Appendix III/IV.D
Water Resources

SHUMAKER
Consulting Engineering & Land Surveying, D.P.C.

June 23, 2017

Mr. Chris Robbins
Senior Technical Director
AKRF, Inc.
34 South Broadway, Suite 401
White Plains, NY 10601

Re: Draft Wetland Screening
Hudson Highlands Fjord Trail
Beacon and Cold Spring
Dutchess and Putnam Counties, New York

Dear Mr. Robbins:

In accordance with our Scope of Services, Shumaker Consulting Engineering & Land Surveying, D.P.C. (SCE) performed a wetland screening along the proposed Hudson Highlands Fjord Trail in Beacon and Cold Spring, New York. The limits of the screening encompassed a 100-foot bandwidth around the trail alignment provided by AKRF. The field effort was performed Monday May 15 through Thursday May 18, 2017. Portions of trail sections 3.2b and 3.1b were not reviewed due to access constraints. Trail sections 1.3b and 1.2 also have not yet been reviewed due to access issues; a formal wetland delineation will be conducted to support the design of segment 1.2 Shoreline between Little Stony Point and Breakneck Ridge, as opposed to the wetland screening conducted elsewhere. The northern section (3.3a) was not reviewed as it has already been assessed by others.

Prior to the field survey effort, a number of sources were consulted to obtain background information. These sources included: the NYSDEC Environmental Resource Mapper (ERM), the NWI Map published by the United States Fish and Wildlife Service (USFWS), the Dutchess and Putnam Counties Soil Survey Maps, and aerial photography.

The NWI Maps depict five wetlands within the 100-ft bandwidth and several more in the surrounding area. The ERM depicts one NYSDEC Freshwater Wetland (Wetland WT-1) in the vicinity of trail sections 3.3a and 3.2b. Mapped NWI and NYSDEC wetlands are shown on the attached Figure 1.

The county soil surveys show that the project area contains several soil types. The soil surveys describe each unit's hydric rating, farmland classifications, and much more. The mapped soil units are depicted on Figure 1.

The trail corridor traverses several ecological communities, the most prevalent of which are oak-tulip tree forest, successional southern hardwoods, mowed lawn with trees, and paved road/path. A detailed description of each community along the corridor and a figure depicting the locations of each community are included in our Ecological Screening summary letter, dated June 23, 2017. This letter also includes a discussion of the flora and fauna observed along the trail and a discussion of threatened and endangered species.

This wetland screening effort resulted in the identification of 25 potential wetlands and 24 streams, not including Fishkill Creek. The wetland boundaries and stream lines are shown on Figure 1 and are included in the digital GIS file transmitted on June 12, 2017. Wetland boundaries, as identified, were determined based on a combination of GPS points, a prevalence of hydrophytic vegetation, and surface wetland hydrology indicators. Subsurface hydrological indicators and soils were not assessed during the screening effort. The centerlines of stream channels were located at the trail crossing and as far up- and down-stream as feasible. The stream lines depicted on Figure 1 represent these features. Actual streams typically continue to the review area edge and beyond. A brief discussion of each resource follows. Anticipated connections to NYSDEC or NWI wetlands are also mentioned.

Potential Wetland A (trail section 3.2b, Figure 1A) appeared to be a scrub-shrub/forested wetland complex dominated by green ash (*Fraxinus pennsylvanica*), dogwood (*Cornus* sp.), common reed (*Phragmites australis*), and sensitive fern (*Onoclea sensibilis*). Wetland A continues beyond the limits of the project corridor and is likely to be a part of mapped NYSDEC Wetland WT-1 and have a connection to an NWI wetland. This wetland is anticipated to be under the jurisdiction of both the USACE and NYSDEC.

Potential Wetland B (trail section 3.2b, Figure 1A) appeared to be an emergent wetland dominated by creeping Jenny (*Lysimachia nummularia*), bulrush (*Scirpus* sp.), and goldenrod (*Solidago* sp.). Wetland B continues beyond the limits of the project corridor and is likely to be a part of mapped NYSDEC Wetland WT-1 and have a connection to an NWI wetland. This wetland is anticipated to be under the jurisdiction of both the USACE and NYSDEC.

Potential Wetland C (trail section 3.2b, Figure 1A) appeared to be a scrub-shrub/forested wetland complex dominated by green ash, creeping Jenny, aster (*Symphyotrichum* sp.), smartweed (*Persicaria* sp.), willow (*Salix* sp.), Japanese honeysuckle (*Lonicera japonica*), and greater celandine (*Chelidonium majus*). Wetland C may have an off-site connection to mapped NYSDEC Wetland WT-1 and an NWI wetland. This wetland is anticipated to be under the jurisdiction of both the USACE and NYSDEC.

