

Pilgrim Pipeline and its Environmental and Regulatory Conflicts

June 13, 2017



By
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Princeton Hydro LLC.

Pipelines in the Landscape



Both photographs attributed to Delaware Riverkeeper Network

My Objectives for this Evening

- Describe typical fallacies associated with the impact analyses related to pipeline projects
- Relate pipeline impacts to NJDEP's regulations and provide examples of impacts and failure to provide regulatory compliance
- Provide examples of recent NJDEP actions relevant to pipelines

Pilgrim Pipeline Project, NY DEIS

Pipeline projects never result in significant impacts

Because under FERC if any impact is identified it is simply dealt with by indicating that it will be mitigated

This is not the case for Pilgrim

Table ES-2 Summary of Impacts		
Resource	Impacts	
	Construction Impacts	Operation Impacts
Regional Geologic Setting	<i>Bedrock geology: minor</i> <i>Surficial Geology: negligible</i>	<i>Bedrock geology: no impact</i> <i>Surficial geology: no impact</i>
Soils	<i>Contaminated soils: minor</i> <i>Highly erodible soils: negligible</i>	<i>Contaminated soils: no impact</i> <i>Highly erodible soils: no impact</i>
Water Quality - Groundwater	<i>Groundwater quantity and quality: minor</i> <i>Sole source aquifers: no impact</i>	<i>Groundwater quantity and quality: no impact</i> <i>Sole source aquifers: no impact</i>
Water Quality – Surface Water	<i>Surface water quantity and quality: minor to moderate</i> <i>Floodplains and floodways: negligible to minor</i> <i>Sensitive waterbodies: minor</i>	<i>Surface water quantity and quality: no impact</i> <i>Floodplains and floodways: no impact</i> <i>Sensitive waterbodies: no impact</i>
Air Quality	<i>Ambient Air Quality: negligible</i> <i>Greenhouse Gas: negligible</i>	<i>Ambient Air Quality: no impact</i> <i>Greenhouse Gas: potential indirect beneficial impact if pipelines replace some barge traffic</i>
Terrestrial Vegetation	<i>Vegetation: negligible to minor</i> <i>Invasive Plant species: no impact</i>	<i>Vegetation: minor due to permanent ROW maintenance</i> <i>Invasive Plant species: negligible</i>
Terrestrial Wildlife	<i>Wildlife: minor to moderate</i> <i>Sensitive or managed wildlife habitats: no impact</i>	<i>Existing wildlife: negligible</i> <i>Sensitive or managed wildlife habitats: no impact</i>
Aquatic Resources	<i>Aquatic habitats and communities: minor to moderate</i> <i>Fisheries Resources: minor to moderate</i>	<i>Aquatic habitats and communities: no impact</i> <i>Fisheries Resources: no impact</i>
Threatened and Endangered Species	<i>Plants: minor, if habitat is determined to be present</i> <i>Wildlife: minor, if habitat is determined to be present</i>	<i>Plants: no impact</i> <i>Wildlife: no impact</i>
Wetlands	Minor to moderate for all wetland types	<i>PEM and PSS wetlands: No impact</i> <i>Forested wetlands: moderate impact with proposed mitigation</i>

Natural Resource Impacts Associated with Pipelines










DRN, TGP Pike County, PA across the Sawkill Creek. June 2011

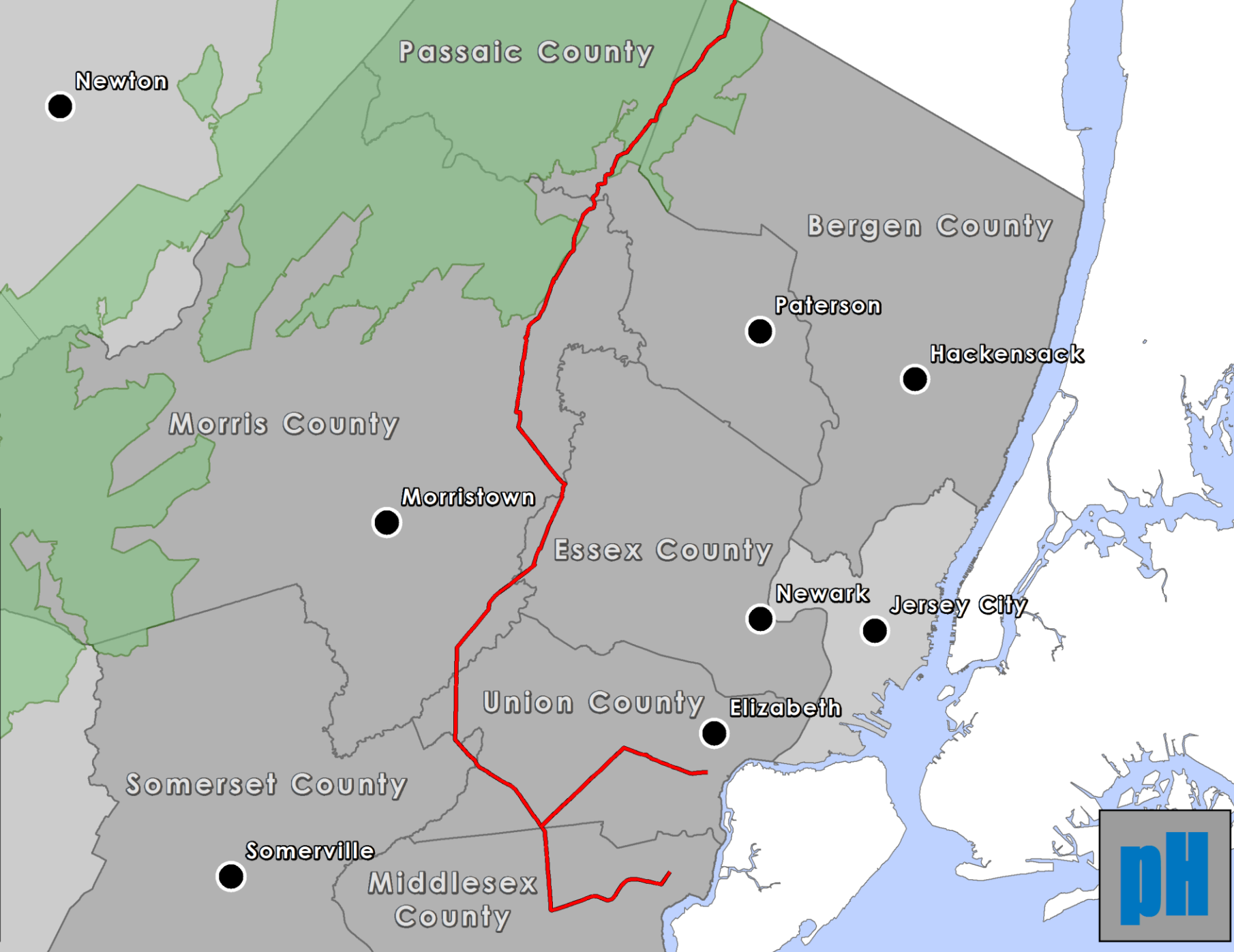
- Habitat Fragmentation
 - Fragmentation of core forest and impacts to areas sensitive species
 - Invasive species colonization
 - Loss of unique habitat
- Stream degradation
 - Direct, indirect and cumulative impacts
 - Additional impacts associated with loss of riparian zones, modified hydrology and increased water temperature
 - Impacts to antidegradation streams
- Impacts to soils through excavation and compaction as well as erosion
- Impacts to Human Use – Aesthetics, and Water supply, Sole source aquifers

Pilgrim Pipeline Overview

Legend

-  NJ County Seat
-  Proposed Pilgrim Pipeline
-  Highlands Preservation Area
-  Impacted NJ County
-  Other NJ County
-  Other State

