WATER RESOURCES and WETLANDS

Chapter Nine

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A. Introduction

Wetlands on the property and off-site wetlands that are located near the property were field delineated in accordance with Chapter 78, "Freshwater Wetlands" in the Code of the Town of Southeast, Article 24 of the New York State Department of Environmental Conservation (DEC) Environmental Conservation Law and the technical criteria in the 1987 Army Corps of Engineers (ACOE) Wetland Delineation Manual (TR-Y-87-1). The field delineation was conducted on August 21, 2008 by a field biologist from Evans Associates Environmental Consulting, Inc. (Evans Associates). The wetland/upland boundaries were flagged with sequentially-numbered, orange flagging depicting the words "Wetland Boundary." In total, five wetlands were delineated on the property or just off site of the eastern portion of the property. Four wetlands are located to the west of the railroad tracks, and one wetland was delineated entirely off site, to the east of the railroad tracks. The flags were located by a licensed surveyor (Terry Bergendorff Collins Professional Land Survey) and are depicted on Map #11 , Existing Conditions Map, dated 04/27/12, prepared by LADA, P.C.

B. Existing Conditions

The property is approximately 52-acres, triangular-shaped, and bounded to the west by route 312, to the east by a railroad line, and to the south by Interstate 84. The majority of the property drains to the east, toward the railroad tracks. Drainage may exit the property occasionally through a culvert that connects Wetland C, on the west side of the railroad tracks, to Wetland A, on the east side of the railroad tracks (both wetlands are described below) after significant storm events. The watersheds for Wetland B and Wetland C are entirely contained within the property, which is mainly undeveloped. The watersheds for Wetland E and Wetland D (which is located off site) are mainly located on the property, but also include small areas that are located just off-site of the property which are also mainly undeveloped, with the exception of the railroad tracks. The watershed for Wetland A (which is located off site) is large and includes mainly off-site areas. The watershed for Wetland A is partially developed with residential and commercial areas along with roadways, highways and railroad lines. The remainder of the watershed is mainly forested.

SURFACE WATER RESOURCES

Surface water resources within the vicinity of the site are visible on Map #42 , Regional Wetland Map, dated 06/28/2013, prepared by LADA, P.C.. DEC Freshwater Wetland BR-18 is located to the east of the property and it flows southwest into Tonetta Brook and eventually into the Diverting Reservoir. The property is within the watershed for this wetland. DEC Freshwater Wetland LC-28 is located to the west and northwest of the site, on the west side of Interstate 84. Those off-site wetlands drain to the southwest and eventually into the Middle Branch Reservoir. The site does not drain to those off-site wetlands.

DESCRIPTION OF INDIVIDUAL WETLANDS

The five wetlands that were delineated on and near the property, Wetland A, Wetland B, Wetland C, Wetland D, and Wetland E, are described below. Wetland information, including wetland size, type, flagging sequences, and regulatory jurisdictions are summarized in Table 9.B.EA-1, following the wetland descriptions. On-site wetlands and wetland portions comprise 1.25 percent of the approximately 52-acre property as shown on Map#26, Soils Map.

Wetland A Wetland A is the large (approximately 165± acre) DEC wetland (Freshwater Wetland BR-18) that is located completely off site, east of the railroad tracks (see Map 52). The portion of this wetland that is nearest to the subject property is a complex of forested, scrub-shrub and emergent wetlands. Vegetation in this wetland includes red maple (*Acer rubrum*), American elm (*Ulmus americana*) and ironwood (*Carpinus caroliniana*) trees and saplings, spicebush (*Lindera benzoin*) shrubs, poison ivy (*Toxicodendron radicans*) vines, along with cattails (*Typha latifolia*), tussock sedge (*Carex stricta*), cinnamon fern (*Osmunda cinnamomea*), clearweed (*Pilea pumila*), sensitive fern (*Onoclea sensibilis*), and jewelweed (*Impatiens capensis*). Soils in this wetland consist of Leicester and Sun loams along with Palms muck and Carlisle muck. Leicester and Sun loams are very deep, and poorly drained and very poorly drained, respectively. Leicester and Sun loams are mineral soils that are found on the lower parts of hillsides and along small drainageways and depressions. Carlisle muck and Palms muck are very deep, very poorly drained and consist of organic material. Palms muck consists of 16 to 51 inches of organic material over mineral soil and Carlisle muck consists of more than 51 inches of organic material over mineral soils. Leicester loam, Sun loam, Palms muck and Carlisle muck all have aquic moisture regimes and are listed on hydric soils lists. The wetland is primarily sustained by interception of the regional underlying, seasonally-high groundwater table, along with runoff from the surrounding uplands. The watershed providing recharge to this wetland is estimated to be 1300± acres in size. Evidence of wetland hydrology includes ponded water, saturated soils, drainage patterns, sediment deposits, and water-stained leaves.

Wetland B Wetland B is a very small, hydrologically isolated wetland pocket that is located adjacent to the railroad tracks in the northeast corner of the site. Vegetation in this wetland includes red maple and American elm trees and saplings, spicebush shrubs, along with poison ivy and Virginia creeper *(Parthenocissus quinquefolia)* vines. The soils in Wetland B consist of poorly drained Leicester loam. The wetland is primarily sustained by interception of the regional underlying, seasonally-high groundwater table.