Potential Wetland D (trail section 3.2b, Figure 1A) appeared to be an emergent ditch wetland dominated by spotted jewelweed (*Impatiens capensis*), common reed, curly dock (*Rumex crispus*), and purple loosestrife (*Lythrum salicaria*). Wetland D does not correspond with any mapped NWI wetlands, and there are no apparent connections to any mapped NYSDEC wetlands. This wetland is anticipated to be isolated and not under the jurisdiction of either the USACE or NYSDEC.

Potential Wetland E (trail section 3.2a, Figure 1A) appeared to be an emergent ditch wetland dominated by common reed. Wetland E does not correspond with any mapped NWI wetlands, and there are no apparent connections to mapped NYSDEC wetlands. This wetland is drained by a culvert to an unknown location. It is anticipated this this provides a hydrologic connection with other wetland or stream resources. For this reason, this wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland F (Grandview Ave., Figure 1A) appeared to be an emergent ditch wetland dominated by sedge (*Carex* sp.) and late goldenrod (*Solidago gigantea*). Wetland F does not correspond with any mapped NWI wetlands and there are no apparent connections to mapped NYSDEC wetlands. This wetland lies between a culvert outlet and a catch basin. It is anticipated that this catch basin drains to Stream 1. This wetland would therefore be under the jurisdiction of the USACE.

Potential Wetlands G, H, and I (trail section 3.1b, Figure 1B) appeared to be emergent seep wetlands where jewelweed typically dominated. Wetlands G, H and H do not correspond with any mapped NWI wetlands, and there are no apparent connections to mapped NWI or NYSDEC wetlands. All three of these

wetlands are adjacent to or drain to Stream 3. These wetlands would therefore be under the jurisdiction of the USACE.

Potential Wetland J (trail section 3.1b, Figure 1B) appeared to be an emergent/scrub-shrub wetland dominated by spice bush (*Lindera benzoin*), skunk cabbage (*Symplocarpus foetidus*), and sensitive fern. There are no apparent connections to mapped NWI or NYSDEC wetlands. Wetland J is adjacent to Stream 3 and would therefore be under the jurisdiction of the USACE.

Potential Wetland K (trail section 3.1B, Figure 1B) appeared to be an emergent wetland dominated by skunk cabbage, jewelweed, and Canadian clearweed (*Pilea pumila*). Wetland K does not correspond with any mapped NWI wetlands, and there are no apparent connections to any mapped NYSDEC wetlands. This wetland continues off-site where it likely connects to other aquatic resources. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland L (trail section 3.1b, Figure 1B) appeared to be an emergent wetland dominated by jewelweed, skunk cabbage, and Japanese stilt grass (*Microstegium vimineum*). Wetland L does not correspond with any mapped NWI wetlands, and there are no apparent connections to any mapped NYSDEC wetlands. Wetland L is anticipated to connect off-site to other aquatic resources, and therefore be under the jurisdiction of the USACE.

Potential Wetland M (trail section 3.1b, Figure 1B) appeared to be a scrub-shrub/forested wetland dominated by spice bush, goldenrod, Japanese stilt grass, jewelweed, sedge, skunk cabbage, and silver maple (*Acer saccharinum*). Wetland M does not correspond with any mapped NWI wetlands and there are no apparent connections to mapped NYSDEC wetlands. This wetland continues off-site where it likely connects to other aquatic resources. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland N (trail section 3.1b, Figure 1C) appeared to be a forested wetland dominated by eastern cottonwood (*Populus deltoides*) and poison ivy (*Toxicodendron radicans*). Wetland N does not correspond with any mapped NWI wetlands, and there are no apparent connections to mapped NYSDEC wetlands. This wetland continues off-site where it likely connects to other aquatic resources. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland O (trail section 3.1b, Figure 1C) appeared to be a scrub-shrub wetland dominated by spice bush and common buckthorn (*Rhamnus cathartica*). Wetland O does not correspond with any mapped NWI wetlands and there are no apparent connections to any NWI or NYSDEC wetlands. This wetland continues off-site where it likely connects to other aquatic resources. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland P (trail section 3.1b, Figure 1C) appeared to be a forested wetland dominated by eastern red cedar (*Juniperus virginiana*) and common reed. Wetland P continues off-site beyond the project corridor and may correspond with a mapped NWI wetland to the west. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland Q (trail section 3.1b, Figure 1C) appeared to be a scrub-shrub wetland dominated by silky dogwood (*Cornus amomum*) and common reed. Wetland Q continues off-site beyond the project corridor and may ultimately correspond with one or two mapped NWI wetlands to the west. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland R (trail section 3.1b, Figure 1C) appeared to be a scrub-shrub wetland dominated by silky dogwood and jewelweed. Wetland R continues off-site beyond the project corridor and may correspond with a mapped NWI wetland to the west. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland S (trail section 2.2a, Figure 1D) appeared to be an emergent wetland dominated by skunk cabbage, jewelweed, and poison ivy. Wetland S does not correspond with any mapped NWI wetlands, and there are no apparent connections to mapped NYSDEC wetlands. This wetland continues off-site where it likely connects to other aquatic resources. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland T (trail section 2.1a, Figure 1E) appeared to be an emergent wetland dominated by sensitive fern. Wetland T does not correspond with any mapped NWI wetlands and there are no apparent connections to mapped NYSDEC wetlands. This wetland continues off-site where it likely connects to other aquatic resources. This wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland U (trail section 2.1a, Figure 1D) appeared to be an emergent ditch wetland dominated by sensitive fern and reed canary grass (*Phalaris arundinacea*). Wetland U does not correspond with any mapped NWI wetlands, and there are no apparent connections to mapped NYSDEC wetlands. This wetland appears to be isolated and may therefore not under the jurisdiction of either the USACE or NYSDEC. This would have to be further investigated and coordinated during later phases of the project.

