



Land Surveying – Planning – Permitting

**WETLAND FUNCTIONAL ASSESSMENT |
PROJECT CONSTRAINT | ALTERNATIVE ANALYSES**

Tax Map 14 Lots 56 & 57

80 & 80R Winnicutt Road

Stratham, NH 03885

April 13th, 2026

Revised August 28th, 2026 (in green)

1.0 INTRODUCTION

This report is being submitted in connection with a proposal by Copley Properties, LLC to construct 48 homes within a 33-lot subdivision slightly relocating the existing barn, and installing 13 shared septic systems and a total of 37 new and 1 existing well(s). The project incorporates a comprehensive stormwater management system consisting of lot-level stone drip edges, roadside swales, catch basins, a sediment forebays, pretreatment devices, and two bioretention basins, together with temporary erosion and sediment controls during construction.

The following sections provide an overview of the wetland delineation process, description of the identified wetland resources, and the functions and values associated with those resources. Attached are functional assessment data forms, photos of the wetlands, and a map of the identified resources.

2.0 WETLAND DELINEATION

Five (5) wetland systems were delineated by Joseph Noel, CWS #86 in spring 2023, confirmed by Luke Hurley of Hurley Environmental & Land Planning, LLC in spring 2024, and survey located by JVA in the spring 2023 and 2024. Vernal pools were reviewed in April 2023 by Joseph Noel and flagged in April 2026 by Morgan Moody, CWS #554, of JVA. The wetland delineation and vernal pool assessment of the above reference site was conducted utilizing the following standards:

- 1) U.S. Army Corps of Engineers. 2011. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- 2) Lichvar, R.W., D.L. Banks, W.N. Kirchnew, and N.C. Melvin. 2016 The National Wetland Plant List; 2016
- 3) New England Hydric Soils Technical Committee. 2025 Version 5, Field Indicators for Identifying Hydric Soils in New England.
- 4) United State Department of Agriculture, Natural Resources Conservation Service. 2024. Field

- Indicators of Hydric Soils in the United States, Version 9.0.
- 5) Classification of Wetlands and Deepwater Habitats of the United States, December 1979. US Department of the Interior, Fish & Wildlife Service. FWS/OBS-79/31.
 - 6) Marchand, M. 2016. Identifying and Documenting Vernal Pools in New Hampshire. Third Edition: Published by New Hampshire Fish and Game Department – Nongame and Endangered Wildlife Program.
 - 7) Kenney, L.P. and M.R. Burne. 2000. A Field Guide to Animals of Vernal Pools. Massachusetts Division of Fisheries and Wildlife and the Vernal Pool Association, Reading, MA.
 - 8) New Hampshire Code of Administrative Rules Env-Wt 100-1000. Current edition.

3.0 FUNCTION & VALUE ASSESSMENT

The Highway Methodology considers 13 functions and values:

1. *Groundwater recharge/discharge*: This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where groundwater can be discharged to the surface.
2. *Floodflow Alteration*: This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
3. *Fish and Shellfish Habitat*: This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shellfish habitat.
4. *Sediment/Toxicant/Pathogen Retention*: This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens.
5. *Nutrient Removal/Retention/Transformation*: This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.
6. *Production Export*: This function relates to the effectiveness of the wetland to produce food or usable products for human, or other living organisms.
7. *Sediment /Shoreline Stabilization*: This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
8. *Wildlife Habitat*: This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and or migrating species must be considered.
9. *Recreation*: This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland, whereas non-consumptive opportunities do not.
10. *Educational/Scientific Value*: This value considers the effectiveness of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.
11. *Uniqueness/Heritage*: This value relates to the effectiveness of the wetland or its associated water bodies to produce certain special values. Special values may include such things

as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geological features.

12. *Visual Quality/Aesthetics*: This value relates to the visual and aesthetic qualities of the wetland.

13. *Threatened or Endangered Species Habitat*: This value relates to the effectiveness of the wetland or associated water bodies to support threatened or endangered species.

