

November 19, 2014

Ms. Kimberly D. Bose, Secretary Federal Energy Regulatory Commission 888 First Street, N.E. Washington, D.C. 20426

Re: Tennessee Gas Pipeline Company, L.L.C., Docket No. CP11-161-000

Northeast Upgrade Project

Supplemental Filing -- Invasive Species Monitoring Report

Dear Ms. Bose:

On May 29, 2012, the Federal Energy Regulatory Commission ("Commission") issued its certificate order authorizing Tennessee Gas Pipeline Company, L.L.C.'s ("Tennessee") Northeast Upgrade Project ("Project"). In the certificate order, the Commission outlined Tennessee's post-construction commitment to further minimize impacts on forest and other vegetation by implementing measures that include controlling the spread of invasive plant species through preparation and implementation of Invasive Species Management Plans ("ISMP") for Pennsylvania and New Jersey. Included in this filing is a copy of Tennessee's Post-Construction Invasive Species Monitoring Report, dated November 18, 2014. This report discusses the findings for the initial post-construction invasive species monitoring event conducted in September and October 2014 for the right-of-way for the two pipeline loops in New Jersey (Loops 323 and 325) and associated aboveground facilities, consistent with the New Jersey ISMP.

In accordance with the Commission's filing requirements, Tennessee is submitting this filing with the Commission's Secretary through the eFiling system. Tennessee is also providing complete copies of this filing to the Office of Energy Projects. Copies of this letter are being served on all parties of the official service list for the above-referenced docket. Any questions concerning this filing should be addressed to the undersigned at (713) 420-4544 or Mr. Richard Siegel at (713) 420-5535.

Respectfully submitted,

TENNESSEE GAS PIPELINE COMPANY, L.L.C.

By: /s/ Jacquelyne M. Rocan
Jacquelyne M. Rocan
Assistant General Counsel

Enclosure

cc: Mr. David Hanobic (Commission Staff)

Ms. Ellen St. Onge (Commission Staff)

All parties

¹ Tennessee Gas Pipeline Co., L.L.C., 139 FERC ¶ 61,161 (2012).



AK Environmental, LLC
An NV5 Company
"Consulting with Energy"
www.ak-env.com

POST-CONSTRUCTION INVASIVE SPECIES MONITORING REPORT NORTHEAST UPGRADE PROJECT LOOPS 323 and 325

Sussex, Passaic and Bergen Counties, New Jersey



Prepared for: Tennessee Gas Pipeline Company, L.L.C.
Prepared by: AK Environmental, LLC an NV5 Company
November 18, 2014

CONTENTS

1.0 Introduction	1
2.0 Purpose and Objectives	2
3.0 Monitoring Area Description	
•	
4.0 Methods	
5.0 Post-Construction Invasive Species Monitoring Results, by Year	7

Figures

- 1. NEUP Project Area Map
- 2. Loop 323 Location Map
- 3. Loop 325 Location Map

Summary Tables:

- 1. Wetland Post-Construction Invasive Species Monitoring Summary, Year 1 (Fall 2014)
- 2. Waterbody Post-Construction Invasive Species Monitoring Summary, Year 1 (Fall 2014)
- 3. Upland and Transition Area Post-Construction Invasive Species Monitoring Summary, Year 1 (Fall 2014).
- 4. Access Road Post-Construction Invasive Species Monitoring Summary, Year 1 (Fall 2014).

Appendices:

- A1. Project Alignment Sheets (Loops 323, 325)
- A2. Loop 323 Landscape Restoration Plans

Loop 325 Landscape Restoration Plans (unavailable in Fall 2014)

- B. Invasive Species Data Tables, by Year
- C. Invasive Species Data Forms, by Year
- D. Invasive Species Photo Log, by Year

1.0 Introduction

As recommended by the Federal Energy Regulatory Commission ("FERC"), Tennessee Gas Pipeline Company, L.L.C. ("Tennessee") prepared a site-specific Invasive Species Management Plan ("ISMP") for the New Jersey portion of the Northeast Upgrade Project ("NEUP" or "Project"). The ISMP¹ is specific to revegetation of the right-of-way ("ROW") for construction of two pipeline loops, Loop 323 and Loop 325, and associated aboveground facilities located in New Jersey. Specific measures to be applied within state-owned properties are also included in the ISMP.