Potential Wetland V (trail section 2.1a, Figure 1E) appeared to be an emergent ditch wetland dominated by sedge and late goldenrod. Wetland V does not correspond with any mapped NWI wetlands and there are no apparent connections to mapped NYSDEC wetlands. This wetland appears to be isolated and may therefore not under the jurisdiction of either the USACE or NYSDEC. This would have to be further investigated and coordinated during later phases of the project

Potential Wetland W (Route 9D, Figure 1C) appeared to be an emergent wetland dominated by jewelweed and buttercup (*Ranunculus* sp.) Wetland W does not correspond with any mapped NWI wetlands and there are no apparent connections to mapped NYSDEC wetlands. This wetland is fed by a culvert and continues off-site where it is anticipated to connect to other aquatic resources. Therefore, this wetland is anticipated to be under the jurisdiction of the USACE.

Potential Wetland X (trail section 1.1, Figure 1G) appeared to be a tidal marsh dominated by narrowleaf cattail (*Typha angustifolia*) and common arrowhead (*Sagittaria latifolia*). Wetland X connects to an NWI wetland to the west. This wetland is anticipated to be under the jurisdiction of the USACE. Additional review and coordination with the USACE will be necessary to determine whether NYSDEC would assert jurisdiction over this wetland as a tidal wetland associated with the Hudson River.

Potential Wetland Y (trail section 1.1, Figure 1G) appeared to be an emergent wetland dominated by common reed. Wetland Y drains via a culvert under Fair Street and possesses a connection to Stream 23 and a mapped NWI wetland to the west. Therefore, this wetland is anticipated to be under the jurisdiction of the USACE.

Four perennial streams were identified; Streams 2, 12, 13, and Fishkill Creek. These streams were identified in trail sections 2.1b, 3.1a, and 3.2a, and are shown on Figures 1B-D. The NYSDEC identifies Stream 12 as Gordons Brook and Stream 13 as Wades Brook. Stream 2 is not mapped or named by the NYSDEC. Perennial streams flow nearly always and often support aquatic macroinvertebrates such as mayfly larvae, stonefly larvae, and caddisfly larvae. Substrates are typically larger-grained, such as gravel, cobble, boulder, or even bedrock. Streams 2, 12, and 13 are all Class C Standard C water bodies.

Therefore, they are not considered NYSDEC "protected" streams. Fishkill Creek would be "protected" by NYSDEC due to its classification as a navigable waterbody. Fishkill Creek is also a Traditionally Navigable Water and would therefore be under the jurisdiction of the USACE. Streams 2, 12 and 13 are Relatively Permanent Waters, and would also be under the jurisdiction of the USACE.

Eight intermittent streams were identified along the trail corridor; Streams 1, 3, 10, 11, 15, 17, 21, and 24. These streams were identified in trail sections 3.1b, 9D, and 1.1, and are shown on Figures 1B, 1C, 1E, and 1G. Intermittent streams occasionally run dry for periods during dry seasons. Aquatic macroinvertebrates are sometimes supported. Substrates are typically smaller-grained or mixed, such as cobble, gravel, sand, and silt. These intermittent streams are Relatively Permanent Waters, and are anticipated to be under the jurisdiction of the USACE.