Wetland I.D.	Wetland Classification	Principle Function	Justification
A	R4SB3,4 PSS1E PEM1E	Groundwater Recharge/Discharge Nutrient Removal	Primary function of groundwater recharge/discharge and nutrient removal by way of intermittent stream receiving stormwater runoff. Secondary functions of wildlife habitat, sediment/toxicant retention, and production export by way of intermittent stream, but the area lacks deep water and dense vegetation.
B	R2UBH1,2 PSS1E PEM1E	Groundwater Recharge/Discharge Floodflow Alteration Sediment/Toxicant Retention Nutrient Removal Production Export Wildlife Habitat	Primary functions of water quality, production export, and wildlife habitat by way of lower perennial stream (Mill Brook) and connectivity to multiple intermittent streams, offering diverse wetland communities throughout. The enhanced watershed connectivity increases sediment/nutrient processing potential associated with high-functioning production export corridor and habitat heterogeneity throughout. Channel complexity with connected floodplain.
C	R4SB3,4 PFO1E PSS1E	Groundwater Recharge/Discharge Nutrient Removal Production Export Wildlife Habitat	Contributes to localized groundwater interactions through episodic infiltration during low-flow and storm events. Nutrient removal driven by frequent wetting and drying cycles that promote microbial processing, adsorption to sediments, and retention of nutrient pulses delivered from upslope areas. Production export by way of transporting organic matter and dissolved nutrients downstream, contributing to the productivity of Wetland B, or Mill Brook. One area of upstream that supports three vernal pools. Secondary functions of floodflow alteration and sediment/shoreline stabilization, but highly variable due its episodic flow regime. Overall stability is generally low to moderate and strongly dependent on vegetation density and soil

			composition. Attenuation is short-lived compared to Mill Brook.
D	PEM1Eh	Sediment/Toxicant Retention	Primary function of sediment/toxicant retention mainly due to its hydrological connectivity with wetland E, the manmade agriculture pond. The swale functions as a transitional buffer that attenuates but does not fully prevent sediment and contaminant delivery to the downslope impoundment. Nutrient removal function is considered secondary due to the swale's limited storage capacity, shallow depth, and high variability in flow conditions typical of agricultural runoff events.
E	PUBHh PEM1Eh	Floodflow Alteration Sediment/Toxicant Retention	Primary function of floodflow alteration by acting as a surface water storage feature that intercepts and temporarily retains stormwater runoff generated from the surrounding agricultural watershed. Receives associated particulate-bound nutrients and agricultural contaminants such as phosphorus, pesticides, and other potential toxicants. Accumulation of sediments reduces downstream transport. Secondary functions of groundwater recharge/discharge, nutrient removal, production export, and wildlife habitat, each influenced by its constructed nature and hydrologic connectivity within the agricultural watershed.

Table 1. Wetland Function and Value Summary

4.0 COMPARATIVE WETLAND EVALUATION

Wetland B is considered the most valuable because this system provides the highest overall ecological value due to its integrated stream-wetland network, high connectivity, and diverse habitat structure. This system functions as a high-integrity watershed corridor, meaning it is not just a single wetland, but a connected network that supports ecological processes across spatial and temporal scales.

Wetland C provides moderate ecological value, ranking between the Mill Brook system and Wetlands A and E. Although hydrologically connected to Mill Brook, it functions independently as an ephemeral-to-intermittent flow system with distinct wetting and drying cycles. Nutrient processing is supported through microbial activity and sediment interaction, while also supporting organic matter transport to downstream to Mill Brook. Habitat value is moderate,

with strong importance for amphibians and invertebrates, and it is further enhanced by connectivity to multiple vernal pools in the upstream reach. However, reduced hydroperiod duration and limited structural complexity constrain long-term aquatic habitat value compared to the perennial system.

Wetland A represents a moderate-value natural intermittent stream-wetland system that is hydrologically connected to Mill Brook through a culvert, providing direct downstream linkage within the watershed network. This connection enhances its functional importance by facilitating the transfer of water, nutrients, organic matter, and sediments between upland areas and the perennial stream system. Compared to the Mill Brook system, Wetland A has reduced hydrologic permanence, habitat stability, and channel complexity; however, its direct connection via culvert increases its importance as a contributing hydrologic and ecological input area rather than an isolated system. Secondary functions include floodflow alteration and sediment/shoreline stabilization, though these remain variable due to intermittent flow conditions and limited channel development.

Wetland E functions as a constructed treatment-to-storage sequence rather than a natural wetland system, with ecological function concentrated in hydrologic attenuation rather than landscape integration. Downstream sediment and contaminant export is reduced, particularly during moderate storm events, though performance decreases during high-intensity runoff when conveyance exceeds storage capacity.