The objective of the ISMP is to control invasive plant species by means of limited herbicide use in coordination with other control methods such as mechanical removal, mowing and cutting, if necessary. Implementing these control measures will ensure that existing ecosystems are not compromised by dominance of these species. The invasive species can change habitat communities and adversely affect restoration of impacted streams and wetlands. The ISMP is a guideline for the eradication and/or control of invasive plant species and also provides the corrective measures for eradication and/or control.

Tennessee's overall goal is to control invasive plant species within the Project ROW such that wetlands and uplands are not dominated by the invasive species listed in the ISMP to a point where the resource is compromised. Tennessee's plan is to follow the ISMP to reduce the levels of invasive plant species to a non-dominant position during the first five (5) years following the completion of construction and then to incorporate the control measures into the ROW mowing/maintenance plan, thereby keeping the invasive species populations under control.

This Post-Construction Invasive Species Monitoring Report was prepared by AK Environmental, LLC ("AK") on behalf of Tennessee to provide results of monitoring for the Project that occurred in September and October 2014. The report is structured to include the purpose and objectives of the monitoring (Section 2.0), a monitoring area description (Section 3.0), monitoring methods (Section 4.0), and results from the monitoring effort (Section 5.0). This report includes results from the initial monitoring event while results from subsequent monitoring events will be provided as addendums to this report.

¹ Invasive Species Management Plan (ISMP). Northeast Upgrade Project – New Jersey. FERC Environmental Report. December 2012. A separate Invasive Species Management Plan was prepared for Project areas located in Pennsylvania.

2.0 Purpose and Objectives

The purpose of the invasive species monitoring for the Project is to provide post-construction inspection of vegetation restoration in uplands and wetlands to document Tennessee's adherence to the ISMP. The purpose of this report is to document areas of populations of invasive species, identify immediate problem areas, and provide recommendation for corrective actions to control the populations. The report includes data on the invasive species percent cover within the ROW and, where applicable, outside or adjacent to the ROW. Recommendations for treatment of existing populations and identification of new populations that may occur during subsequent years is also included.

2.1 Permits and Plan Conditions

The monitoring of invasive species is in accordance with the ISMP, and is further required by specific state permits and other Project-specific plans. The specific plans and permit conditions referencing requirements under the ISMP are listed below.

- FERC Upland Erosion Control, Revegetation, and Maintenance Plan Section VII.A.2: visual survey of the density and cover of non-nuisance vegetation is similar in density and cover to adjacent undisturbed land.
- FERC Wetland and Waterbody Construction and Mitigation Procedures Section VI.D.5 (d): invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.
- New Jersey Department of Environmental Protection ("NJDEP") Division of Land Use Regulation ("DLUR") Permit No. 0000-09-0038.2 FHA 110001 (Loop 323) Riparian Zone Compensation Condition 6(iii): the site is less than 10% occupied by invasive or noxious species.
- NJDEP DLUR Permit No. 0000-09-0038.3 FHA 120001 (Loop 325) Riparian Zone Compensation Condition 6.b (iii): the site is less than 10% occupied by invasive or noxious species.
- NJDEP DLUR Permit No. 0000-09-0038.2 FWW 110001 (Loop 323) Freshwater Wetland Mitigation Permit Condition 7.1 (iii): the site is less than 10% coverage by invasive or noxious species.
- NJDEP DLUR Permit No. 0000-09-0038.3 FWW 120001 (Loop 325) Freshwater Wetland Mitigation Condition 9.1 (iii): the site is less than 10% coverage by invasive or noxious species.
- Reforestation Plan, NEUP Loop 323 Section 2.2 Upland Forest Restoration & Section 2.4 Post-Construction Monitoring and Adaptive Management: visual survey of the density and cover of non-nuisance vegetation is similar in density and cover to adjacent undisturbed land.
- Reforestation Plan, NEUP Loop 325 Section 2.2 Upland Forest Restoration & Section 2.4 Post-Construction Monitoring and Adaptive Management: visual survey of the density and cover of non-nuisance vegetation is similar in density and cover to adjacent undisturbed land.