Thirteen ephemeral streams were identified along the trail corridor; Streams 4, 5, 6, 7, 8, 9, 14, 16, 18, 19, 20, 22, and 23. These streams were identified along trail sections 3.1b, 2.2a, 2.1a, 1.1, and Route 9D, and are shown on Figures 1B-E and 1G. Ephemeral streams typically flow only in response to precipitation events. Aquatic macroinvertebrates are not typically supported. Substrates are typically small-grained, or unsorted. Silt and detritus are common. The USACE typically does not assert jurisdiction over ephemeral streams if there is no significant nexus to a Traditionally Navigable Water (TNW). Streams 4, 14, 16, 18, 19, and 20 do not appear to have a significant nexus. Streams 5, 6, 7, 8, 9, 22, and 23 have hydrologic connections to wetlands or other streams and are therefore anticipated be considered jurisdictional by the USACE.

The screening effort is suitable for planning purposes; however, a formal wetland delineation would be necessary to accurately identify the boundaries of each noted potential wetland and collect the vegetation, hydrology, and soils data necessary to complete data sheets and coordinate with NYSDEC and USACE. After a formal delineation is performed, a Jurisdictional Determination (JD) and Boundary Validation would need to be requested from the USACE and NYSDEC respectively during later phases of project development. A Preliminary JD assumes that all on-site wetlands and surface waters are regulated. An Approved JD differentiates each resource as either jurisdictional or non-jurisdictional. Typically, isolated wetlands and ephemeral streams are not jurisdictional. Discharges of dredged or fill material into Waters of the United States (i.e. jurisdictional wetlands and streams) for the construction of a recreational multi-use trail would need to be authorized by Nationwide Permit (NWP) #14 – *Linear Transportation Projects*, assuming impacts do not exceed the NWP thresholds for wetland and stream impacts. It is important to note that regardless of the NWP thresholds for wetland impacts, permanent impacts greater than 0.10-acre require mitigation.

A NYSDEC Wetland Boundary Validation would need to be obtained to determine if Wetlands A, B, and/or C would be considered part of Wetland WT-1. A NYSDEC Article 24 Permit would be required if there are any proposed impacts to Wetland WT-1 or its corresponding 100-ft adjacent area. A NYSDEC Article 15 Permit would be required if there are any proposed impacts to the bed and banks of Fishkill Creek. A NYSDEC Individual Section 401 Water Quality Certification may not be required if a USACE NWP #14 is needed to authorize wetland impacts since a blanket Water Quality Certification was approved for that NWP. The project must meet all of the general requirements of the Certification for it to apply, including discharges of no more than ¼-acre and stream disturbances of no more than 300 feet. If the project fails to meet these or any of the general conditions, an Individual Water Quality Certification would be required.

If you have any questions or require additional information please do not hesitate to contact me.

Very truly yours,

SHUMAKER CONSULTING ENGINEERING
& LAND SURVEYING, D.P.C.

Kelly J. Saladis
Senior Managing Environmental Scientist
Enclosures

N

Figure 1A

Figure 1B

Figure 1C

Figure 1D

Figure 1E

Figure 1F

Figure 1G

Figure 1H

Legend

Trail Alignment

Identified Streams

Potential Wetlands

FIGURE 1
WETLAND SCREENING OVERVIEW MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

SHUMAKER
Consulting Engineering & Land Surveying, D.P.C.