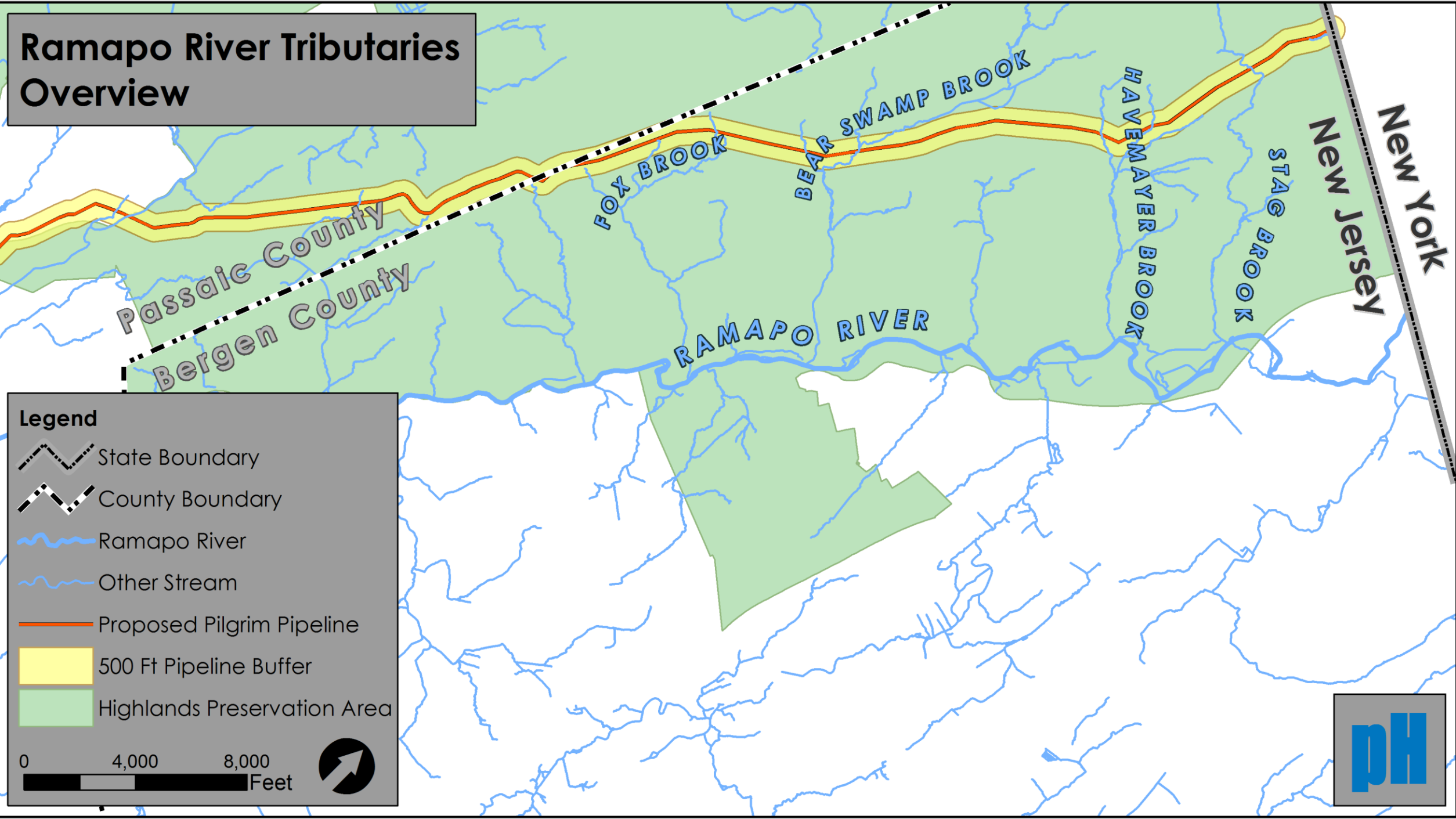
0 30,000 60,000 Feet 



Regulatory Constraints

- Highlands Water Protection and Planning Act
 - NJ Freshwater Wetlands Individual Permit, Section 401 Water Quality Certification
 - Compliance with NJ Water Quality Standards
- Flood Hazard Area Control Act Individual Permit
- Encroachment into Great Swamp will necessitate a Department of the Interior NEPA review
- Federal Historic Preservation Act
- Federal Endangered Species Act
- ***FERC is not involved***

Ramapo River Tributaries Overview



Legend

- State Boundary
- County Boundary
- Ramapo River
- Other Stream
- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Highlands Preservation Area

0 4,000 8,000 Feet



Stag & Havemayer Brook T&E Species & Water Quality

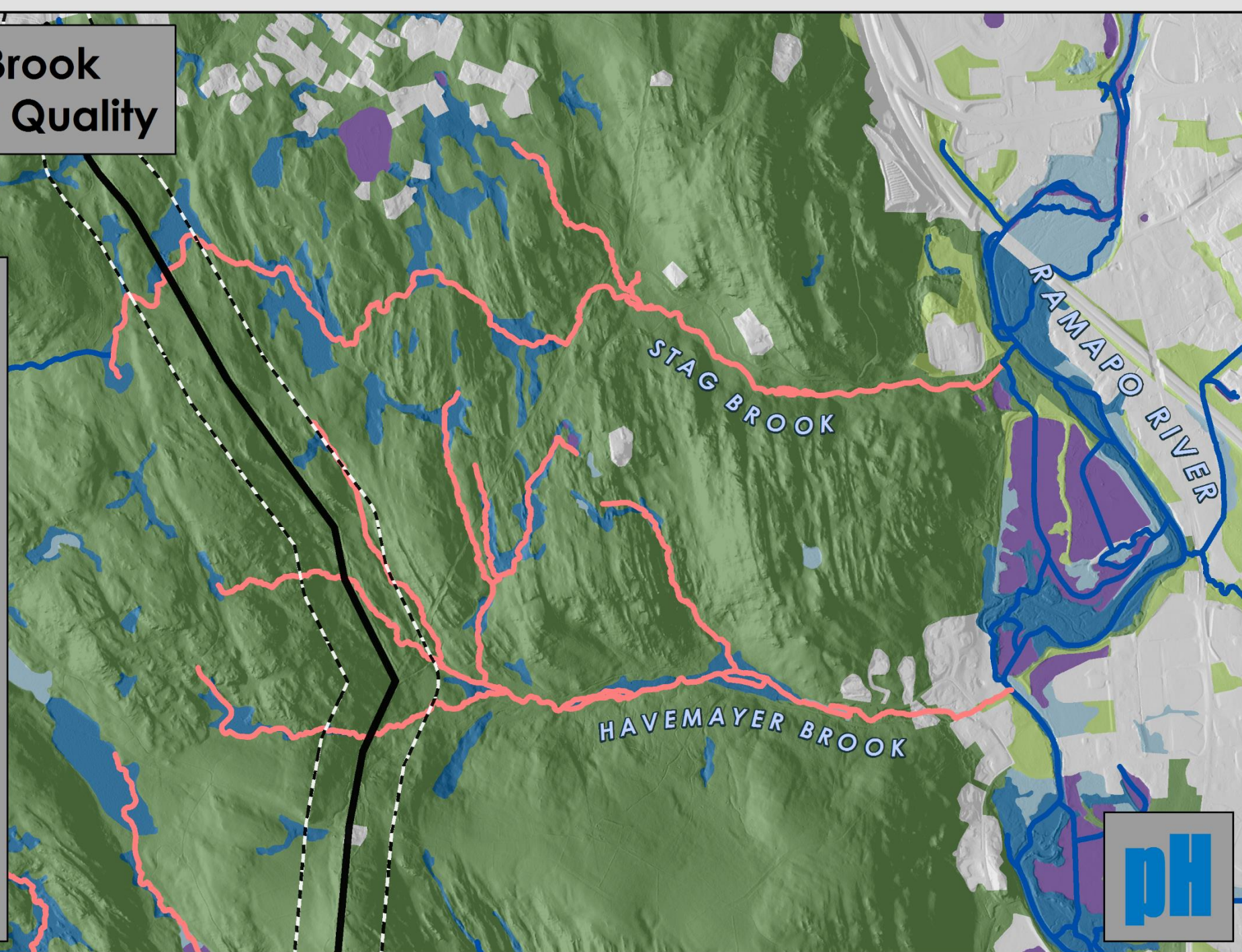
Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Category One Water
- Category Two Water

Landcape Project v3.3

- Wetland
- Wetland with State Listed T&E Species
- Wetland with Federally Listed T&E Species
- Upland with State Listed T&E Species
- Upland with Federally Listed T&E Species