2.2 Objectives of the ISMP

The objectives of the ISMP are to:

- 1. Identify the presence of populations of invasive species and their percent cover;
- 2. Determine the need for additional monitoring, treatment or other restoration measures;
- 3. Monitor and reduce populations of invasive species to non-dominant communities during the first five years following construction;
- 4. Identify the status of eradication and control efforts on a yearly basis for five years post-construction;
- 5. Control invasive species to a level such that upland and wetlands are not dominated by the invasive species where the function of the system is compromised;
- 6. Identify and document populations of invasive species along construction access roads utilized for construction; and,
- 7. Prepare a report suitable for filing with the FERC, NJDEP DLUR, NJDEP Division of Parks and Forestry, NJDEP Regional Superintendent, and NJDEP Office of Natural Lands Management ("ONLM").

According to the New Jersey ISMP, on lands not owned by the State of New Jersey, after the fifth year of monitoring, yearly surveys will continue to be conducted as per the FERC or NJDEP. Herbicide applications will be managed on an as-needed basis. Treatment and retreatment will be conducted accordingly, with timing to be determined by Tennessee.

On lands owned by the State of New Jersey, after the fifth year of monitoring, yearly surveys will continue for five additional years. Herbicide applications will be managed on an as-needed basis, and eradication efforts will be incorporated into the current ROW mechanical mowing maintenance plan. After the tenth year of monitoring, herbicide applications will be managed on an as-needed basis, and eradication efforts will be incorporated into the current ROW mechanical mowing maintenance plan.

3.0 Monitoring Area Description

Post-construction invasive species monitoring includes all disturbed workspaces within the FERC-approved permanent ROW and temporary workspaces for the Project, including all upland areas, construction access roads, and wetlands and waterbodies impacted by construction. Appendix A1 to this report provides the Project alignment sheets that show the Project alignment, temporary workspaces, and the natural resources identified. Appendix A2 to this report provides the Loop 323 Landscape Restoration Plans showing the planting scheme within the Project area. It is noted that at the time of Fall 2014 monitoring, the Loop 325 Landscape Restoration Plans had not been approved and the planting had not been completed. Subsequent monitoring events will include this information.

The Project area consists of upland forest, wetlands, agricultural fields, commercial/industrial and residential development, and existing maintained ROW. Invasive species identified along the Project prior to construction include: garlic mustard (*Alliaria petiolata*), Japanese barberry (*Berberis thunbergii*), oriental bittersweet (*Celastrus orbiculatus*), multiflora rose (*Rosa multiflora*), burning bush (*Euonymus alatus*), amur honeysuckle (*Lonicera maackii*), Japanese honeysuckle (*Lonicera japonica*), and Japanese stiltgrass (*Microstegium vimineum*).

4.0 Methods

During the first post-construction monitoring year, the entire ROW along the Project was monitored for invasive species with the exception of segments that were crossed by Horizontal Directional Drill ("HDD"). Areas crossed by HDD (Loop 323: milepost ("MP") 6.23 in Pennsylvania to MP 6.67 in New Jersey and Loop 325: MP 0.03 to MP 0.96) were not impacted on the ground surface during construction and were, therefore, not subject to monitoring. All other portions of Loop 323 were studied except an approximate 0.5-mile portion between MP 10.30 and MP 10.80 that was skipped due to active construction adjacent to the Project area (pipe replacement on the parallel 300-1 Line). All other portions of the Loop 325 ROW were studied by a two-person team led by a qualified biologist experienced in linear natural gas pipeline projects.