0 0.25 0.5 1 Miles

1 inch = 2,000 feet
1:24,000

County Coverage: Dutchess & Putnam

Client Name: AKRF

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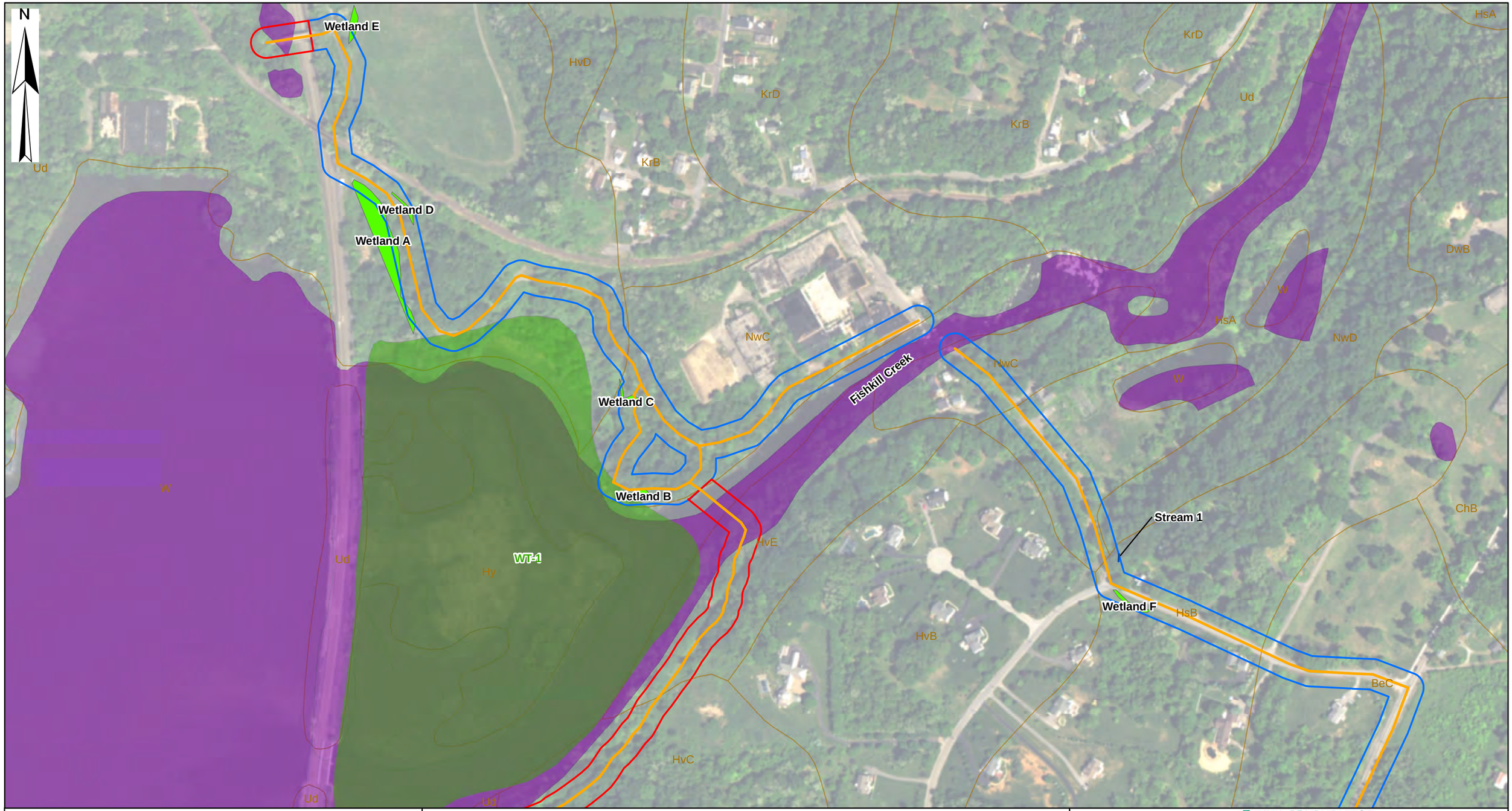


Trail Alignment
Not Reviewed
Reviewed
Potential Wetlands
NYSDEC Wetlands
NWI Wetlands
HuB Soil Map Units
Identified Streams

FIGURE 1A
WETLAND SCREENING DETAIL MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