Wetland D is considered the least valuable wetland due to its small overall narrow shape/size and continued disturbance, but functions as a mid-system conveyance feature that routes flow from the upstream pond to downstream wetland and pond components, ultimately contributing to discharge toward Wetland A. It conveys pond outflows while reducing flow velocity and moderating peak discharge between constructed storage features. The emergent vegetation within the swale provides limited hydraulic roughness, promoting minor attenuation of flow energy and short-duration surface water retention during storm events.

Overall, the wetlands function as an integrated mosaic of natural and constructed features that collectively support watershed hydrology and water quality processes. The Mill Brook perennial stream represents the highest-value aquatic resource on site, serving as the primary receiving water with continuous flow conditions and strong downstream connectivity, and providing key functions related to habitat support, production export, and water quality processing at the watershed scale. Wetland A contributes moderate ecological value as a semi-natural intermittent stream system, providing seasonal hydrologic connectivity, nutrient cycling, and organic matter transport, and discharging to Mill Brook via culvert. In contrast, Wetlands E and D, along with the associated pond systems, function as a constructed stormwater treatment and conveyance sequence, providing primary benefits in floodflow attenuation and sediment/toxicant retention, with secondary contributions to nutrient removal and limited habitat functions. While these constructed systems reduce sediment and nutrient loading prior to discharge to natural waters, their ecological integrity and habitat complexity are limited relative to the natural stream-wetland network. Collectively, the site exhibits a gradient of wetland function, with the perennial Mill Brook system and associated natural wetlands providing the highest ecological value and the

constructed systems providing hydrologic control and water quality attenuation prior to discharge into the broader watershed.

5.0 AVOIDANCE & MINIMIZATION

The project design was developed in accordance with the requirements of the New Hampshire Department of Environmental Services to avoid and minimize impacts to wetlands and surface waters to the maximum extent practicable. In accordance with Env-Wt 313.03, “potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized (see below for justification).

5.1 IMPACTS A & B – Upgrade of Existing Crossing

Impacts A and B represent the wetland impacts associated with the upgrade of an existing crossing. Because both impact areas are associated with the same existing crossing, they are evaluated together. The applicant is not proposing to establish a new crossing at this location. Rather, the proposed work will improve the existing crossing to accommodate the requirements of the proposed subdivision while utilizing an existing disturbed area. Utilization and improvement of the existing crossing avoid the need to establish a new crossing through an otherwise undisturbed portion of the wetland system. Temporary construction impacts will be confined to the limits necessary to install the new culvert and will not result in permanent conversion of the remaining wetland resource.

The crossing is within the interconnected wetland and stream network that ultimately contributes to Mill Brook. The applicant has also considered the potential for indirect effects to downstream resources of Mill Brook. The project incorporates erosion and sediment controls and stormwater management measures to minimize construction-related sediment transport and changes in runoff reaching the downstream system.

5.2 IMPACTS C & D – Existing Farm Access Way

Impacts C and D are associated with the proposed crossing of previously disturbed emergent wetland areas along an existing farm access way. The crossing is necessary to provide access to approximately 20 - 34x40’ array homes. By utilizing the existing farm access way and limiting the crossing to a single location, the project avoids the need to establish a new access corridor through higher-functioning and previously undisturbed wetland resource areas.

Potential indirect effects to Mill Brook and associated watershed will be minimized through the project's erosion and sediment control and stormwater management measures. The plan set includes a dedicated Erosion & Sediment Control Plan (Sheet C7.2), a proposed sediment basin and bioretention basin (Sheet C7.1), and pre- and post-development drainage plans (Sheets SW1 and SW2–SW2.6). These measures are intended to control sediment generated during construction and manage and treat post-development runoff prior to discharge to the downstream wetland and stream network.

The applicant recognizes that Wetland C contributes to the larger Mill Brook watershed; therefore, the avoidance and minimization strategy for Impacts C and D addresses both the direct wetland disturbance and the potential indirect effects to downstream resources. By utilizing an

existing disturbed access way, limiting the crossing to a single location, maintaining the surrounding higher-functioning wetland areas, and incorporating construction and post-development stormwater controls, the project minimizes the potential for Impacts C and D to adversely affect the functions and values of Mill Brook and its associated watershed.