0 1,500 3,000 Feet



pH

Stag & Havemayer Brook Steep Slopes

Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Ramapo River
- Other Stream

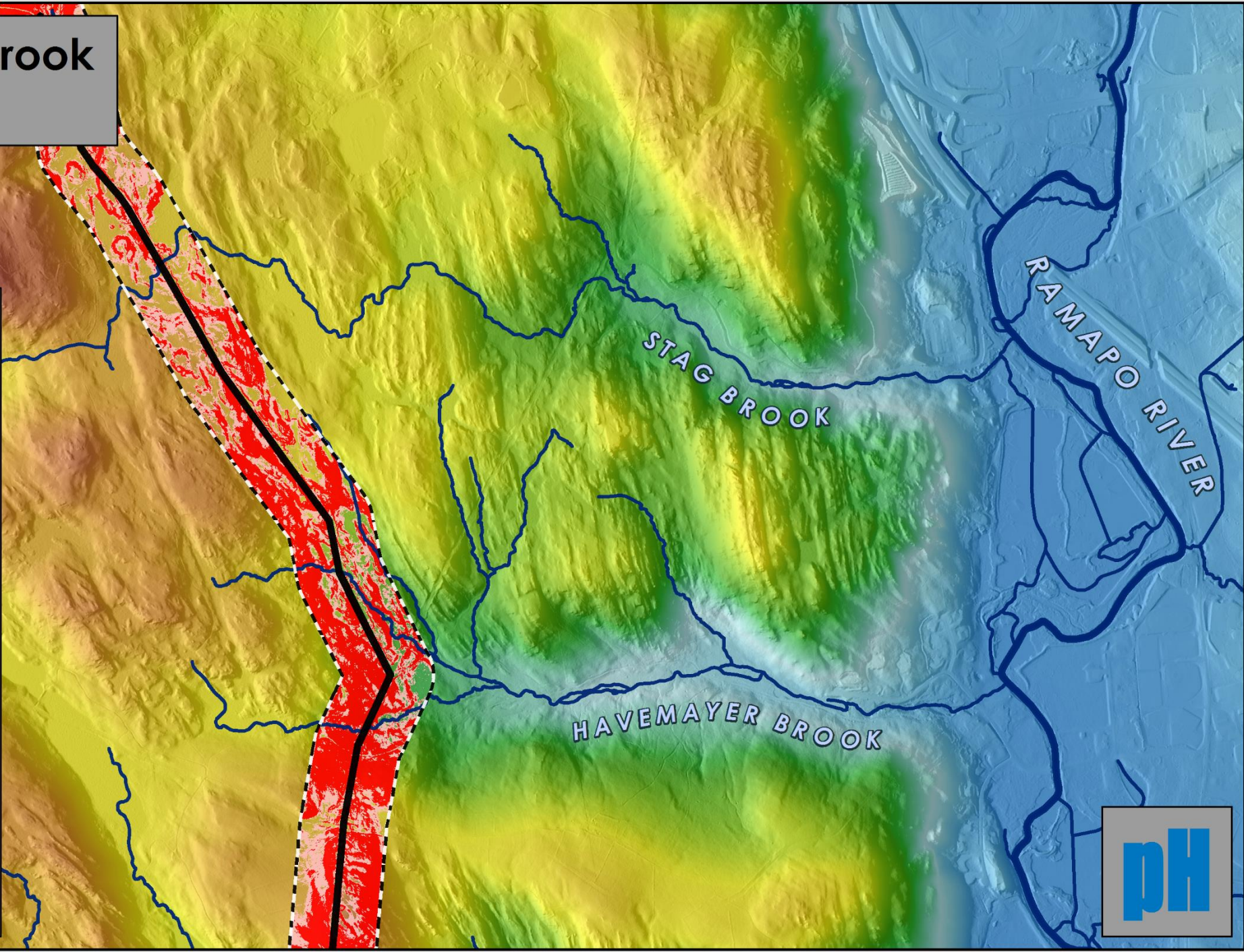
Percent Slope

- 10% - 20%
- >20%

Elevation (NAVD88 - Feet)

- High : 1167.52
- Low : 241.1

0 1,500 3,000 Feet



Soil Loss Analysis for PennEast Pipeline in Hunterdon County

Analysis Area	Parameter	Existing	Proposed	Percent Change
1	TSS (tons/yr)	0.17	0.43	153
	CN	78	89	--
	Potential Soil Loss (tons/ac/yr)	8.55	32.63	282
2	TSS (tons/yr)	0.15	0.58	287
	CN	79	89	--
	Potential Soil Loss (tons/ac/yr)	7.31	32.14	340
3	TSS (tons/yr)	0.8	1.99	149
	CN	76	88	--
	Potential Soil Loss (tons/ac/yr)	7.19	26.81	273

*TSS, total suspended solids, load calculated using UAL analysis.

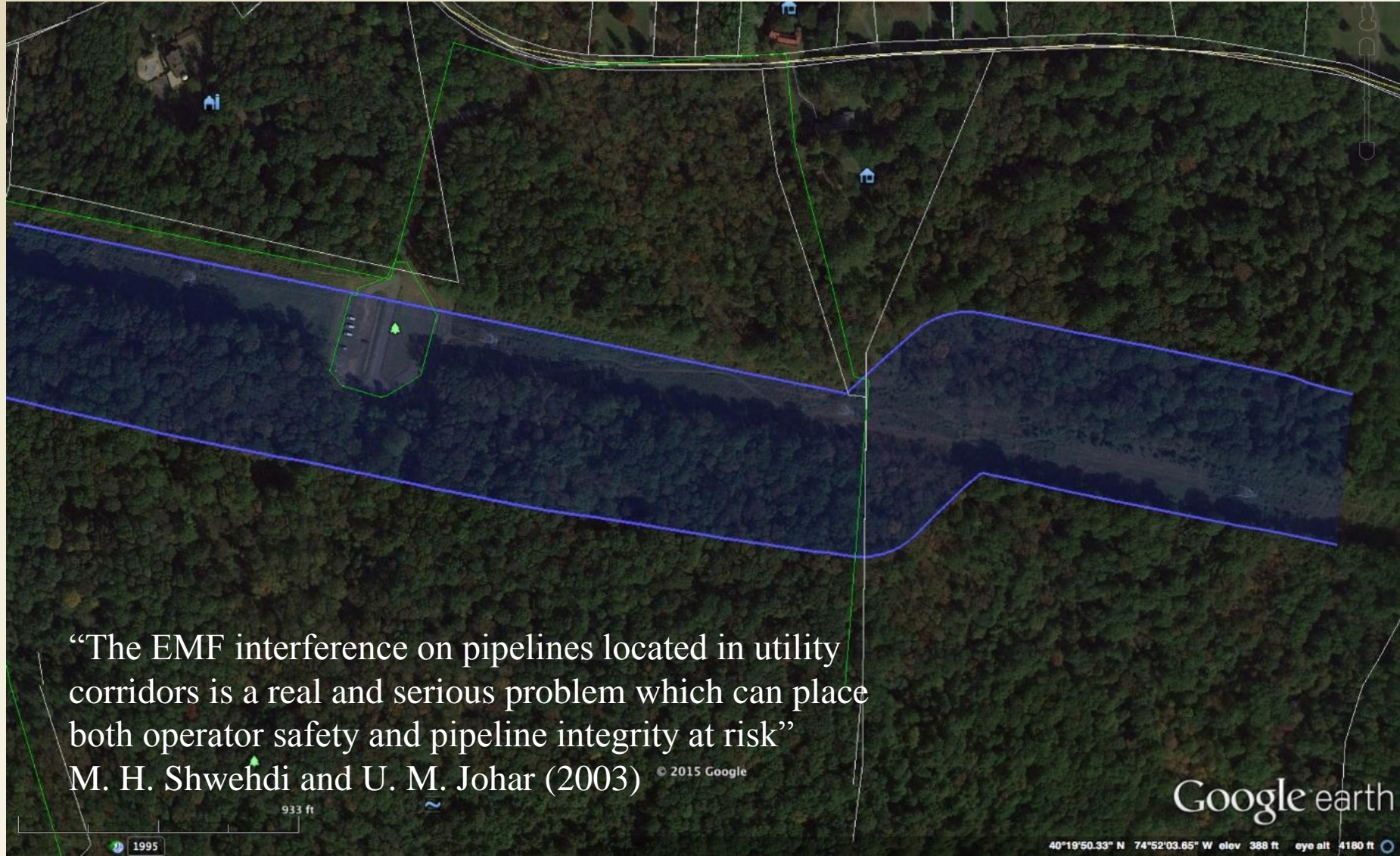
*CN, curve number, calculations based on SCS Runoff Curve Number Method.

*Average potential soil loss calculated using the Revised Universal Soil Loss Equation (RUSLE).

Poor site
restoration
due to
shallow
bedrock
TG
Pipeline



Co-location of pipelines in Transmission line corridors?



