quoted as saying that
this whole matter is as close
to a government taking as it
could come - because we all know
this is true. I thank Mr. Vohden
and hope he will listen and help.

Thank you!

Hank Klumpp
24 Longview Road
Lebanon, N.J. 08833
908-832-7634

January 19, 2012

Attention: Highlands Council

My family has been farming in
Tewksbury, Hunterdon County, since 1952.

Because of the Highlands Bill and

• Preservation, my family is being faced
with a situation that will change our
lives forever. The farm was originally

my father's and now it is mine and
was to be my sons' in the future.

However, our land investments are
being seriously jeopardized by this

legislation. I can only hope that

some compromises will be made.

When I inherited the farm, the land was appraised as actual real estate and taxed accordingly. Now, what happens when my sons inherit the same piece of property? Are they going to inherit land in the Highlands Preservation Area that has no value? Land with no equity? How will the land be appraised? Is it still worth the same?

Picture this - same 150 acre farm - Grandpa, Father, Sons, Grandsons - all farming year after year. How can generations of investments be taken away? Once land

is in the Highlands Preservation Area, with ridiculous restrictions, it is basically worthless - it has no equity.

The Highlands Act has changed everything. Hunterdon farmers can't be punished for the problems of the rest of the State. Trenton can't afford to buy my land for the REAL amount it is worth so they are taking it through regulations and by forcing it into preservation. I have been asking for almost eight years now to see the scientific study that

put my farm in the Preservation Area.

There is no scientific study. How were the boundaries decided? My property is in the preservation and property on the other side of the road is not. Please tell me how the line was drawn.

Farmers need help to continue farming practices and to, also, safeguard their investments. We are being forced to pay such a huge price. How unfair it is to have our business and investments stolen by legislators who do not understand the farming business

and have nothing to lose themselves.

The Highlands Act was so poorly written that many pages of amendments have been added and, even though it still isn't

RIGHT, legislators are willing to make life-altering changes in the farmers' future.

Year after year, I stand before the Highlands Council asking questions but receive no answers.

I've been called one of the half-dozen "persistent regulars".

It's the people with everything to lose that attend these

meetings - the general public in the Highlands is unaware of all the regulations they will be facing.

"Save the water" is such a cover-up for the biggest land grab ever. Devaluating land by as much as 90% makes the Highlands Act a legal theft.

When the Highlands Act was passed, there was no funding in place to compensate landowners and - now - almost eight years later, there is still no funding. The state has NO money. An

executive order should block further
actions until proper funding is
in place.

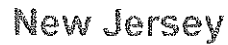
Sincerely,

Hank Klumpp

Hank Klumpp

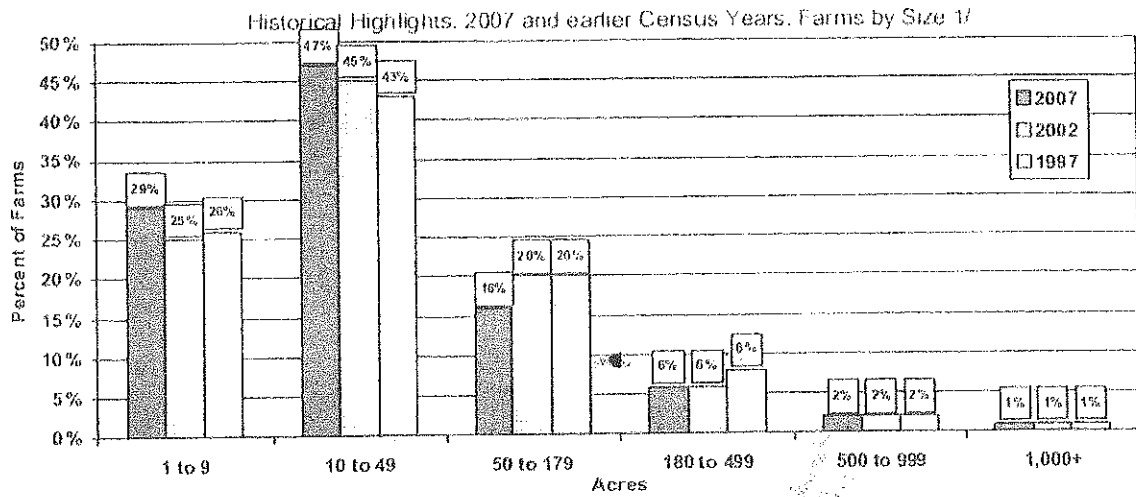
24 Longview Road
Lebanon, New Jersey
(Tewksbury) 08833
908-832-7634