5.3 IMPACT E – Open-Bottom Box Culvert for Shared Driveway Crossing

Impact E represents a wetland and stream crossing associated with a shared driveway serving two separate private residences. The crossing is necessary to provide access to the proposed homes while maintaining a consolidated access point rather than constructing separate driveway crossings through the wetland and stream system. The applicant has minimized the impact by utilizing a single shared driveway to serve both residences, thereby avoiding the need for two separate driveways and potentially duplicative wetland and stream crossings. Consolidating access in this manner reduces the overall extent of clearing, grading, and wetland disturbance associated with providing residential access.

As part of the revised design, Impact E will be upgraded to an open-bottom box culvert. The open-bottom structure will maintain an open stream channel and natural streambed through the driveway crossing, minimizing alteration of the existing stream system and maintaining hydrologic continuity. The open-bottom crossing also provides an opportunity to minimize habitat fragmentation between the interconnected wetland and vernal pool systems on the property. In particular, the crossing is located within the landscape connecting the vernal pool #4, located near Mill Brook with vernal pools #1-3, associated with Wetland C. The applicant recognizes that various wildlife (wetland-dependent and non-dependent wildlife) utilizing the wetland and vernal pool complexes may move through both aquatic and terrestrial portions of the landscape. The open-bottom box culvert is not presented as eliminating all potential effects of the proposed development on wildlife movement; rather, it is intended to maintain the existing stream and wetland corridor through the driveway and reduce the degree to which the driveway functions as a barrier between the connected wetland complexes. The open-bottom box culvert will maintain a continuous stream and wetland corridor beneath the driveway, thereby reducing the degree of fragmentation between these wetland complexes and maintaining a potential migratory pathway through the crossing.

Construction-related indirect impacts will be minimized through the erosion and sediment control measures incorporated into the project, including the measures shown on Sheet C7.2. Post-development runoff will be addressed through the proposed drainage and stormwater management system, including the sediment forebay and bioretention facilities shown on Sheet C7.1 and the associated drainage plans.

Overall, Impact E has been minimized by consolidating access for two residences into a single shared driveway by limiting the crossing to the area necessary to provide that access, upgrading the crossing design to an open-bottom box culvert, maintaining stream and hydrologic continuity, minimizing disruption to migratory pathways, reproductive sites, and associated wetland complex or wetland community systems, and reducing the potential for the driveway to fragment the wetland and vernal pool complexes associated with Mill Brook and Wetland C.

5.4 IMPACTS F & G – “At-Grade” Stone Fords for Shared Leach Field Access

Impacts F and G consists of a proposed at-grade stone ford crossing necessary to provide access to a shared leach field system. The location of the shared leach fields is constrained by the distribution of soils suitable for wastewater disposal and the location of the proposed residential development. Consolidating wastewater disposal into shared systems allows the applicant to utilize areas with suitable soils and avoids the need for additional individual septic systems and associated disturbance throughout the property.

The applicant evaluated the potential to avoid the wetland and stream impact associated with these two accesses. Complete avoidance is not practicable because the wetland and intermittent stream network separates portions of the proposed development from the areas identified for shared wastewater disposal. Relocating the access would either require additional crossings, increase the length of wetland disturbance, or shift the impacts to another portion of the wetland and stream network.

The impact is therefore minimized through the use of an at-grade stone ford rather than a larger structural crossing. The stone ford will follow the existing grade and allow water to continue to pass through the crossing, minimizing alteration of the existing drainage pattern and stream channel and will be limited to the smallest area necessary to provide access to the shared leach field. The applicant recognizes that the affected wetland and stream system ultimately contributes to Mill Brook, which functions as the principal perennial stream and downstream receiving resource for the property and potential indirect effects to Mill Brook have been considered. The limited footprint and at-grade design minimize alteration of hydrologic connectivity, while the project's erosion and sediment control measures will minimize the potential for construction-related sediment to migrate downstream. Post-development drainage and stormwater management measures will further minimize potential changes in runoff reaching the Mill Brook system.

Impacts F and G have therefore been minimized by consolidating wastewater infrastructure, limiting the access crossing to the minimum area practicable, utilizing a low-maintenance at-grade stone ford, maintaining adjacent areas as otherwise undeveloped open space, and maintaining the existing grade and hydrologic connection to the maximum extent practicable.