Wetland C Wetland C is a 0.43 acre, shallow-ponded wetland with a forested fringe that is located along the railroad tracks. There is no inlet associated with this wetland but it appears to be intermittently hydrologically connected to the large off site DEC wetland (Wetland A) to the east of the site via a culvert under the railroad tracks. The distance from the east side of the railroad tracks through the DEC wetland to a small unnamed perennial stream is approximately 0.06 miles. Approximately 0.81 miles from this point south, the unnamed stream flows into Tonetta Brook. Tonetta Brook continues east for 0.25 miles until it drains into Lake Tonetta. Vegetation in the wetland includes red maple trees and saplings, spicebush, northern arrow-wood (*Viburnum dentatum*), and silky dogwood (*Cornus amomum*) shrubs, along with cattails (*Typha latifolia*), water plantain (*Alisma subcordatum*), skunk cabbage (*Symplocarpus foetidus*), jewelweed (*Impatiens capensis*), clearweed (*Pilea pumila*), and mild water pepper (*Polygonum hydropiperoides*). The soils in Wetland C consist of poorly drained Leicester loam. The wetland is primarily sustained by interception of the groundwater table, along with runoff from the surrounding uplands. The wetland was ponded with shallow water during the field visits.

During a site visit on April 14, 2010, green frog and spring peeper tadpoles were observed in Wetland C. This observation, in addition to visual confirmation of ponding in the wetland during all site visits (including spring and summer of 2013) confirms that Wetland C in not a vernal pool and does not support species characteristic of vernal pool wetlands.

Wetland D Wetland D is a linear depressional wetland that is located along the railroad tracks. This wetland is located off site, but the Town-regulated wetland buffer extends onto the subject property. There is no inlet or outlet associated with Wetland D. Vegetation in the wetland includes red maple trees, spicebush shrubs, and tussock sedge. The soils in Wetland D consist of poorly drained Leicester loam. Due to its disturbed nature by the railroad tracks, Wetland D may also include some Udorthents, wet substratum soils. The wetland is primarily sustained by interception of the regional underlying, seasonally-high groundwater table, along with runoff from the surrounding uplands.

Wetland E Wetland E is a combination of a linear depressional wetland along the railroad tracks and a hillside seep wetland that located in the southeast corner of the site. Vegetation in the wetland includes red maple trees, spicebush shrubs, skunk cabbage, jewelweed, and cattails. The soils in Wetland E primarily consist of poorly drained Leicester loam, but may also include some Udorthents, wet substratum soils near the railroad tracks. The wetland is

primarily sustained by interception of the regional underlying, seasonally-high groundwater table, along with runoff from the surrounding uplands.

Table 9.B.EA-1.
Wetland size, type, flagging sequences, and regulatory jurisdiction

Wetland ID	Wetland Size (acres)*	Wetland Type	Flagging Sequence	Regulatory Jurisdiction
Wetland A	165± acres (off site)	large, forested, scrub-shrub and emergent	A-1 through A-42	Town DEC ACOE
Wetland B	0.02	isolated pocket	B-1 through B-4	Town
Wetland C	0.43*	shallow ponded, forested fringe, previous intermittent connection to Wetland A	C-1 through C-18	Town DEC ACOE (possible)
Wetland D	0.06 (off site)	isolated linear depressional	D-1 through D-8	Town
Wetland E	0.14*	isolated linear depressional and hillside seep	E-1 through E-11	Town

*on-site portion only

FUNCTIONAL EVALUATIONS OF WETLANDS

"A Rapid Procedure for Assessing Wetland Functional Capacity based on Hydrogeomorphic (HGM) Classification" (Magee and Hollands, 1998) was used in the functional assessments of the wetlands on and near the site. The functions and relative values of freshwater wetlands are determined by biological and physical characteristics, including the position of the wetland in the landscape, the geology and hydrology of the site, and the substrate and vegetation comprising the wetland. Wetland inventory data were collected during the field visits by Evans Associates. The wetland inventory data sheets are included in the Appendix H. The functions assessed by the model include: 1) modification of groundwater discharge, 2) modification of groundwater recharge, 3) storm and floodwater storage, 4) modification of stream flow, 5) modification of water quality, 6) export of detritus, 7) contribution to abundance and diversity of wetland vegetation and, 8) contribution to abundance and diversity of wetland fauna.

The wetlands were assigned a hydrogeomorphic classification based on the type that best represents the majority of the wetland or wetlands. For example, if a wetland contains a majority of slope wetland areas, but also has some minor depressional areas, the slope classification would be used. The model scores for each of the wetlands are summarized in Tables 9.B.EA-2 through 9.B.EA-6, and the functions and values of each of the wetlands are discussed following the tables.

The model scores provide relatively good guidance for describing functions that a particular wetland may perform. However, the model has limitations because the scores only indicate whether the wetland has the potential to perform a function, not the magnitude at which the wetland will perform that function. For example, a very small, isolated, depressional wetland will receive the highest score for the storm and flood water storage function, but will have little capacity and/or opportunity to actually perform this function. Therefore, the numerical scores that are produced by the model should be viewed in terms of the overall capability of the wetland to actually perform the functions assessed by the model.