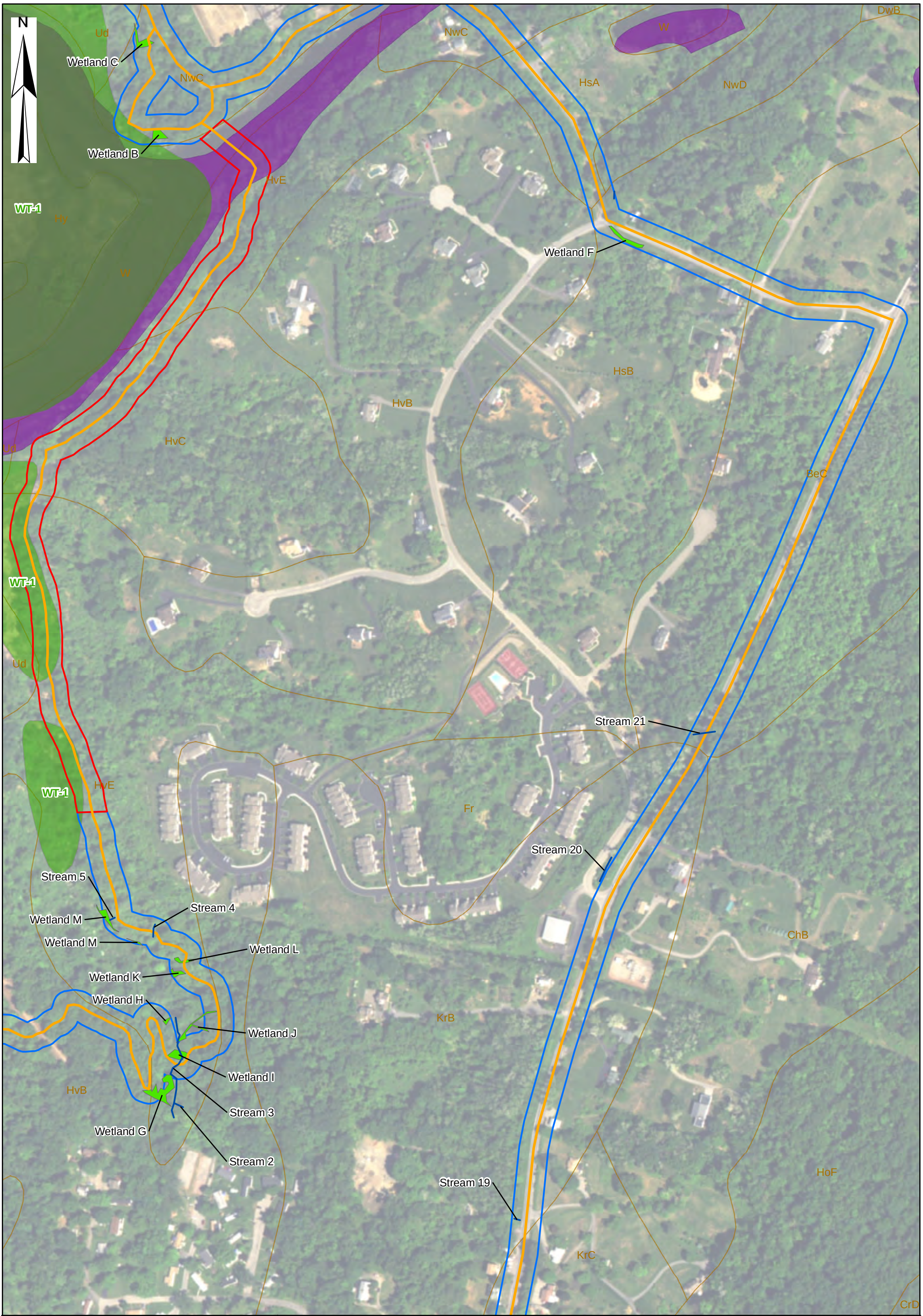
SHUMAKER
Consulting Engineering & Land Surveying, D.P.C.

0 150 300 600 Feet
1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

Path: E:\2016\16286 Fjord Trail\Graphics\Environmental\GIS\Fig 1A Wetland Screening.mxd



Legend

- Trail Alignment
- Not Reviewed
- Reviewed
- Potential Wetlands
- NYSDEC Wetlands
- NWI Wetlands
- HuB Soil Map Units
- Identified Streams

FIGURE 1B
WETLAND SCREENING OVERVIEW MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

SHUMAKER Consulting Engineering & Land Surveying, D.P.C.

0 150 300 600 Feet

1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

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N

Wetland L
Wetland K
Wetland H
Wetland J
Stream 2
Wetland I
Wetland G
Stream 3
Wetland N
Wetland O
Stream 6
Wetland O
Stream 8
Stream 7
Stream 9
Wetland P
Wetland Q
Wetland R
Stream 10
Stream 11
Stream 19
Wetland W
Stream 12
Stream 12

HvE
HvE
HvB
KrB
KrB
KrC
ChB
HoF
CrD
Ud
Ud
Ud
Ud
W

Legend

- Trail Alignment
- Not Reviewed
- Reviewed
- Potential Wetlands
- NYSDEC Wetlands
- NWI Wetlands
- HuB Soil Map Units
- Identified Streams

FIGURE 1C
WETLAND SCREENING OVERVIEW MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

SHUMAKER
Consulting Engineering & Land Surveying, D.P.C.