5.5 IMPACT H – “At-Grade” Stone Ford” for Shared Leach Field Access | Mill Brook

Similar to Impact F and G, impact H consists of a proposed at-grade stone ford crossing associated with access to a shared leach field system. The applicant has given particular consideration to both the direct functions of the affected resource and the potential downstream implications of the crossing. Because Mill Brook receives drainage from the interconnected wetland and stream systems on the property, minimizing impacts within the contributing watershed is also important to maintaining downstream water quality and hydrologic functions within the Squamscott River and Great Bay watershed. The project therefore incorporates measures intended to limit both direct alterations to Mill Brook and indirect effects resulting from changes in runoff, sediment transport, and nutrient loading.

The need for Impact H is associated with providing access to the shared leach field while working within the existing distribution of suitable septic soils and wetland resources. The applicant has minimized the impact by limiting the crossing to the smallest wetland area necessary to provide access and by utilizing an at-grade stone ford rather than a larger structural

crossing. The at-grade design maintains the existing grade and allows surface water to pass across and through the crossing while minimizing alteration of the existing channel and hydrologic connection. By maintaining the crossing at the existing grade, the project avoids introducing a larger structure that could result in greater alteration of the stream channel and adjacent wetland. This design also limits the amount of fill, structural material, and associated grading required within the stream and wetland, minimizing direct impacts to the functions and values of Mill Brook, further minimizing indirect impacts to the Squamscott River and Great Bay watershed. Together with the project's erosion, sediment, drainage, and stormwater controls, these measures minimize both the direct and potential indirect effects to Mill Brook and its associated watershed to the maximum extent practicable.

5.6 OVERALL IMPACTS TO MILL BROOK & ASSOCIATED WATERSHED

The evaluation of wetland functions and values must consider not only direct impacts to jurisdictional areas, but also their relationship to the broader watershed. The wetlands and surface waters on the property form an interconnected drainage network that ultimately includes Mill Brook. Wetland B encompasses the Mill Brook system and represents the highest-value aquatic resource identified on the property. It consists of the perennial Mill Brook channel and its connected wetland and intermittent stream network. The functional assessment identifies Wetland B as providing important groundwater recharge/discharge, floodflow alteration, sediment and toxicant retention, nutrient removal, production export, and wildlife habitat functions. Its connected stream-wetland network also provides important watershed connectivity, sediment and nutrient processing, and habitat diversity.

The proposed development includes 48 residential homes within a 33-lot subdivision, 13 shared septic systems, 37 new drilled drinking water wells (one existing), roads, utilities, stormwater management features, and associated lot-level development. The applicant recognizes that development at this scale has the potential to alter hydrologic patterns, increase runoff, and affect downstream water quality if not appropriately managed. The applicant has therefore evaluated both the direct and indirect effects of the project on Mill Brook and the wetland systems that contribute to it. The revised project includes one limited direct impact to the Mill Brook perennial stream within Wetland B. This impact is necessary to provide access to an additional shared leach field system and has been limited to the area necessary to provide that access. The remaining wetland impacts occur primarily within the intermittent and emergent wetland systems associated with Wetland C and previously disturbed areas, thereby avoiding additional direct crossings of the Mill Brook perennial system.

The direct impact to Mill Brook is minimized through the use of an at-grade stone ford crossing. The crossing will be limited to the minimum area necessary to provide access to the shared leach field and will maintain the existing grade and general drainage pattern through the crossing. The at-grade configuration avoids the need for a larger structural crossing and minimizes alteration of the existing stream channel and adjacent wetland. The applicant recognizes that this crossing represents a direct impact to the highest-value aquatic resource on the property; however, the limited footprint and crossing design reduce the extent of that impact while allowing the necessary wastewater infrastructure to be accessed.

The use of 13 shared wastewater disposal systems is also an important component of the project's overall avoidance and minimization strategy. Rather than distributing individual septic systems and associated primary and reserve areas throughout the subdivision, wastewater

infrastructure is consolidated within areas capable of supporting the proposed systems. The shared leach field areas will otherwise remain undeveloped, with no additional residential or other development proposed within them, and will function as components of the property's open-space network. This approach limits the amount of clearing, grading, access, and infrastructure distributed across the property and reduces additional fragmentation of the interconnected wetland and vernal pool systems that contribute to Mill Brook.