Invasive species populations were mapped using a GPS with a data point taken for future reference. Each population was photo-documented. A data sheet was completed for invasive communities within upland portions of the ROW. Notes were included on wetland and riparian monitoring data sheets for invasive communities within wetlands or waterbodies. Data collected included the percent cover of invasive species within the ROW and coverages outside and adjacent to the new ROW. Adjacent invasive species communities indicated invasive species presence prior to pipeline construction.

Where invasive populations were identified, priority problem area classifications were assigned and categorized as high, medium or low priority. Treatment of invasive populations is recommended for high priority areas where percent cover indicates dominate invasive species. Medium priority areas are recommended for treatment, as the community is likely to spread without remediation. Continued monitoring is recommended for low priority areas where percent cover is less than ten. Priority areas were designated as:

- High priority area: >50% coverage of invasive species;
- Medium priority area: coverage of invasive species >10% and <50%; and,
- Low priority area: 10% coverage of invasive species.

Invasive plant species were monitored throughout the Project area, including wetlands, waterbodies, uplands and access roads. The procedures followed during monitoring activities are described below.

4.1 Wetland Monitoring

AK monitored areas previously identified as wetlands during pre-construction surveys and subsequently impacted by construction. The following tasks were implemented during the invasive species monitoring in wetlands:

- Identified invasive species populations;
- Noted the percent cover of the invasive and native vegetation on wetland data sheets;
- Photo-documented each wetland; and,
- Assigned a problem area priority of high, medium or low during post-processing of data.

4.2 Waterbody Monitoring

AK monitored waterbodies previously identified during pre-construction surveys and subsequently impacted by construction. The following tasks were implemented during the invasive species waterbody monitoring:

- Identified invasive species populations;
- Noted the percent cover of the invasive and native vegetation on riparian data sheets;
- Photo-documented each waterbody; and,
- Assigned a problem area priority of high, medium or low during post-processing of data.

4.3 Upland and Transition Area Monitoring

During the walkover of the Project area, AK evaluated the ROW for invasive species. The following tasks were implemented during the upland and transition area monitoring:

- Identified invasive species populations;
- Noted the percent cover of the invasive species on invasive species data sheets;
- Photo-documented each population;
- Mapped with a GPS point for future reference; and,
- Assigned a problem area priority of high, medium or low during post-processing of data.

4.4 Access Road Monitoring

The following tasks were implemented to monitor invasive species along construction access roads:

- Visually inspected access roads;
- Photo-documented representative conditions of each access road, and any invasive or noxious weed populations;
- Noted locations of invasive populations on field maps; and,
- Assigned a problem area priority of high, medium or low during post-processing of data.

5.0 Post-Construction Invasive Species Monitoring Results, by Year

This report provides a summary of findings for the initial post-construction invasive species monitoring event conducted in September and October 2014. Each subsequent post-construction monitoring event will be added to this report as an addendum. The addendum will include information on the date(s) of the monitoring effort and if there are any deviations from the methods described above. A summary of the findings is provided in the text along with recommendation for corrective action, if necessary. Corrective actions are designated as maintenance activities that will keep the Project moving toward successful recovery or as remediation to eradicate dominant populations of invasive plant species.

Results from monitoring sessions are summarized in Tables 1 to 4. Appendix A1 to this report provides the Project Alignment Sheets that show the Project alignment, temporary workspaces, and the natural resources identified. Appendix A2 to this report provides the Loop 323 Landscape Restoration Plans, approved by the NJDEP, showing the planting scheme within the Loop 323 portion of the Project area. The Loop 325 Landscape Restoration Plans are currently being revised and will be submitted to the NJDEP for approval. Once approval of the Loop 325 Landscape Restoration Plans is received, it will be included in an addendum to this report. Appendix B provides Invasive Species Data Tables, by year; Appendix C provides Invasive Species Data Forms, by year; and Appendix D provides Invasive Species Photo Log, by year, of all of the areas where invasive species were identified.

The invasive species located within the ROW of Loops 323 and 325 include: *Microstegium vimineum* (Japanese stiltgrass), *Berberis thunbergii* (Japanese barberry), *Typha latifolia* (cattail) and *Phragmites australis* (common reed).