Discussion



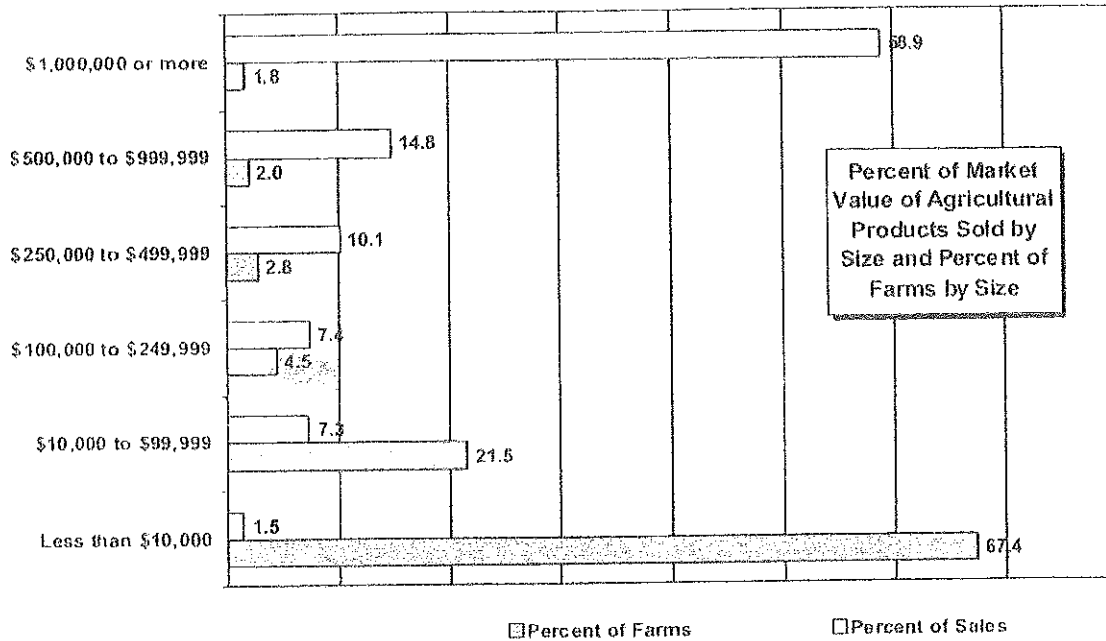
Land in Farms by type of land

Land Type	Percentage
Other land	25.7%
Cultivated land	27.5%
Pasture	31.2%
Barren land	15.6%

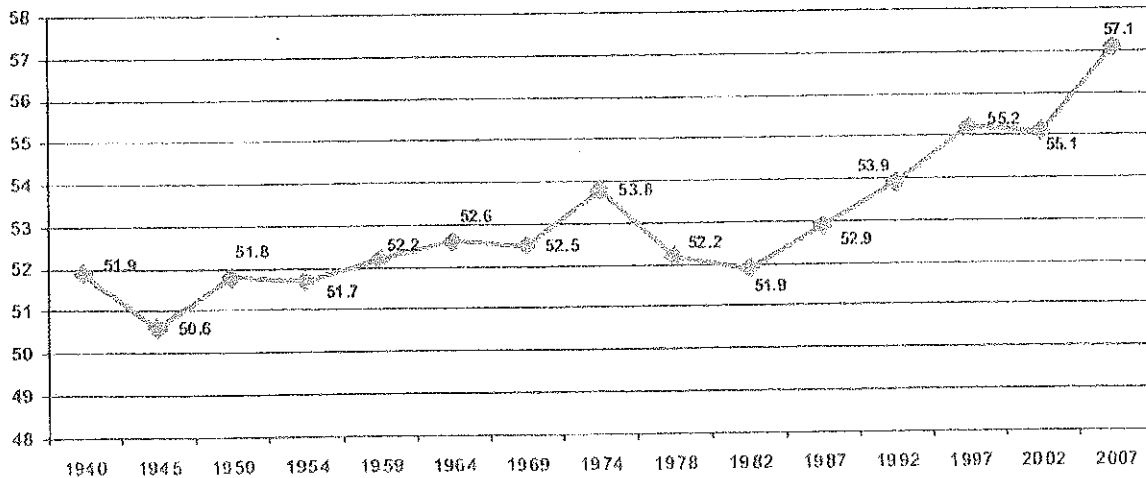


1/ Total for a given year may not add to 100 percent due to rounding.

Distribution of New Jersey Farms by Size and Market Value of Agricultural Products Sold by Size Group, 2007



Average Age of New Jersey Farmers





First Pioneer Farm Credit, ^{ACA}

Your First Choice For Financial Solutions

Mr. Robert A. Tucker, President
Stonegate Standardbred Farms, Inc.
500 West Hill Road
Glen Gardner, New Jersey
08826

Dear Mr. Tucker,

As per our discussion earlier in the week, I wanted to further discuss the impact down zoning would have on farm real estate owners in our area. First of all, First Pioneer Farm Credit specializing in lending to New Jersey agriculture has nearly \$130,000,000 in first mortgages on farm properties in the north central part of New Jersey. All of these loans are secured with a first mortgage on the farm property. Additionally, we have nearly \$50,000,000 in short term loans and almost all of them are secured with farm real estate. Down zoning would have a tremendous effect on almost all of our borrowers. First of all, interest rate to be paid by the customer is primarily determined by equity position. The loss of equity would most likely put First Pioneer in a position to increase the customer's interest rate.

Additionally, any new customers approaching First Pioneer would have additional costs involved in obtaining a loan commitment from our organization due to down zoning. The applicant would most likely be in a position to incur greater closing costs due to possibly having to pledge additional collateral in order to obtain the approval amount requested.

The additional costs coupled with a struggling agricultural economy could force a great many of our long time customers out of business.

We here at First Pioneer Farm Credit continue to work with the agricultural community and try to find ways to increase the viability of each and every operation with proper counseling and consulting. Down zoning would not contribute positively to our cause.

As always, if you have any questions or comments feel free in contacting us.

VERY TRULY YOURS,


HENRY G. BAUM
VICE PRESIDENT