Wetland A

Table 9.B.EA-2
Wetland Functional Model Scores - Wetland A

Wetland ID: **Wetland A** HGM Type: **Depressional Wetland** **Function or Value**	**Site Score**	**Range**
Special/Pre-Emptive Variables	yes*	NA
Modification of Ground Water Discharge	18	3-18
Modification of Ground Water Recharge	NA	4-21
Storm and Flood-Water Storage	16	4-27
Modification of Stream Flow	6	1-9
Modification of Water Quality	14	4-18
Export of Detritus	13	5-18
Contribution to Abundance and Diversity of Wetland Vegetation	15	2-15
Contribution to Abundance and Diversity of Wetland Fauna	31	4-36

* Wetland is regulated by the Town, DEC and ACOE.
Note: because Wetland A is located off site, only the Town-regulated wetland buffer and the DEC-regulated Adjacent Area are relevant to the proposed development on the property.
NA - Not Applicable

Modification of Groundwater Discharge The seepage that was observed in Wetland A verifies that it is an area of groundwater discharge. Accordingly, the wetland received the highest score for this function. Other factors that contribute to the ability of this wetland to modify groundwater discharge include a perennial inlet and outlet, permanent flooding, and organic soil. Because this wetland is mainly depressional, portions of this wetland may

temporarily act as groundwater recharge areas during periods of drought.

Modification of Groundwater Recharge As discussed above, Wetland A is primarily an area of groundwater discharge, but during periods of drought, portions of this wetland system may temporarily act as groundwater recharge areas. Because the presence of seeps is an indicator of dysfunction, this wetland received a "Not Applicable" rating for this function, which accurately represents Wetland A the majority of the time.

Storm and Floodwater Storage Wetland A receives hydrologic input mainly as groundwater discharge, with some runoff. The depressional shape of Wetland A, along with its large size, well developed microrelief, and high vegetation density allows the wetland to detain floodwaters prior to discharge. An unrestricted, perennial outlet may somewhat lessen the ability of this wetland to store excess amounts of water. Accordingly, Wetland A received a moderate score for this function.

Modification of Stream Flow Modification of stream flow is based on the variables of storm and flood water storage, and modification of groundwater discharge. Because Wetland A received moderate and high scores for those variables, respectively, it received a moderately-high score for this function. Groundwater discharge into Wetland A provides base flow for the Tonetta Brook.

Modification of Water Quality The potential of a wetland to modify water quality is dependent upon its ability to retain sediment, particulates, and dissolved elements transported within flowing surface water. Wetland A has characteristics that are conducive to the retention of particulates, such as a continuous, forested cover, low-intensity land use, and organic soil. Accordingly, Wetland A received a high score for this function.

Export of Detritus The dense vegetation within Wetland A along with its unrestricted, perennial outlet provides opportunity for the export of detritus from this wetland. This ability is limited, however, by the depressional shape of the wetland, its permanent flooding, and organic soil. Accordingly, Wetland A received a moderately-high score for this function.

Contribution to Abundance and Diversity of Wetland Vegetation Wetland A has a high vegetation density and diversity, and is connected above and below to other wetlands. The relatively flat topography in portions of Wetland A allows it to trap and retain water over a long enough period of time to support obligate wetland plants such as tussock sedge and cattails. Accordingly, Wetland A received the highest score for this function.

Contribution to Abundance and Diversity of Wetland Fauna The presence of persistent wetness for a period throughout the year sufficient to maintain the plants that provide food and cover to wetland animals, as well as the standing water that is required by some species, is correlated with the capacity of the wetland to support wetland fauna. The permanent ponding of water in Wetland A provides breeding habitat for amphibians. This capacity

along with its large size, the diversity and distribution of its wetland vegetation, and connections above and below to other wetlands, contributed to Wetland A receiving a high score for this function.

Special/Pre-emptive Variables Because Wetland A is ACOE and DEC regulated, it received a positive result for this variable.

Wetland B

Table 9.B.EA-3
Wetland Functional Model Scores - Wetland B

Wetland ID: **Wetland B** HGM Type: **Slope Wetland** **Function or Value**	**Site Score**	**Range**
Special/Pre-Emptive Variables	no	NA
Modification of Ground Water Discharge	4	2 - 15
Modification of Ground Water Recharge	NA	NA
Storm and Flood-Water Storage	21	4 - 21
Modification of Stream Flow	NA	1 - 9
Modification of Water Quality	14	3 - 15
Export of Detritus	NA	4 - 15
Contribution to Abundance and Diversity of Wetland Vegetation	3	2 - 15
Contribution to Abundance and Diversity of Wetland Fauna	17	4 - 33

NA - Not Applicable

Modification of Groundwater Discharge Slope wetlands are areas of groundwater discharge. However, because Wetland B is so small and has no outlet, it is not capable of providing more than a small amount of discharge. Accordingly, the wetland received a low score for this function.

Modification of Groundwater Recharge Because slope wetlands are areas of groundwater discharge, they are not considered to be capable of modifying groundwater recharge. Accordingly, Wetland B received a "Not Applicable" rating for this function.