Bear Swamp Brook T&E Species & Water Quality

Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Category One Water
- Category Two Water

Landcape Project v3.3

- Wetland
- Wetland with State Listed T&E Species
- Wetland with Federally Listed T&E Species
- Upland with State Listed T&E Species
- Upland with Federally Listed T&E Species

0 1,500 3,000 Feet



Bear Swamp Brook



Bear Swamp Brook Steep Slopes

Legend

 Proposed Pilgrim Pipeline

 500 Ft Pipeline Buffer

 Ramapo River

 Other Stream

Percent Slope

 10% - 20%

 >20%

Elevation (NAVD88 - Feet)

 High : 1145.15

Low : 230.14

0 1,500 3,000
Feet



BEAR
SWAMP

MACMILLAN BROOK

RAMAPO RIVER

BEAR SWAMP BROOK

PH

Fox Brook T&E Species & Water Quality

Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Category One Water
- Category Two Water

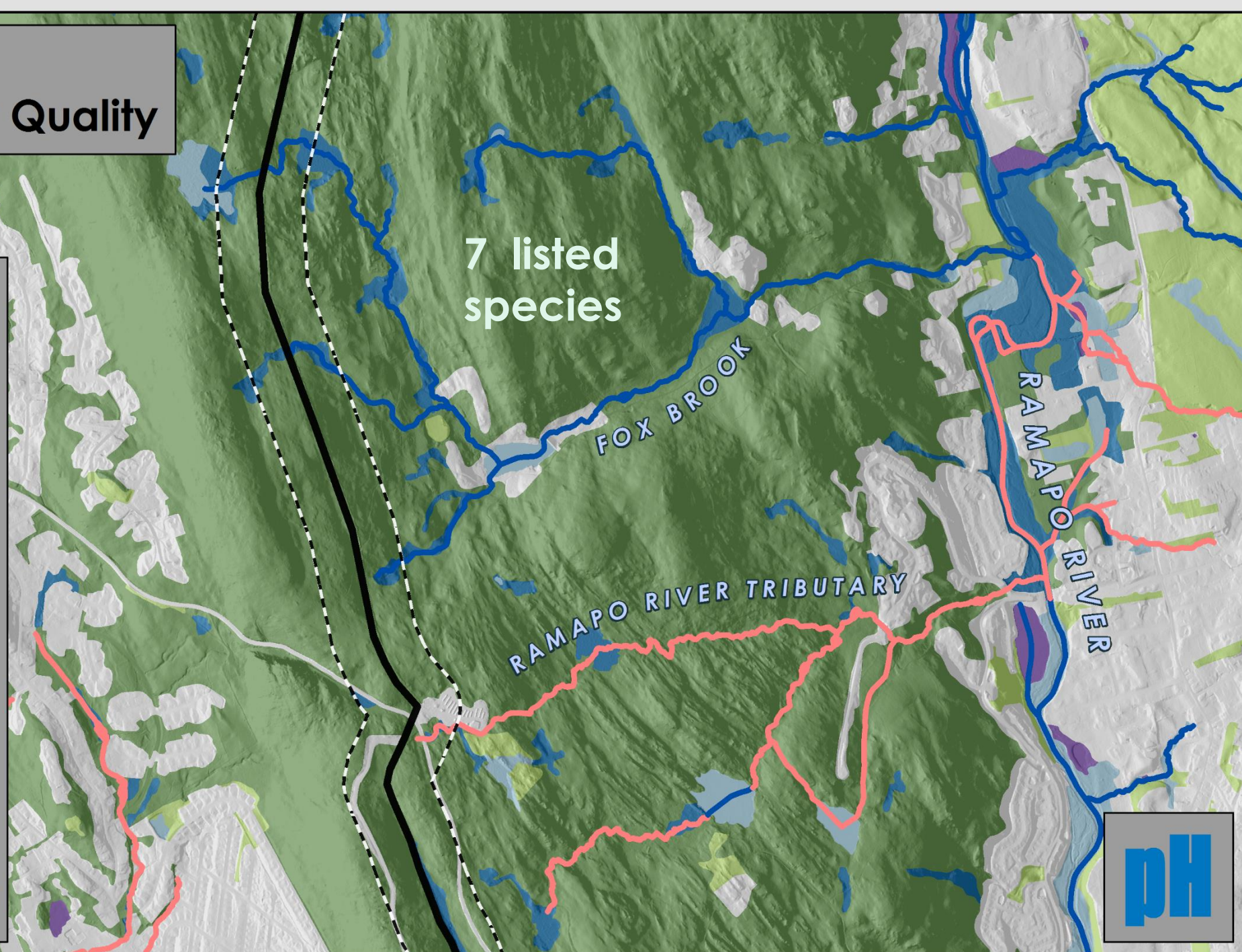
Landcape Project v3.3

- Wetland
- Wetland with State Listed T&E Species
- Wetland with Federally Listed T&E Species
- Upland with State Listed T&E Species
- Upland with Federally Listed T&E Species

0 1,500 3,000 Feet



7 listed species



pH

Fox Brook Steep Slopes

Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Ramapo River
- Other Stream

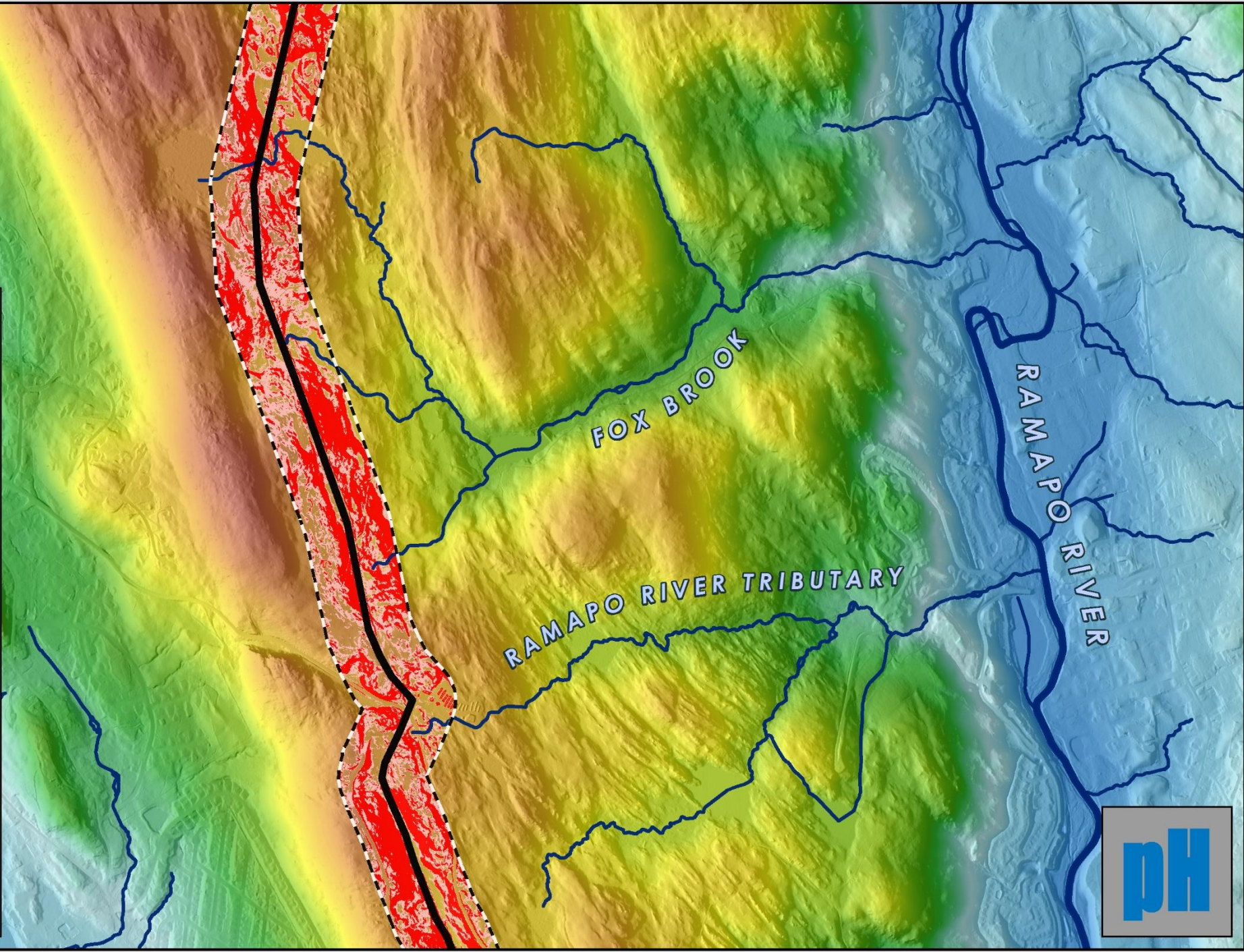
Percent Slope

- 10% - 20%
- >20%

Elevation (NAVD88 - Feet)