The tables in Appendix B are broken down by Loop 323 and Loop 325 as well as by state-owned and non-state owned land. The tables include location information, species identified, and percent coverages within the ROW. The percent cover outside of the ROW is also included where applicable. The priority classification and recommended treatment is also listed in this Appendix.

5.1 Wetland Monitoring, Fall 2014

As of the Fall 2014 monitoring event, all wetlands along Loop 323 (except between MP 10.30 and 10.80 and the area crossed by HDD, as noted previously) and Loop 325 (except the area crossed by HDD, as noted previously) have been monitored for invasive plant species. Forty-two wetlands were monitored along Loop 323. Twenty-nine wetlands were monitored along Loop 325. Table 1 below provides a summary of the data within Appendix B - Invasive Species Data Tables, by year, for each loop. Appendix B also includes the percent coverages of the invasive species along the loops. Low priority classified wetlands will continue to be monitored. Medium and High priority classified wetlands are recommend for treatment.

On Loop 323 in New Jersey, thirty-two of the forty-two wetlands monitored had invasive populations identified within the ROW. Of the thirty-two wetlands with invasive populations:

• Four wetlands are classified as high priority for invasive species treatment (W118, W119, W078, and W011);

- Nineteen wetlands are classified as medium priority for invasive species treatment including W111, W110, W115, W121, W057, W058, W123A, W123, W077, W030, W028, W022A, W021, W020, W015, W013, W003, W002A, and W002;
- Some of the medium priority areas may also contain low priority percent coverages of more than one invasive species growing within the wetland. Wetlands that contain multiple listings of priority coverages of invasive species have been counted as the higher priority in this report;
- Nine wetlands are classified as low priority for invasive species treatment including W114, W033, W059, W025A, W025, W027, W018, W016, and W003; and
- One wetland, W029, did not contain invasive species though *Phragmites australis* was noted outside of the ROW.

On Loop 325, fifteen of the twenty-nine wetlands monitored had invasive populations within the ROW. Of the fifteen wetlands with invasive populations:

- Wetland W091 is classified as a high priority for invasive species treatment;
- Wetlands W036 and W094 are classified as a medium priority for invasive species treatment; and,
- Twelve wetlands are classified as low priority for invasive species treatment including W095, W093, W067, W069A, W069, W070, W088, W085, W040, W002, W003, and W004.

Table 1. Wetland Post-Construction	Invasive Species Moi	nitoring Summary, Ye	ear 1 (Fall 2014).

Description	Loop 323 NJ Wetlands	Loop 325 Wetlands
Total number of wetlands monitored	42	29
Monitored wetlands with invasive species	32	15
Low priority monitoring areas	9	12
Medium priority treatment areas	19	2
High priority treatment areas	4	1

5.2 Waterbody Monitoring, Fall 2014

As of the Fall 2014 monitoring event, all waterbodies along Loop 323 (except between MP 10.30 and 10.80 and the area crossed by HDD, as noted previously) and Loop 325 (except the area crossed by HDD, as noted previously) have been monitored for invasive plant species. Thirty-one waterbodies were monitored along Loop 323. Sixteen waterbodies were monitored along Loop 325. Table 2 below provides a summary of the data within Appendix B - Invasive Species Data Tables, by Year, for each loop. Appendix B also includes the percent coverages of the invasive species along the loops.

On Loop 323 in New Jersey, sixteen of the thirty-one waterbodies monitored had invasive populations identified within the ROW. Of the sixteen waterbodies with invasive populations:

• Waterbody S003 is classified as a high priority for invasive species treatment;

- Thirteen waterbodies are classified as medium priority for invasive species treatment, including S107A, S105, S107B, S108A, S108, S110, S111A, S111E, S114-S114E, S033, S005, S073, and S075;
- Some of the medium priority areas may also contain low priority percent coverages of more than one invasive species growing within the waterbody. Waterbodies that contain both medium and low priority coverages of invasive species have been counted as medium priority in this report; and,
- Two waterbodies are classified as low priority for invasive species treatment including \$106 and \$108B.