Storm and Floodwater Storage Slope wetlands typically do not provide for storm and floodwater storage. Wetland B received the highest score for this function because it has no

outlet, and a low gradient. However, because the wetland is so small, its ability to store water is almost negligible.

Modification of Stream Flow There is no stream associated with Wetland B. Therefore, it accurately received a "Not Applicable" rating for this function.

Modification of Water Quality The potential of a wetland to modify water quality is dependent upon its ability to retain sediment, particulates, and dissolved elements transported within flowing surface water. Wetland B received a very high score for this function because it has characteristics conducive to the retention of particulates, such as having no outlet, and continuous cover. However, because the wetland is so small, its ability to perform this function is severely limited.

Export of Detritus Because Wetland B has no outlet, it is incapable of exporting detritus. Accordingly, it received a "Not Applicable" score for this function.

Contribution to Abundance and Diversity of Wetland Vegetation Slope wetlands generally have low, or unpredictable, abilities to retain saturated soil or standing water. This encourages the development of plant communities that are more suited to a variety of moisture conditions rather than characteristic wetland species. Wetland B accurately received a low score for this function based on its low vegetation density and diversity.

Contribution to Abundance and Diversity of Wetland Fauna Slope wetlands generally have low, or unpredictable, abilities to retain saturated soil, standing water, or characteristic wetland vegetation. This discourages the development of faunal communities that are suited to characteristic wetland habitats. Wetland B received a moderate score for this function based on low intensity wetland and watershed land use, along with even wetland vegetation distribution. However, this wetland is not ideally suited to support faunal communities that are reliant on sustained wet conditions.

Special/pre-emptive Variables Because Wetland B is not ACOE or DEC regulated, it received a negative result for this variable.

Wetland C

Table 9.B.EA-4
Wetland Functional Model Scores - Wetland C

Wetland ID: **Wetland C** HGM Type: **Depressional Wetland** **Function or Value**	**Site Score**	**Range**
Special/Pre-Emptive Variables	yes*	NA
Modification of Ground Water Discharge	8	3-18
Modification of Ground Water Recharge	13	4-21
Storm and Flood-Water Storage	27	4-27
Modification of Stream Flow	NA	1-9
Modification of Water Quality	17	4-18
Export of Detritus	NA	5-18
Contribution to Abundance and Diversity of Wetland Vegetation	7	2-15
Contribution to Abundance and Diversity of Wetland Fauna	25	4-36

* Wetland is regulated by the Town, DEC and possibly the ACOE.
NA - Not Applicable

Modification of Groundwater Discharge Wetland C more often provides groundwater recharge opportunities rather than discharge (discussed below). Accordingly, the wetland received a moderately-low score for this function.

Modification of Groundwater Recharge Wetland C is a depressional wetland that can provide some groundwater recharge opportunities. Wetland C received a moderate score for this function based on its poorly-developed microrelief, fluctuating water level, and its location in mineral, glacial till derived soil.

Storm and Floodwater Storage Wetland C receives hydrologic input mainly as groundwater discharge, with some runoff. The depressional shape of Wetland C, and its low gradient, allow the wetland to detain floodwaters prior to discharge. Because Wetland C has no outlet, it received the highest score for this function, although its small size may limit the ability of the wetland to perform this function.

Modification of Stream Flow Modification of stream flow is based on the variables of storm and flood water storage, and modification of groundwater discharge. Wetland C does not provide direct support for, or modification of, a stream. Therefore, Wetland C received a "Not Applicable" score for this function.

Modification of Water Quality The potential of a wetland to modify water quality is dependent upon its ability to retain sediment, particulates, and dissolved elements transported within flowing surface water. Wetland C has characteristics that are conducive to the retention of particulates, such as a low gradient, low-intensity land use, and no outflow. Accordingly, Wetland C received a very high score for this function. However, due to its small size, the capacity of Wetland C to perform this function is limited.

Export of Detritus Because Wetland C does not have an outlet, the export of detritus from this wetland is prohibited. Accordingly, Wetland C received a "Not Applicable" score for this function.

Contribution to Abundance and Diversity of Wetland Vegetation Wetland C has medium vegetation density and diversity, and is near other wetlands. The flat topography in Wetland C allows it to trap and retain water over a long enough period of time to support obligate wetland plants such as water plantain, mild water pepper, and skunk cabbage. Wetland C received a moderate score for this function.

Contribution to Abundance and Diversity of Wetland Fauna The presence of persistent wetness for a period throughout the year sufficient to maintain the plants that provide food and cover to wetland animals, as well as the standing water that is required by some species, is correlated with the capacity of the wetland to support wetland fauna. The permanent ponding of water in Wetland C provides breeding habitat for amphibians. This capacity, along with even distribution of its wetland vegetation, a location near other wetlands, and low-intensity watershed and wetland land use contributed to Wetland C receiving a moderately-high score for this function.

Special/Pre-emptive Variables Because Wetland C is DEC regulated, and may be ACOE regulated, it received a positive result for this variable.