- High : 1094.82
- Low : 213.98

0 1,500 3,000 Feet



Ramapo Lake & Meadow Brook T&E Species & Water Quality

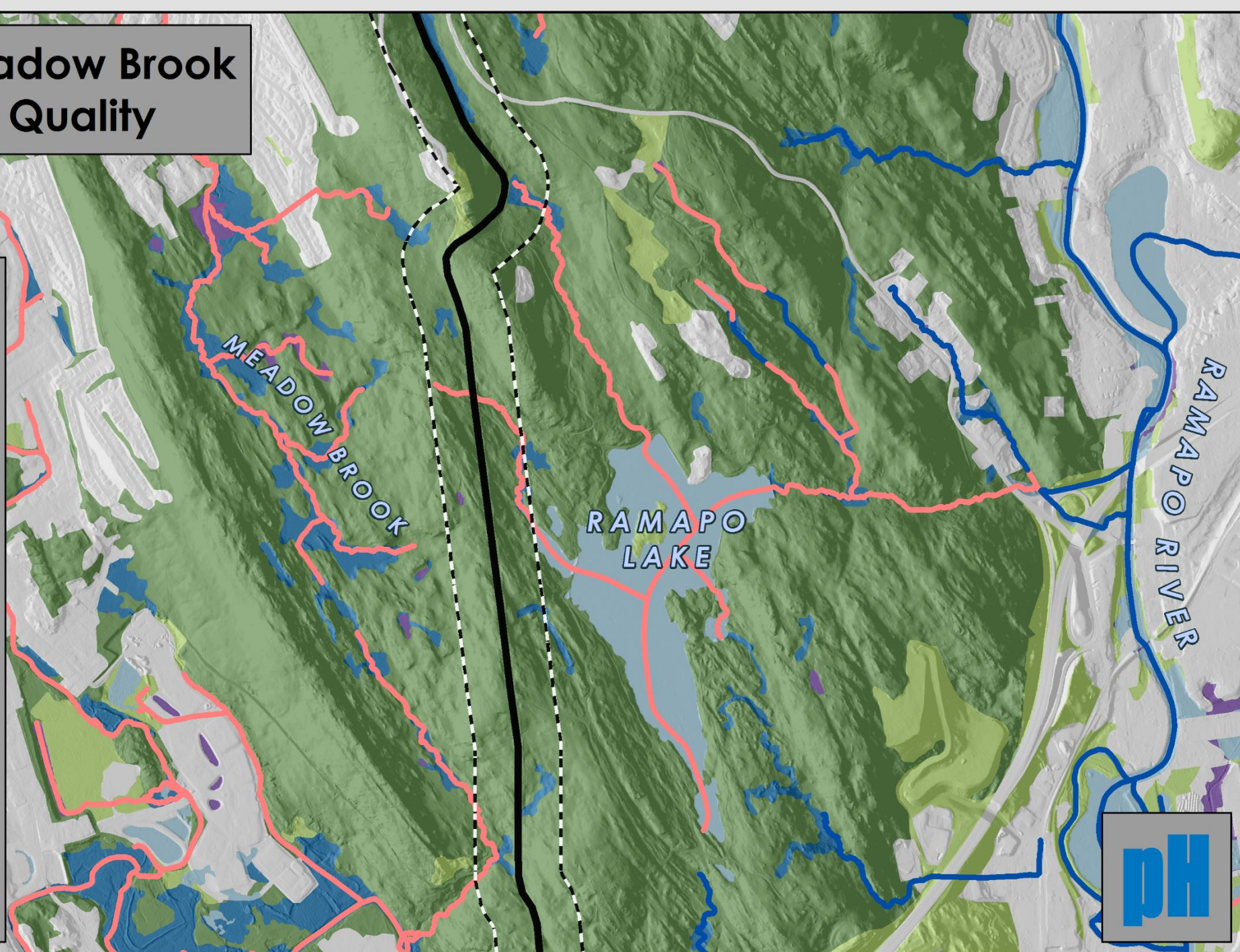
Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Category One Water
- Category Two Water

Landcape Project v3.3

- Wetland
- Wetland with State Listed T&E Species
- Wetland with Federally Listed T&E Species
- Upland with State Listed T&E Species
- Upland with Federally Listed T&E Species

0 1,500 3,000 Feet



Ramapo Lake & Meadow Brook Steep Slopes

Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Ramapo River
- Other Stream

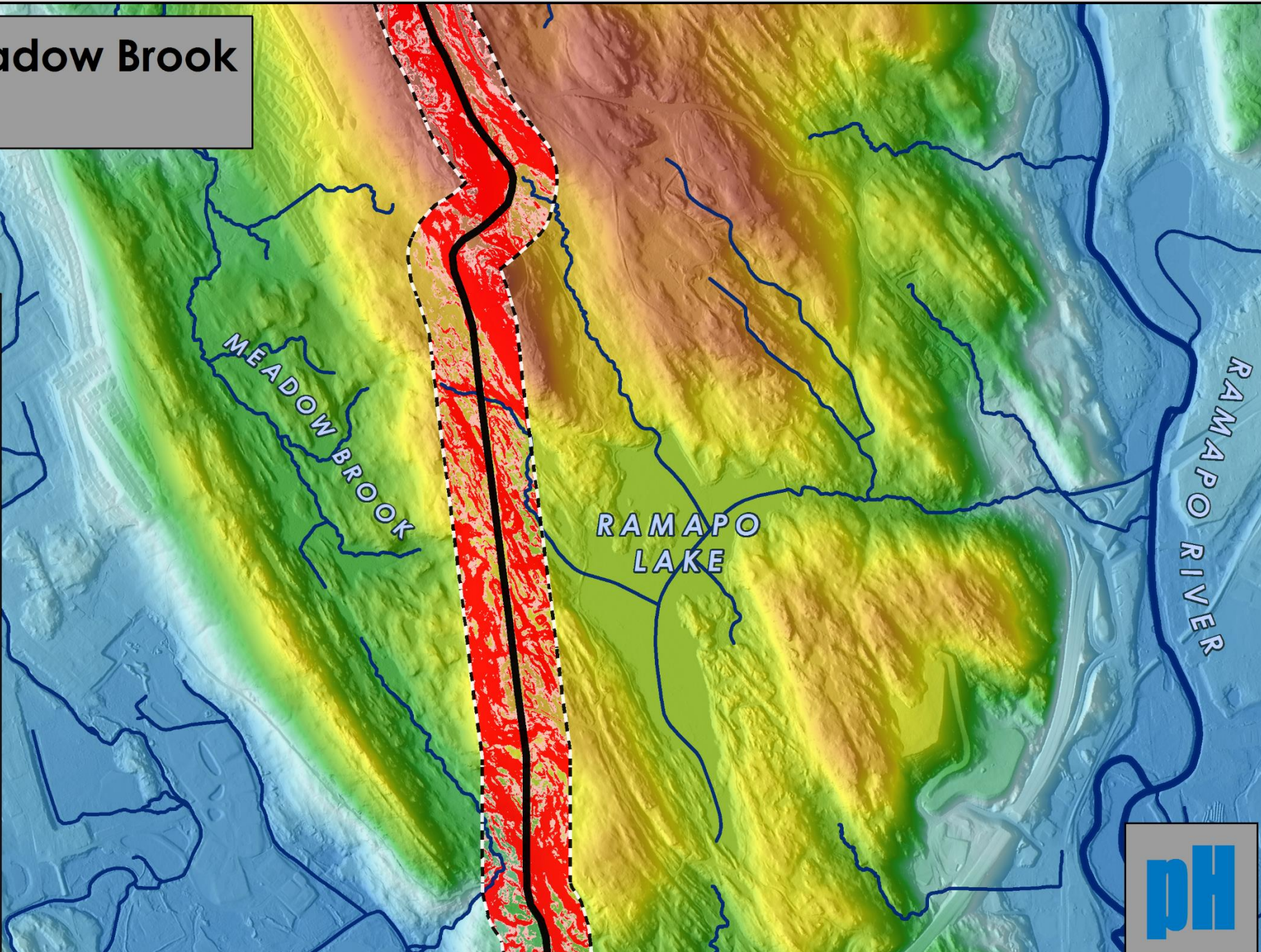
Percent Slope

- 10% - 20%
- >20%

Elevation (NAVD88 - Feet)