0 150 300 600 Feet

1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

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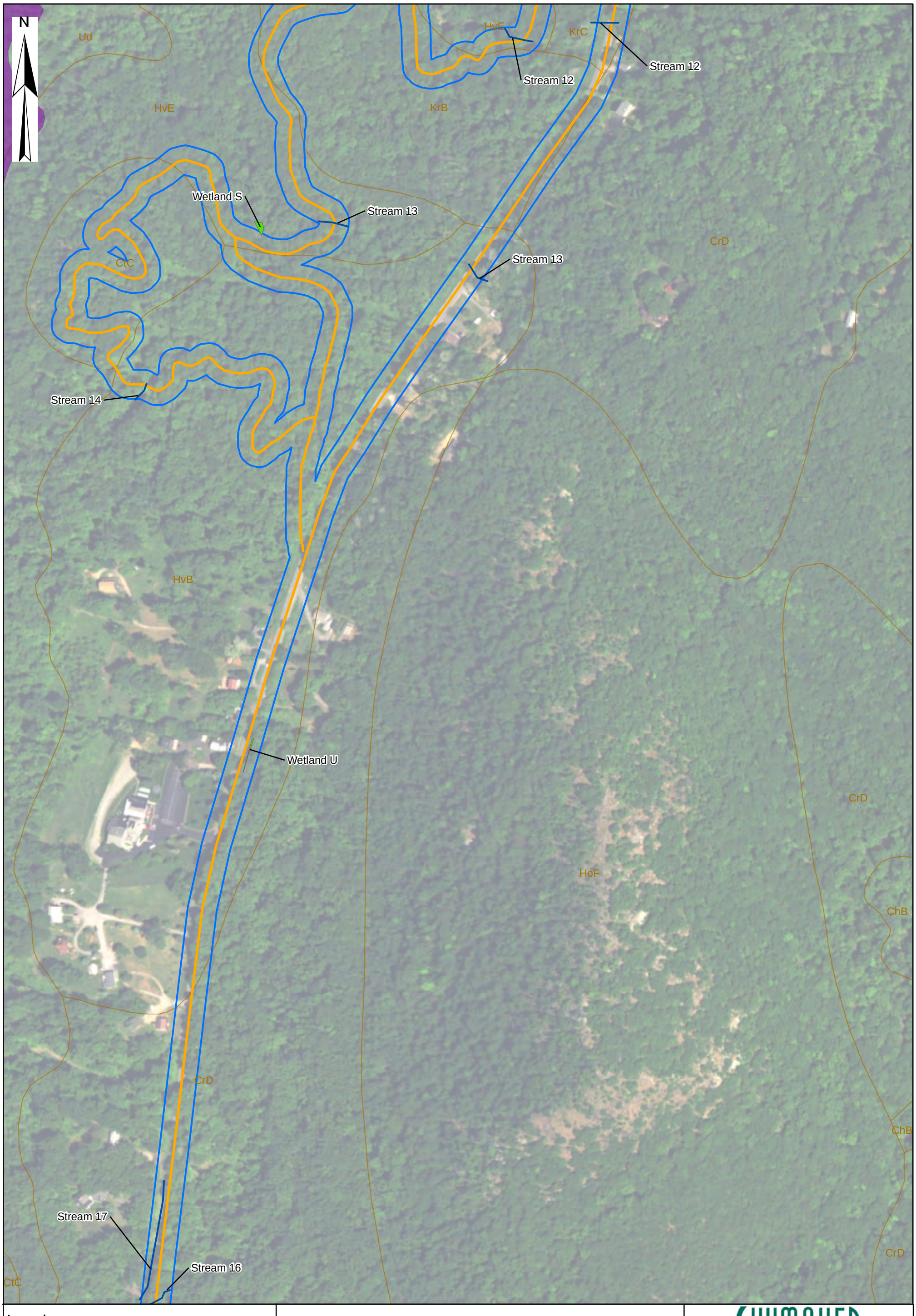

Legend

- Trail Alignment
- Not Reviewed
- Reviewed
- Potential Wetlands
- NYSDEC Wetlands
- NWI Wetlands
- HuB Soil Map Units
- Identified Streams

FIGURE 1D
WETLAND SCREENING OVERVIEW MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

SHUMAKER
Consulting Engineering & Land Surveying, D.P.C.