Wetland D

Table 9.B.EA-5
Wetland Functional Model Scores - Wetland D

Wetland ID: **Wetland D** HGM Type: **Depressional Wetland** **Function or Value**	**Site Score**	**Range**
Special/Pre-Emptive Variables	no	NA
Modification of Ground Water Discharge	5	3-18
Modification of Ground Water Recharge	14	4-21
Storm and Flood-Water Storage	27	4-27
Modification of Stream Flow	NA	1-9
Modification of Water Quality	16	4-18
Export of Detritus	NA	5-18
Contribution to Abundance and Diversity of Wetland Vegetation	5	2-15
Contribution to Abundance and Diversity of Wetland Fauna	19	4-36

NA - Not Applicable

Modification of Groundwater Discharge Wetland D more often provides groundwater recharge opportunities rather than discharge (discussed below). Accordingly, the wetland received a low score for this function.

Modification of Groundwater Recharge Wetland D is a depressional wetland that can provide some groundwater recharge opportunities. Wetland D received a moderate score for this function based on its poorly-developed microrelief, and its location in mineral, glacial till derived soil. In reality, this small wetland provides little groundwater recharge.

Storm and Floodwater Storage Wetland D received the highest score for this function, because it has no outlet, and a low gradient. However, because the wetland is so small, its ability to store water is almost negligible.

Modification of Stream Flow There is no stream associated with Wetland D. Therefore, it accurately received a "Not Applicable" rating for this function.

Modification of Water Quality The potential of a wetland to modify water quality is dependent upon its ability to retain sediment, particulates, and dissolved elements transported within flowing surface water. Wetland D received a high score for this function because it has characteristics conducive to the retention of particulates, such as having no outlet, and continuous, forested cover. However, because the wetland is so small, its ability to perform this function is severely limited.

Export of Detritus Because Wetland D has no outlet, it is incapable of exporting detritus. Accordingly, it received a "Not Applicable" score for this function.

Contribution to Abundance and Diversity of Wetland Vegetation Wetland D has medium vegetation density, but low vegetation diversity, and it is not connected to other wetlands. Wetland D cannot retain saturated soil or standing water. This encourages the development of plant communities that are more suited to a variety of moisture conditions rather than characteristic wetland species. Wetland D accurately received a low score for this function.

Contribution to Abundance and Diversity of Wetland Fauna Wetland D has a low, or unpredictable, ability to retain saturated soil, standing water, or characteristic wetland vegetation. This discourages the development of faunal communities that are suited to characteristic wetland habitats. Wetland D received a moderate score for this function based on low intensity wetland and watershed land use, along with even wetland vegetation distribution. However, this wetland is not ideally suited to support faunal communities that are reliant on sustained wet conditions.

Special/Pre-emptive Variables Because Wetland D is not ACOE or DEC regulated, it received a negative result for this variable.

Wetland E

Table 9.B.EA-6
Wetland Functional Model Scores - Wetland E

Wetland ID: **Wetland E** HGM Type: **Slope Wetland** **Function or Value**	**Site Score**	**Range**
Special/Pre-Emptive Variables	no	NA
Modification of Ground Water Discharge	15	2-15
Modification of Ground Water Recharge	NA	NA
Storm and Flood-Water Storage	21	4-21
Modification of Stream Flow	NA	1-9
Modification of Water Quality	14	3-15
Export of Detritus	NA	4-15
Contribution to Abundance and Diversity of Wetland Vegetation	5	2-15
Contribution to Abundance and Diversity of Wetland Fauna	18	4-33

NA - Not Applicable

Modification of Groundwater Discharge The seepage that was observed in Wetland E verifies that it is an area of groundwater discharge. Accordingly, the wetland received the highest score for this function. However, because the wetland is so small, its ability to perform this function is severely limited.

Modification of Groundwater Recharge As discussed above, Wetland E is primarily an area of groundwater discharge. Because the presence of seeps is an indicator of groundwater discharge, this wetland accurately received a "Not Applicable" rating for this function.

Storm and Floodwater Storage Wetland E received the highest score for this function because it has no outlet, and a low gradient. However, because the wetland is so small, its ability to store water is almost negligible.

Modification of Stream Flow There is no stream associated with Wetland E. Therefore, it accurately received a "Not Applicable" rating for this function.

Modification of Water Quality The potential of a wetland to modify water quality is dependent upon its ability to retain sediment, particulates, and dissolved elements transported within flowing surface water. Wetland E received a high score for this function because it has characteristics conducive to the retention of particulates, such as having no

outlet, and continuous, forested cover. However, because the wetland is so small, its ability to perform this function is severely limited.

Export of Detritus Because Wetland E has no outlet, it is incapable of exporting detritus. Accordingly, it received a "Not Applicable" score for this function.

Contribution to Abundance and Diversity of Wetland Vegetation Wetland E has medium vegetation density, but low vegetation diversity, and it is not connected to other wetlands. Wetland E cannot retain saturated soil or standing water. This encourages the development of plant communities that are more suited to a variety of moisture conditions rather than characteristic wetland species. Wetland E accurately received a low score for this function.

Contribution to Abundance and Diversity of Wetland Fauna Wetland E has a low, or unpredictable, ability to retain saturated soil, standing water, or characteristic wetland vegetation. This discourages the development of faunal communities that are suited to characteristic wetland habitats. Wetland E received a moderate score for this function based on low intensity wetland and watershed land use, along with even wetland vegetation distribution. However, this wetland is not ideally suited to support faunal communities that are reliant on sustained wet conditions.