On Loop 325, eight of the sixteen waterbodies monitored had invasive species populations within the ROW. Of the eight waterbodies with invasive species populations:

- Seven waterbodies are classified as medium priority for invasive species treatment including S059-S059A, S039, S042, S058-second crossing, S002, S004, and S006;
- Some of the medium priority areas also contain low priority percent coverages if there are more than one invasive species growing within the waterbody. Waterbodies that contain both medium and low priority coverages of invasive species have been counted as medium priority in this report;
- Waterbody S056 is classified as a low priority for invasive species treatment; and,
- There were no high priority areas identified on Loop 325.

Table 2. Waterbody Post-Construction Invasive Species Monitoring Summary, Year 1 (Fall 2014).

Description	Loop 323 NJ Waterbodies	Loop 325 Waterbodies
Total number of waterbodies monitored	31	16
Monitored waterbodies with invasive species	16	8
Low priority monitoring waterbodies	2	1
Medium priority treatment waterbodies	13	7
High priority treatment waterbodies	1	0

5.3 Upland and Transition Area Monitoring, Fall 2014

As of the Fall 2014 monitoring event, all upland and transition areas along Loop 323 (except between MP 10.30 and 10.80 and the area crossed by HDD, as noted previously) and Loop 325 (except the area crossed by HDD, as noted previously) have been monitored for invasive plant species. Loop 325 did not have any invasive plant populations identified in upland or transition areas as of the initial invasive monitoring session. Loop 323 in New Jersey had one location of invasive species populations identified in uplands and transition areas within the ROW. Additionally, two locations had invasive species populations identified in the area adjacent to the ROW. Table 3 below provides a summary of the data within Appendix B - Invasive Species Data Tables, by year, for each loop. Appendix B also includes the percent coverages of the invasive species along the loops.

The three locations of invasive species are located along Loop 323 at MP 8.15 alternate route ("ALT"), MP 9.30 ALT, and MP 11.10. The invasive species at MP 8.15 ALT and MP 9.30 ALT include *Microstegium vimineum* and *Berberis thunbergii*. The invasive species at MP 11.10 included *Microstegium vimineum* and *Phragmites australis*. Invasive populations located at MP 8.15 ALT and MP 9.30 ALT are growing adjacent to the construction ROW; invasive plants at MP 11.10 are growing within the ROW. Only one location (MP 11.10) is classified as a low priority problem area; however, it is recommended that all three be monitored during the next monitoring session.

Table 3. Upland and Transition Area Post-Construction Invasive Species Monitoring Summary, Year 1 (Fall 2014).

Description	Loop 323 NJ Upland and	Loop 325 Upland and
Description	Transition Areas	Transition Areas
Monitored areas with invasive species	1	0
Low priority monitoring areas	1	0
Medium priority treatment areas	0	0
High priority treatment areas	0	0
Areas with invasive populations adjacent to the	2	0
ROW	2	U

5.4 Access Road Monitoring, Fall 2014

The access roads used during construction of Loops 323 and 325 were mainly existing paved or gravel roadways. In general, there were no immediate concerns noted during the Fall 2014 monitoring event along access roads. Appendix B includes the percent coverages of the invasive plant species along the access roads. A photo log of each road is included in Appendix D – Invasive Species Photo Log, by year. Table 4 below provides a summary of the data collected. Invasive species were located along access road AR-32 (Twin Brooks Road) on Loop 323 and along access roads AR-21.05 and AR-80 (Bear Swamp Road) on Loop 325. The invasive species located along access roads AR-32 and AR-80 are likely pre-existing to construction activity as they were observed growing outside of the access road ROW. AR-21.05 is classified as medium priority and is recommended for treatment.

Table 4. Access Road Post-Construction Invasive Species Monitoring Summary, Year 1 (Fall 2014).

Description	Loop 323 NJ Access Roads	Loop 325 Access Roads
Access roads monitored	11	14
Low priority monitoring areas	0	0
Medium priority treatment areas	0	1
High priority treatment areas	0	0
Areas with invasive populations adjacent to the access road	1	1

FIGURES