- High : 968.26
- Low : 200

0 1,500 3,000 Feet








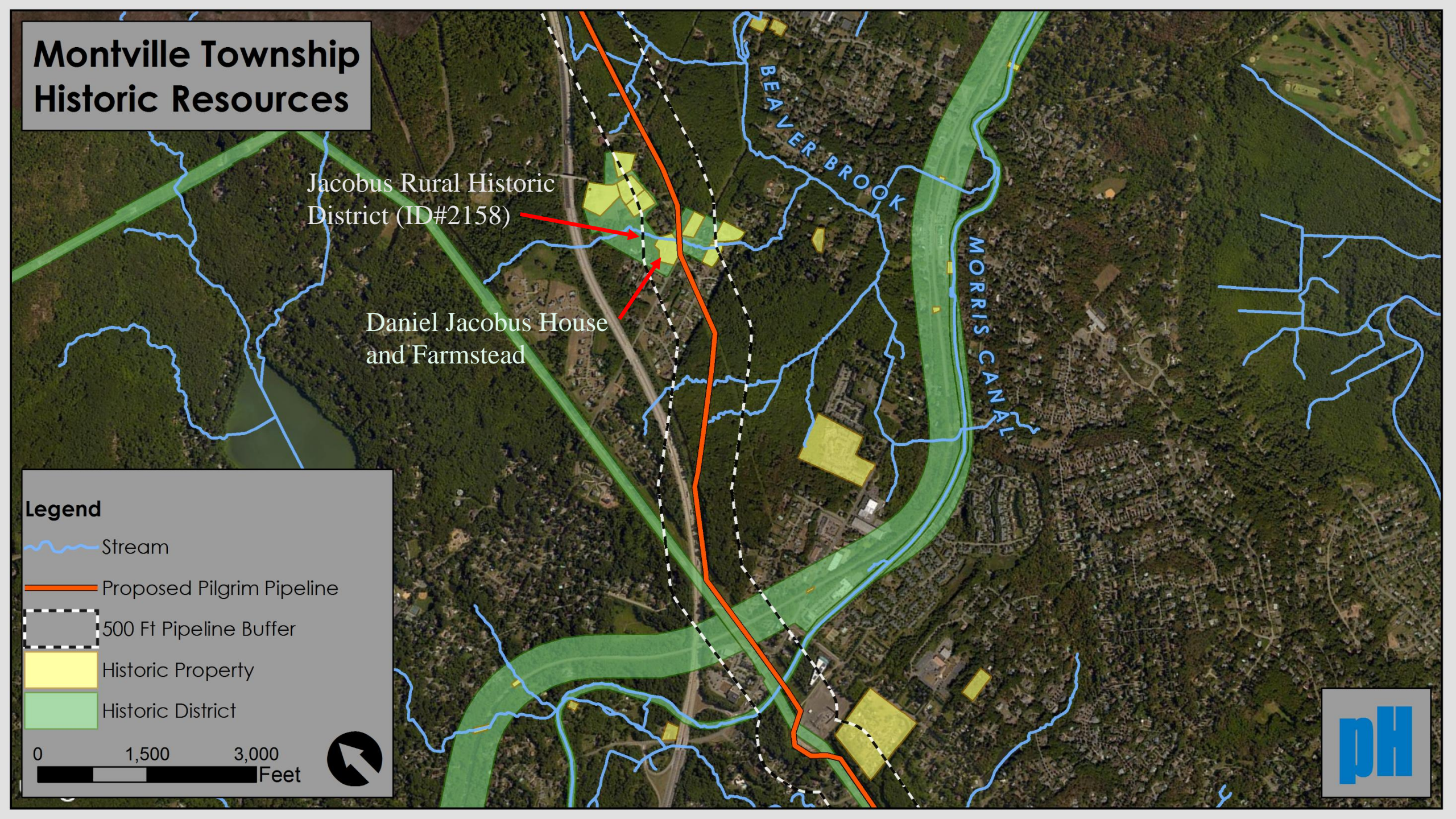
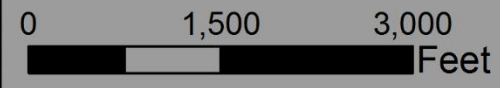
Montville Township Historic Resources

Jacobus Rural Historic
District (ID#2158)

Daniel Jacobus House
and Farmstead

Legend

-  Stream
-  Proposed Pilgrim Pipeline
-  500 Ft Pipeline Buffer
-  Historic Property
-  Historic District



Troy Meadows & Hatfield Swamp T&E Species & Water Quality

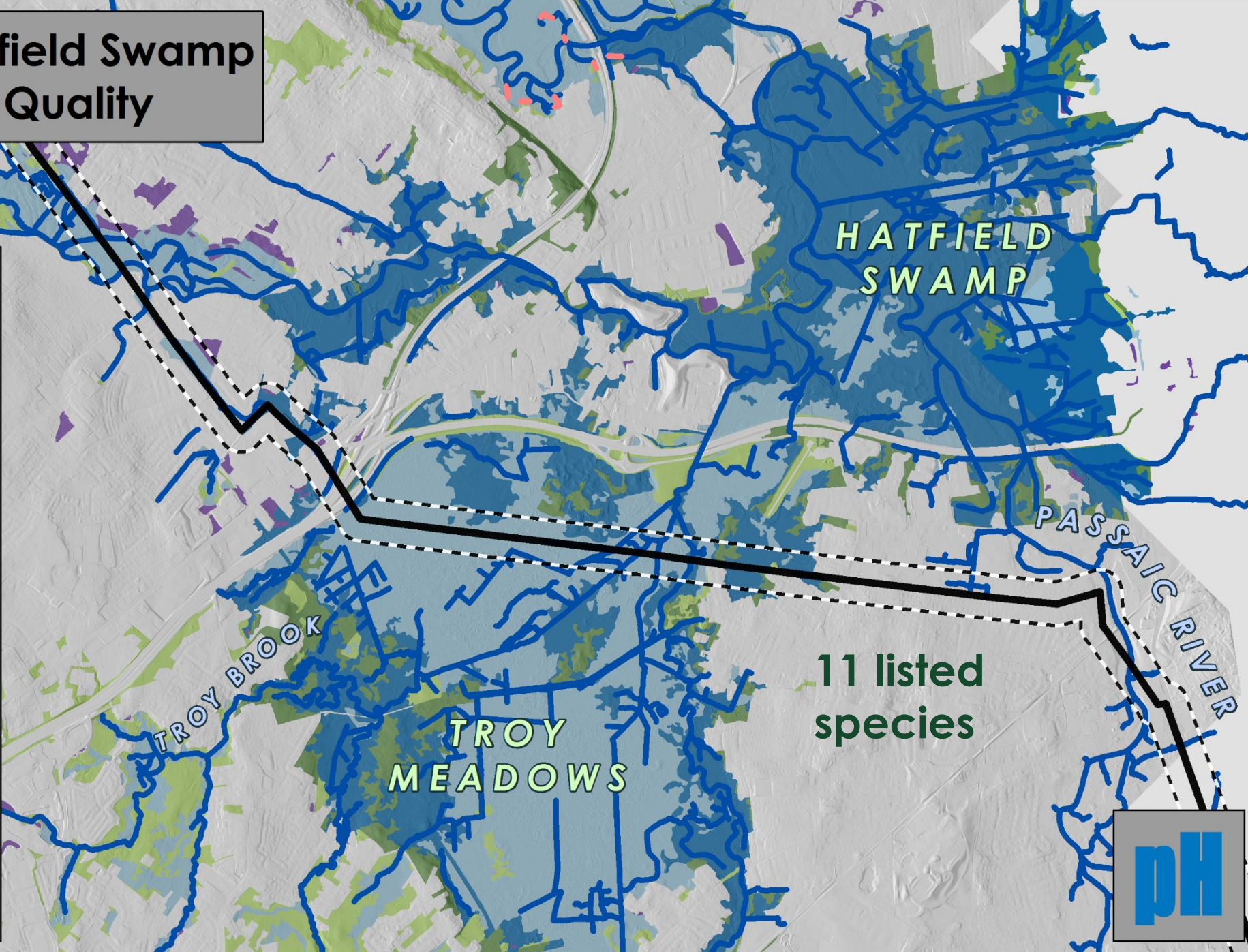
Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Category One Water
- Category Two Water

Landcape Project v3.3

- Wetland
- Wetland with State Listed T&E Species
- Wetland with Federally Listed T&E Species
- Upland with State Listed T&E Species
- Upland with Federally Listed T&E Species

0 3,000 6,000 Feet



Commonwealth Water Company Reservoir Conflict

Elevation
Approximately
170 Feet

Elevation
Approximately
210 Feet

RESERVOIR
NUMBER 3

Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Lake
- Stream

Elevation (NAVD88 - Feet)

High : 376.153

Low : 162.664

0 1,500 3,000 Feet



Freshwater Wetlands Protection Act

If the Federal Guidance set forth in the 404(b)1 guidelines is followed as municipal and private water supplies that consist of surface water or ground water which is directed to the intake of a municipal or private water supply system must be considered in the impact analysis of a proposed project.