0 150 300 600 Feet

1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

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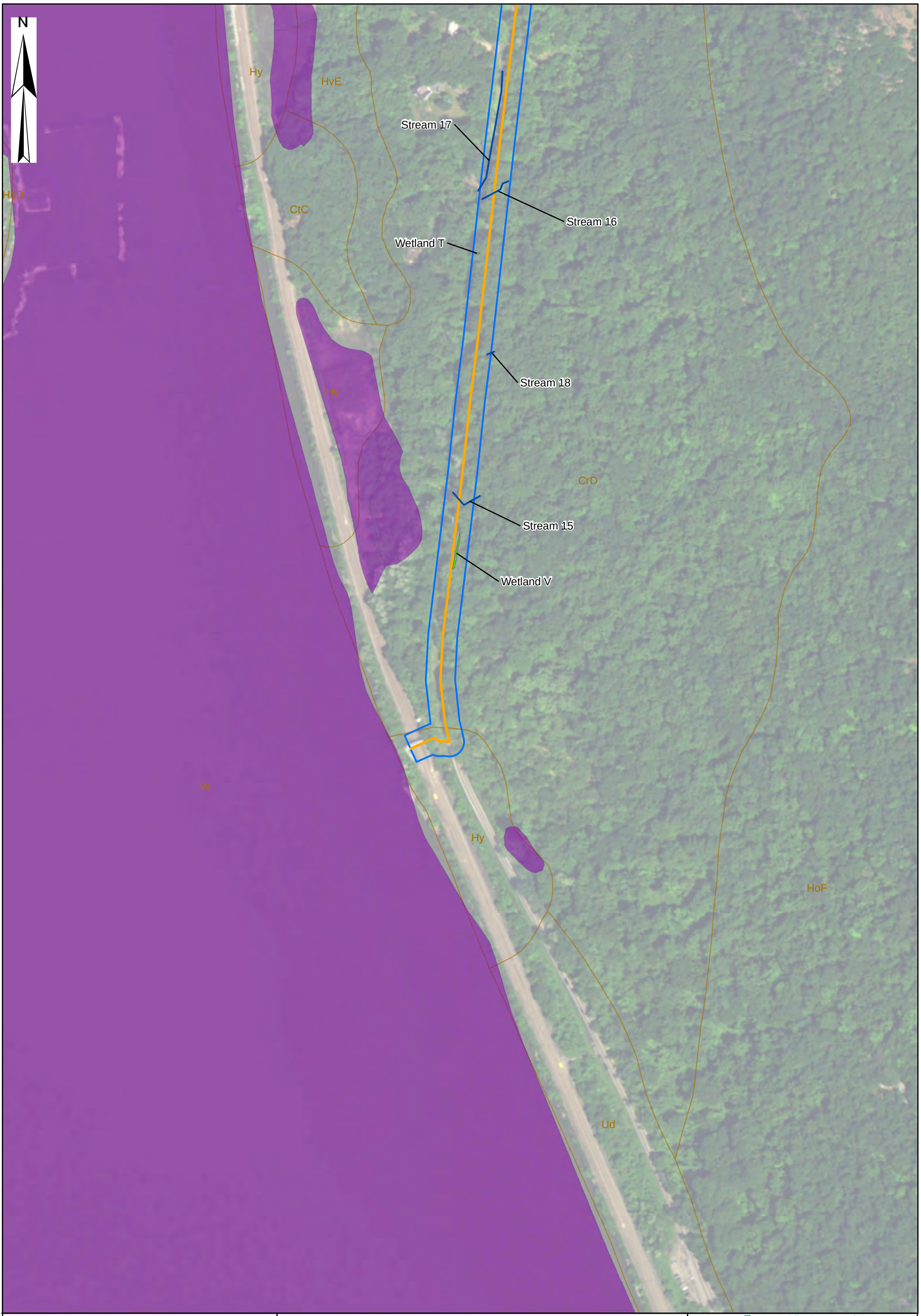

Legend

- Trail Alignment
- Not Reviewed
- Reviewed
- Potential Wetlands
- NYSDEC Wetlands
- NWI Wetlands
- HuB Soil Map Units
- Identified Streams

FIGURE 1E
WETLAND SCREENING OVERVIEW MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

SHUMAKER Consulting Engineering & Land Surveying, D.P.C.

0 150 300 600 Feet

1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

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Legend

- Trail Alignment
- Not Reviewed
- Reviewed
- Potential Wetlands
- NYSDEC Wetlands
- NWI Wetlands
- HuB Soil Map Units
- Identified Streams

FIGURE 1F
WETLAND SCREENING OVERVIEW MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

SHUMAKER Consulting Engineering & Land Surveying, D.P.C.

0 150 300 600 Feet

1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

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N

ClF
HrF
Ub
RhE
Pv
CuD
ClE
Uc
ClC
CrC
ChD
ChC
ClD
UhB
UhC
ChE
UlC
CsD
W

Wetland X
Wetland Y
Stream 22
Stream 23
Wetland X
Stream 24

Legend

- Trail Alignment
- Potential Wetlands
- Not Reviewed
- Reviewed
- NYSDEC Wetlands
- NWI Wetlands
- HuB Soil Map Units
- Identified Streams

FIGURE 1G
WETLAND SCREENING OVERVIEW MAP

SHUMAKER
Consulting Engineering & Land Surveying, D.P.C.

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

0 150 300 600 Feet

1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

Path: E:\2016\16286 Fjord Trail\Graphics\Environmental\GIS\Fig 1G Wetland Screening.mxd

Legend

- Trail Alignment
- Potential Wetlands
- Not Reviewed
- Reviewed
- NYSDEC Wetlands
- NWI Wetlands
- HuB Soil Map Units
- Identified Streams

FIGURE 1H
WETLAND SCREENING OVERVIEW MAP

Hudson Highlands Fjord Trail
City of Beacon, Town of Fishkill, Town of Philipstown, and Village of Cold Spring
Dutchess and Putnam Counties, New York

SHUMAKER Consulting Engineering & Land Surveying, D.P.C.

0 150 300 600 Feet

1 inch = 300 feet
1:3,600

County Coverage: Dutchess & Putnam

Client Name: AKRF

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