Special/Pre-emptive Variables Because Wetland E is not ACOE or DEC regulated, it received a negative result for this variable.

DESCRIPTION AND FUNCTIONS OF WETLAND BUFFERS

The on-site portions of the Town and DEC-regulated wetland buffers consist of an Appalachian Oak-hickory Forest upland community. This mixed deciduous forest community is described in detail in Chapter #7: Natural Resources (A. Existing Conditions).

The main function of wetland buffers is to provide protection to the wetlands. In addition, a wetland buffer can provide habitat and corridors for movement for aquatic and terrestrial wildlife. Wetland buffers can protect wetlands by removing or reducing the effects of sediment or contaminants from upland areas and surface water runoff. In addition, effects from human disturbance or the spread of non-native species into wetlands can also be reduced. Currently on the property, the main impacts to the on-site wetlands include surface water runoff and the associated erosion and sedimentation that results. The majority of the runoff is from stormwater that runs off of the upgradient highway and roads and flows undeterred downhill through the property, ultimately flowing into the on-site wetlands. Large channels have been cut through the site and sediment deposits were noted in and around Wetlands B and C.

The wetland buffers on the property do not provide a great amount of protection for these wetlands from the surface water runoff because the flow is channelized and cuts through the uplands and the wetland buffers at a relatively steep gradient. Therefore, under the existing

conditions, the main functions of the on-site wetland buffers are to serve as corridors for movement and habitat for some of the aquatic and terrestrial wildlife on and near the property. A detailed description of the wildlife on the property, including their preferred habitats, is provided in Chapter #7: Natural Resources.

APPLICABLE REGULATIONS

Army Corps of Engineers Wetland Regulations The ACOE is the Federal agency that regulates wetlands under the Clean Water Act. They regulate wetlands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology as defined in the 1987 ACOE Wetland Delineation Manual (TR-Y-87-1). The ACOE regulates wetlands that are associated with hydrologic features that are connected to interstate waters (e.g., connected to streams that ultimately drain to the Hudson River). There is no wetland buffer regulated under federal jurisdiction. Wetland A drains to Tonetta Brook, which in turn ultimately drains to interstate waters and is therefore clearly under the jurisdiction of the ACOE, however the wetland is not located on the property. Wetland C appears, at one time, to have been intermittently hydrologically connected to Wetland A via a pipe under the railroad tracks. Therefore, this wetland is presumed to be regulated by the ACOE. Wetlands B, D and E are hydrologically isolated, and are therefore not likely to be regulated by the ACOE. Wetland A and Wetland D are located completely off site. There are no streams on the property. Because no activities are proposed to occur within any of the on-site or nearby wetlands, an ACOE Jurisdictional Determination is not needed.

New York State Department of Environmental Conservation Wetland Regulations The DEC regulates wetlands in accordance with the New York State Freshwater Wetlands Act (Article 24 of the New York State Environmental Conservation Law). The DEC regulates wetlands that are 12.4 acres or greater, primarily based on the presence of hydrophytic vegetation, that are shown on, or are vegetatively connected to wetlands shown on, the New York State Freshwater Wetlands Maps. The DEC may also regulate smaller wetlands that are near (within 50 meters), and function together with larger DEC mapped wetlands. In addition to regulating the wetlands, the DEC also regulates a 100-foot adjacent area surrounding the wetlands. The boundaries of the wetlands shown on the New York State Freshwater Wetlands Maps are only used for reference and need to be field delineated and then confirmed by DEC staff.

On July 30, 2009 Evans Associates conducted a site walk with Mr. Brian Drumm of the DEC. Mr. Drumm agreed with the wetland boundaries as delineated by Evans Associates. Wetland A is clearly part of DEC Wetland BR-18 and is therefore regulated by the State. Although Wetland C is not shown as being part of DEC Wetland BR-18 on the Freshwater Wetlands Map, Mr. Drumm determined that Wetland C and the DEC Wetland BR-18 are within 50 meters of each other and are intermittently hydrologically connected. Therefore Wetland C was determined to be under the jurisdiction of the DEC. Wetlands B, D and E are not shown to be part of DEC Wetland BR-18 on the Freshwater Wetlands Map, are not hydrologically connected and were determined to not be regulated by the DEC.

Subsequently, Mr. Drumm signed the DEC Wetlands Map on August 11, 2009. The DEC verification of the wetlands is valid for a period of 10 years. A copy of this map is provided in Appendix H.

Town of Southeast Regulations The Town of Southeast regulates wetlands primarily based on the presence of hydrophytic vegetation and/or hydric soils as defined in Chapter 78, "Freshwater Wetlands" in the Code of the Town of Southeast. The Town does not have a minimum size for regulated wetlands. All of the on site wetlands, as well as the offsite wetlands, are locally regulated by the Town of Southeast. In addition to regulating the wetlands, the Town also regulates wetland buffers that vary between 100 feet and 200 feet based on the hydrologic soil grouping (HSG) of the adjacent uplands. The soils in the uplands adjacent to the wetlands are mainly classified as moderately well drained Chatfield-Charlton (CsD) soils in the south portion of the site and well drained Paxton (PoC) soils in the north portion of the site. Chatfield-Charlton soils have an HSG of B and Paxton soils have a HSG of C. According to the Town regulations, a wetland with the adjacent upland soils having a HSG of B and C would have a 133-foot buffer and 166-foot wetland buffer, respectively. Therefore, the Town-regulated buffers around Wetland B and Wetland C would be 166 feet and the Town-regulated buffers around Wetland D and Wetland E would be 133 feet. The buffer around Wetland A would most-likely be variable from 133 feet to 166 feet, see Map #26.