404(b)1 Subpart F—Potential Effects on Human Use Characteristics, § 230.50 Municipal and private water supplies.

It is also worth looking into local Wellhead Protection Plans.

Black Brook & Great Swamp NWR T&E Species & Water Quality

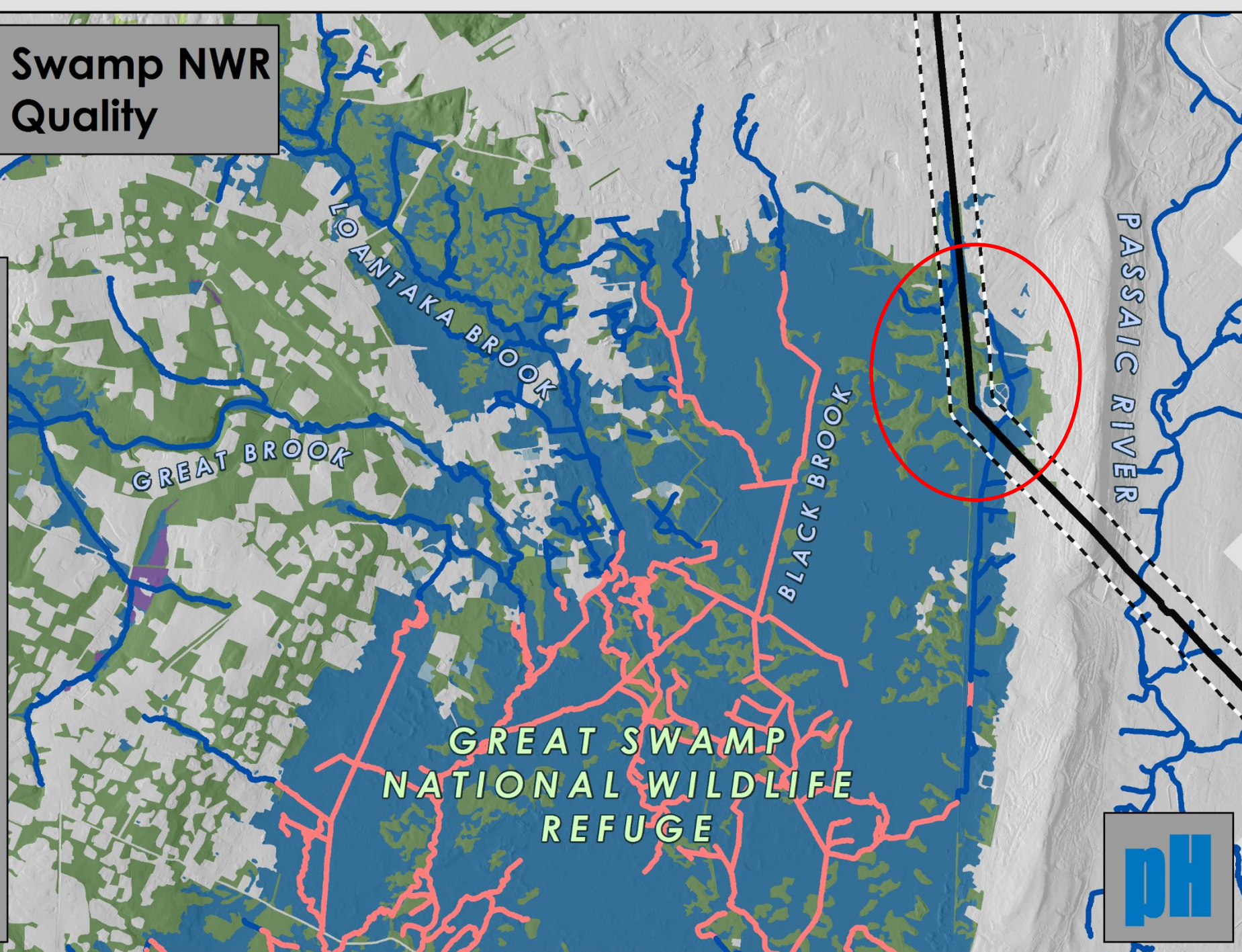
Legend

- Proposed Pilgrim Pipeline
- 500 Ft Pipeline Buffer
- Category One Water
- Category Two Water

Landcape Project v3.3

- Wetland
- Wetland with State Listed T&E Species
- Wetland with Federally Listed T&E Species
- Upland with State Listed T&E Species
- Upland with Federally Listed T&E Species

0 3,000 6,000 Feet



Black Brook & Great Swamp NWR Steep Slopes

5 listed
species

Legend

— Proposed Pilgrim Pipeline

⋯ 500 Ft Pipeline Buffer

⋯ Ramapo River

⋯ Other Stream

Percent Slope

10% - 20%

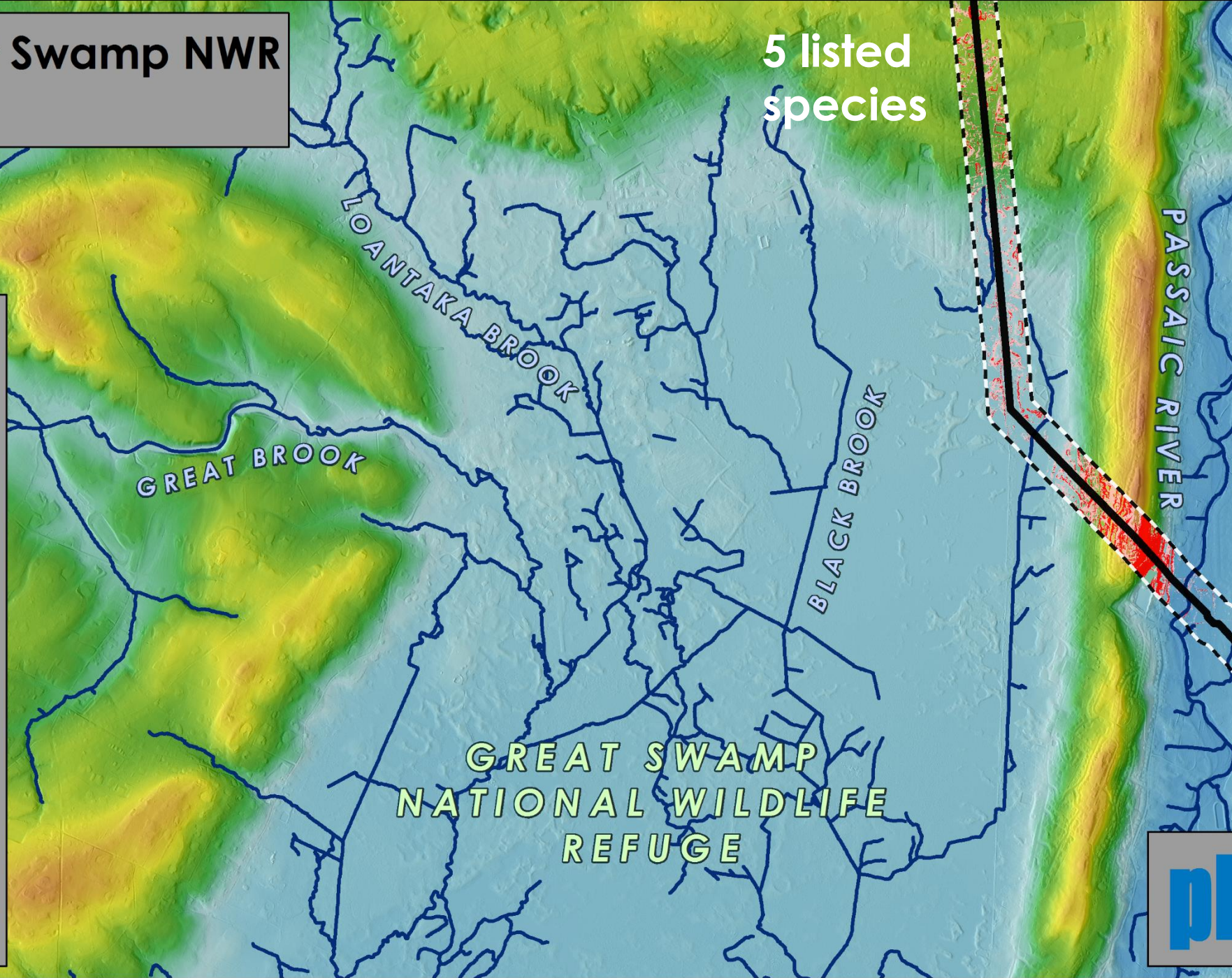
>20%

Elevation (NAVD88 - Feet)

High : 733.634

Low : 191.963

0 3,000 6,000
Feet



USFWS Property

If they
encroach
will need to
have the
USFWS
prepare a
NEPA
Analysis

The screenshot shows a GIS interface with a map. A red boundary outlines a property, and a cyan boundary shows an encroachment. A pop-up window titled "Information about the Property:" provides the following details:

Information about the Property:	
Street Address	300 WESTGATE CENTER DR.
City and State	HADLEY, MA
Zip Code	01035
Land Value	68,300
Last Year's Taxes	0.00
Size (Acres)	4.55
Year of Construction	0000

Map data not yet available

data not available

data not available

data not available

NJ Office of Information Technology (NJ/OIT)

Freshwater Wetlands Protection Act

This project will likely require an Individual Freshwater Wetland Permit

- Has no practicable alternatives which would have less adverse impact on the aquatic environment or would not involve a freshwater wetland or SOW.
- Would not violate an applicable water quality standard
 - At least 13 Category 1 antidegradation streams along route
- Is it in the public interest as it relates to the public's interest in natural resource preservation as well as in the interest of the property owner/applicant ?
-and other issues including but not limited to conflicts with endangered and threatened species and historic and archaeological sites

Endangered and Threatened species

Stag & Havemayer Brook	Bear Swamp Brook	Fox Brook	Ramapo Lake & Meadow Brook	Troy Meadows	Black Brook & Great Swamp
Arrowhead Spiketail	Arrowhead Spiketail	Arrowhead Spiketail	Arrowhead Spiketail	American Bittern	Barred Owl
Barred Owl	Barred Owl	Bald Eagle	Bald Eagle	Bald Eagle	Blue-spotted Salamander
Bobcat	Bobcat	Barred Owl	Barred Owl	Barred Owl	Bog Turtle
Broad-winged Hawk	Broad-winged Hawk	Bobcat	Bobcat	Blue-spotted Salamander	Cooper's Hawk
Brown Thrasher	Brown Thrasher	Broad-winged Hawk	Broad-winged Hawk	Bobcat	Great Blue Heron
Brush-tipped Emerald	Brush-tipped Emerald	Brown Thrasher	Brown Thrasher	Bobolink	Indiana Bat
Cerulean Warbler	Cerulean Warbler	Brush-tipped Emerald	Brush-tipped Emerald	Great Blue Heron	Northern Myotis
Cooper's Hawk	Cooper's Hawk	Cerulean Warbler	Cerulean Warbler	Least Bittern	Red-shouldered Hawk
Eastern Box Turtle	Eastern Box Turtle	Cooper's Hawk	Cooper's Hawk	Northern Harrier	Wood Thrush
Gray Petaltail	Gray Petaltail	Eastern Box Turtle	Eastern Box Turtle	Northern Myotis	
Great Blue Heron	Great Blue Heron	Gray Petaltail	Gray Petaltail	Red-headed Woodpecker	
Hooded Warbler	Hooded Warbler	Great Blue Heron	Great Blue Heron	Red-shouldered Hawk	
Northern Copperhead	Northern Copperhead	Hooded Warbler	Hooded Warbler	Savannah Sparrow	
Northern Myotis	Northern Myotis	New England Bluet	New England Bluet	Wood Thrush	
Red-shouldered Hawk	Red-shouldered Hawk	Northern Copperhead	Northern Copperhead	Wood Turtle	
Sable Clubtail	Sable Clubtail	Northern Myotis	Northern Myotis		
Timber Rattlesnake	Timber Rattlesnake	Red-shouldered Hawk	Red-shouldered Hawk		
Veery	Veery	Sable Clubtail	Sable Clubtail		
Wood Thrush	Williamson's Emerald	Timber Rattlesnake	Timber Rattlesnake		
Wood Turtle	Wood Thrush	Veery	Veery		
Worm-eating Warbler	Wood Turtle	Williamson's Emerald	Williamson's Emerald		
	Worm-eating Warbler	Wood Thrush	Wood Thrush		
		Wood Turtle	Wood Turtle		
		Worm-eating Warbler	Worm-eating Warbler		

Alternatives Analysis

Key elements to regulatory review and compliance

- 404B(1) Guidelines – regulatory basis for the preparation of an alternatives analysis. *This is a minimum requirement/standard.*
- Avoid, minimize and as a last resort mitigate impacts
- Also requires an analysis of impacts based on “factual determinations”
- Lets look at a few examples

Special Aquatic Sites

- **Sec. 230.40 Sanctuaries and refuges.**
- (a) Sanctuaries and refuges consist of areas designated under State and Federal laws or local ordinances to be managed principally for the preservation and use of fish and wildlife resources.
Such as the Great Swamp NWR
- practicable alternatives that do not involve special aquatic sites are presumed to be available

404(b)1 Subpart H

Actions to minimize adverse impacts

§ 230.75 Actions affecting plant and animal populations.

Minimization of adverse effects on populations of plants and animals can be achieved by:

- (a) Avoiding changes in water current and circulation patterns which would interfere with the movement of animals;
- (b) Selecting sites or managing discharges to prevent or avoid creating habitat conducive to the development of undesirable predators or species which have a competitive edge ecologically over indigenous plants or animals;
- (c) Avoiding sites having unique habitat or other value, including habitat of threatened or endangered species;

Pilgrim's NY DEIS Wetland Impact Analysis

- Temporary minor impacts to wetlands and adjacent areas resulting from Project construction could include soil disturbance, temporary alteration of hydrology, and loss of vegetation.
- Although wetlands would be directly affected by trenching and other construction activities, they would be restored in-place upon completion of construction.
- Impact minimization techniques would vary and would be employed based on the methodology used to construct the wetland crossing. No overall loss of wetland resources would occur, since restoration of workspaces following construction would restore soils, hydrology and allow for the re-growth of wetland vegetation.

In reality there are many impacts

- Disturbance associated with the installation of the pipeline. 296 wetland crossings (9.2 linear miles), 29.7 acres forested wetland, 564.7 acres of forest removal
- Habitat conversion, edge impacts including cowbird parasitism and invasive plant species
 - increased light and higher temperature
 - Modified soil structure as a result of compaction. Olson and Doherty (University of Wisconsin, 2011) found that soils within pipeline corridors had higher bulk density, lower depth to refusal and lower soil moisture.
 - Increased stormwater runoff

Soil Loss Analysis for PennEast Pipeline in Hunterdon County

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	CN	78	89	--
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*TSS, total suspended solids, load calculated using UAL analysis.

*CN, curve number, calculations based on SCS Runoff Curve Number Method.

*Average potential soil loss calculated using the Revised Universal Soil Loss Equation (RUSLE).

**Minimal to
no impacts?**



DRN, TGP Pike County, PA across the Sawkill Creek. June 2011

Antidegradation Streams in NJ

NJAC 7:9B Surface Water Quality Standards

- Category One (C1). C1 waters are designated through rulemaking for protection **from measurable changes in water quality** because of their Exceptional Ecological Significance, Exceptional Water Supply, Exceptional Recreation, and Exceptional Fisheries to protect and maintain their water quality, aesthetic value, and ecological integrity.

Highlands Approvals Required

- Highlands Preservation Area Approval (HPAA)
- Environmental constraints
 - Open water and riparian buffers
 - Steep slopes
 - forests
 - Endangered and threatened species habitat

Satisfaction of these rules will be difficult, alternatives analysis will be required

Last time we met with the NJDEP they made it clear that a route through the Highlands would not be approved.

NJDEP Position on other Pipelines

- Impacts to endangered and threatened species
 - Threatened and endangered species that may be impacted by the proposed pipeline “must be fully surveyed prior to a review of a land use application”.
 - “Penneast must make every effort to minimize impacts to threatened and/or endangered species and their habitat within and adjacent to the proposed right-of-way.”

continued

- DEP strongly encourages PennEast to complete all surveys prior to submitting an applications to DEP for any permit or approval
- If PennEast cannot successfully bore under streams, then PennEast must first avoid the resources by exploring all viable alternatives.
- The DEP strongly encourages PennEast to submit an application for an LOI at least 1 year prior to submittal of an application.

**THANK
YOU**

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