On August 6, 2009 Evans Associates conducted a site walk with the Town wetlands consultant, Mr. Steve Coleman. The purpose of the site walk was to have Mr. Coleman confirm the wetland boundaries. Mr. Coleman agreed with all of the wetland boundaries as delineated by Evans Associates.

New York City Department of Environmental Protection (NYC DEP) Watershed Regulations The Site drains to the East Branch Croton River Diverting Reservoir and is located within the New York City watershed. Therefore, the Site is subject to the NYC DEP watershed regulations. On September 28, 2009, Evans Associates conducted a site walk with Mr. Jean Marc Roche of the NYC DEP. Mr. Roche determined that there were no features on the Site that meet the definition of a "watercourse" under the NYC DEP watershed regulations. A copy of the correspondence between Evans Associates and the NYC DEP regarding this determination is provided in Appendix U.

C. Potential Impacts of the Proposed Project

No direct impacts are proposed to the on or off-site wetlands. Direct impacts to the wetland buffer have also been avoided by pulling the proposed development further away from the wetland and out of the wetland buffer. The previously proposed retaining walls surrounding the project have been replaced by a tiered system of boulder retaining walls and soil or rock fill embankments. While these retaining walls and embankments will form a migration barrier to most species of reptiles and amphibians using the wetland, voids between the boulders will provide some new habitat for snakes and other reptiles

on the site. Indirect impacts to the wetland from changes in the hydrology of the site are discussed below.

As described in Chapter 8, subsurface conditions at the site were extensively investigated in the areas of the proposed development. Surface soils and bedrock at the site consist of a thin layer (± 3") of topsoil over a dense till subsoil which is comprised of a well graded mixture of sands, clay, silt-clay, and cobbles/boulders. The metamorphic bedrock underlying the soil is comprised of a blend of amphibolite, gneiss, pyroxenic amphibolite, and is typically found from 3 – 20+ feet below the surface. A total of 18 test borings were drilled to an average depth of 20 feet, and 51 test pits were excavated at the site to provide detailed subsurface data.

Depths to groundwater at the site in the areas of the proposed development are generally below the maximum depths explored (deeper than about 20 feet). In localized areas, particularly near the base of the slope above the wetlands, groundwater is as shallow as four feet. The wetlands on and immediately adjacent to the site are primarily sustained by interception of the regional underlying, seasonally-high groundwater table, along with runoff from the surrounding uplands. The majority of the property drains to the east, toward the railroad tracks. Drainage exits the property occasionally through a culvert that connects Wetland C, on the west side of the railroad tracks, to Wetland A, on the east side of the railroad tracks after significant storm events. The watersheds for Wetland B and Wetland C are entirely contained within the property. The watersheds for Wetland E and Wetland D (which is located off site) are mainly located on the property, but also include small areas that are located just off-site of the property which are also mainly undeveloped, with the exception of the railroad tracks. The watershed for Wetland A, which is located entirely off site, is approximately 1300 acres in area and includes the project site, see Map #52.

Following development, the re-grading of the site will modify the pattern of water infiltration and surface run-off as it generally flows down towards the southeast towards the wetlands. Increased impervious areas will reduce water infiltration into the soil and bedrock, as the runoff flows will be captured and diverted into the stormwater system. Outside of the impervious portions of the site, exposure of bedrock and construction of rock-fill and rock revetted slopes will tend to increase infiltration in the uplands. Lastly, removal of trees and vegetation will reduce the evapotranspiration on the site, which in turn creates more net infiltration.

Stormwater runoff that will occur from the proposed project, along with the untreated stormwater runoff that is currently occurring on the property, will be captured, slowed, and treated within the proposed stormwater management system. As designed, the direction and location of discharge of the on-site drainage, and the overall hydrologic cycle of the area will not be substantially altered by the proposed project.

The quantity of the groundwater recharged on the site following development will not be meaningfully impacted, as no runoff will be diverted off site. However, some of the

water which reaches the wetlands as shallow groundwater under the existing conditions may reach the wetlands as surface water following development. As the project progresses through the detailed design phase, additional geotechnical and hydrogeologic engineering will be required to develop specific measures to increase the infiltration of stormwater in the post-development condition in order to sustain the hydrology of the on-site wetlands.

The Stormwater Pollution Prevention Plan that is proposed for the project is designed to prevent the degradation and pollution of waters, and prevent the potential for flooding. There are no natural watercourses on the property, however, a few highly-eroded channels exist on the property, mainly carrying intermittent, high-velocity runoff from Route 312 as well as the fire wood processing area. These flashy storm channels can potentially carry sediment and pollutants from the road to the on-site wetlands, as well as cause sedimentation and erosion throughout the property. The railroad tracks offer a buffer between these stormwater channels and the large, off-site, DEC-regulated wetland, but the on-site wetlands receive direct surface discharge from these channels. The on-site wetlands are mainly sustained by the groundwater table, and replacing the occasional surface water inputs from these channels with treated runoff from the stormwater basins and vegetated swales will not threaten the hydrology of the wetlands. In addition, the water quality of the wetlands will be improved by eliminating the current erosion and sedimentation impacts. Two existing, drainage discharges from the property pass beneath the nearby railroad tracks. These off-site drainage discharges, which lead to DEC wetland BR-18 (also off site), will not be altered.

The Stormwater Pollution Prevention Plan and the Sediment and Erosion Control Plan for the proposed project will provide protection from potential indirect impacts and will meet the criteria for approval for the following applicable requirements (per Section 78-4.G of the Southeast Town Code):

- The proposed project will not have a substantial adverse effect upon the natural functions and benefits (as set forth in § 78-1B(6)) of the wetlands on and near the property,
- The proposed project will not result in the degrading or pollution of waters,
- The proposed project will not increase the potential for flooding, and
- The proposed project has made sufficient provision for control of erosion, siltation and sedimentation during and after conduct of the activity.

As shown on Map #10, a FEMA 100 year Flood Plain Line encroaches along the site boundary along the Railroad Line.

In addition to the Town regulations, the proposed storm drainage systems will collect, store, and convey water as required by the NYCDEP and the NYSDEC. Ponds will be designed in accordance with the NYSDEC "Stormwater Design Manual" including Chapter 10 "Enhanced Phosphorus Removal Supplement". The design will also comply with the NYCDEP "Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources" that require two different methods of treatment if the impervious area covers 20% or more of drainage area. A two foot minimum separation from groundwater or bedrock will be implemented into basin design.

The post development impervious area is approximately 16.0 acres. The combined volume of the six (6) ponds shown in the supporting drawings is estimated at 15 acre-feet. This volume would be sufficient for the water quality storage and would mitigate peak discharges from all storms up to and including the 100 year storm event. At this point in the project design, the ponds are not intended to infiltrate any water. Stormwater will be collected through conventional piping systems and conveyed to ponds before being discharged from the site at or below pre-development rates. The water leaving the stormwater basins will be conveyed towards the wetlands in vegetated swales to provide water quality attenuation and controlled discharge velocities. Due to the topography and soils on the site, it is likely that at the vegetated swales will encroach into the Town-regulated wetland buffers, but it is the design intent to preserve the NYS DEC-regulated wetland buffer as a naturally vegetated filter strip around Wetland C.

D. Mitigation Measures Proposed

Impacts to all of the wetlands and wetland adjacent areas were avoided to the extent possible and site design efforts have focused on conservation measures aimed at protecting the wetland and wooded wetland buffer habitats on the property. The total disturbance area of the project upon completion will impact approximately 31 acres of the site, leaving 21 acres undeveloped. The acreage that will remain undeveloped includes a linear section of unbroken forest in the eastern portion of the site, along the western edge of DEC regulated Freshwater Wetland BR-18. Native plantings are proposed to improve habitat quality in upland areas below the limits of disturbance.

After construction, the currently-existing, eroded channels that carry high-velocity stormwater runoff will no longer be present, thereby improving the quality of the wetlands through reduction in erosion and sedimentation. Finally, the edge of the wetland buffer will be replanted with trees and shrubs in accordance with the proposed Planting Plan.

With regard to measures intended to protect the quantity and quality of the water reaching

the wetlands from the developed portion of the site, several practices will be proposed. The Town Zoning Regulations, and specifically the Large Retail Zoning Code, Section 138-63.4, require that at least 25% of the parking be proposed as pervious paving. Accordingly, a series of low impact development (LID) procedures will be employed in the final project design as, required by the NYSDEC regulations. Rain gardens may be constructed in islands in the parking lots, pervious paving will be employed within at least 25% of the parking areas, and green roof technologies will be investigated. This detailed work will occur during the SEQRA Final Environmental Impact Statement and Final Site Plan Phase.

The project is designed to include catch basins which will have 4 ft. deep sumps and hoods over the outlet piping. This will restrict sand, leaves, and other debris from entering the discharge piping and will collect this sediment at each structure before it can pass into any of the ponds. In some areas of the site hydrodynamic separators will be installed between the catch basins and the ponds to process the stormwater flow before it can enter any of the ponds. Finally, as described above, water discharged from the stormwater basins will be conveyed towards the wetlands in vegetated swales to provide water quality attenuation and controlled discharge velocities. Due to the topography and soils on the site, it is likely that at the vegetated swales will encroach into the Town-regulated wetland buffers, but it is the design intent to preserve the NYS DEC-regulated wetland buffer as a naturally vegetated filter strip around Wetland C.

During construction, the new ponds at the southwest corner of the site will be constructed early and will be used as temporary sediment ponds during the construction activities to control runoff. Additional temporary sediment traps will also be used in various areas during the construction process in certain areas. These sediment traps will capture and eroded soil or rock dust generated by the construction before it reaches the wetlands.