The project further minimizes impacts to the Mill Brook watershed by utilizing existing disturbed corridors and crossings where practicable and by concentrating the majority of unavoidable wetland impacts within the moderate-value Wetland C system rather than creating additional impacts to the Mill Brook perennial stream. Impact E, which provides access to two private residences, will be upgraded to an open-bottom box culvert. The open-bottom design will maintain an open stream channel and natural streambed through the crossing, preserving hydrologic continuity and reducing the barrier effect of the driveway. This is particularly important for maintaining connectivity between the vernal pool located near Mill Brook and the three vernal pools associated with Wetland C. Although the culvert does not eliminate the broader habitat fragmentation associated with residential development, it minimizes the additional fragmentation attributable to the driveway crossing and helps maintain connectivity within the larger wetland and vernal pool complex.

The project incorporates stormwater management measures at both the individual lot and site-wide levels to minimize changes in runoff and protect downstream wetland and stream resources, including Mill Brook. Each proposed house on a new lot will be provided with a 4-foot-wide by 4-foot-deep stone drip edge to collect and infiltrate roof runoff, as shown in the drip edge detail on EEI Sheet D2. In addition to the lot-level drip edges, the project includes two proposed bioretention basin (Sheet C7.1), six catch basins, one sediment forebay (Sheet C7.1), one Pretx with Silt Sack Type C (Sheet D2), and two additional proposed Pretx treatment measures (Sheet D2) to address and manage runoff associated with the proposed paved roadway as shown on EEI Plan Sheet C7.2. These measures are intended to provide collection, treatment, attenuation, and infiltration of stormwater prior to discharge, thereby reducing the potential for increased runoff, sediment transport, and nutrient loading to the downstream wetland and stream network.

Measures will also be implemented prior to and during construction to control soil erosion and sedimentation. The areas proposed to be disturbed, including each wetland impact area, will be surrounded with erosion and sediment controls consisting of Filtrexx SiltSox or an approved equivalent. In addition, nine temporary 12-inch-high check dams will be installed at appropriate locations to slow concentrated runoff and promote sediment settling. These measures will remain in place and be maintained throughout construction until disturbed areas have been stabilized. Other temporary construction-phase protection includes the proposal of a tree line intended to help define the limits of clearing and disturbance and to retain existing vegetation where practicable. The applicant recognizes that, following conveyance of individual lots, long-term maintenance of the proposed tree line within private lot areas cannot be assured by the applicant because future property owners may modify vegetation within their respective lots. Accordingly, the proposed tree line is not relied upon as a permanent wetland or habitat protection measure. Long-term protection of resource areas is instead provided through the proposed no-cut/no-disturb easement (see below) adjacent to Mill Brook, wetland boundary delineation and wetland placards (see below), and the other easements and development restrictions identified on the plans. Collectively, the permanent stormwater management measures, temporary erosion and sediment controls, and proposed tree line are intended to minimize both construction-related and

post-development impacts to jurisdictional wetlands and streams and to reduce the potential for sediment and runoff to reach Mill Brook and downstream waters to the maximum extent practicable.

The applicant is also proposing a no-cut/no-disturb easement over approximately 55,175 square feet of upland located along the rear of Lots 1 through 7, directly adjacent and north of Mill Brook, as shown on EEI Plan E1. This easement will limit future clearing and disturbance within this area and help maintain the existing upland habitat and buffer immediately adjacent to the Mill Brook corridor. In addition, the project proposes septic, drainage, and snow storage easements throughout the site, as well as approximately 242,295 square feet (5.56 acres) of public access easements, as shown on EEI Plans E1, E2, and OS1. These easements define and constrain the areas in which future site improvements and access may occur and help prevent unnecessary expansion of development-related disturbance. The no-cut/no-disturb easement provides a specific restriction on future clearing and disturbance adjacent to Mill Brook. The septic, drainage, snow storage, and public access easements define the areas within which these respective improvements or uses may occur and help concentrate such activities within designated portions of the property.

The wetland boundaries will also be clearly delineated on the house side of the wetlands with 5-inch by 7-inch signs mounted on metal posts and spaced approximately 75 feet apart, as shown on EEI Plan C8. This signage will provide clear identification of the wetland limits to property owners and residents and help prevent future encroachment or disturbance within the jurisdictional wetland areas. Collectively, the proposed easements and wetland boundary delineation provide additional measures to limit future disturbance, maintain undeveloped habitat adjacent to Mill Brook and the interconnected wetland systems, and protect the functions and values of jurisdictional resources beyond the initial construction of the project.

The applicant's avoidance and minimization analysis therefore considers the project in its larger Mill Brook watershed context, rather than evaluating impacts solely by direct wetland acreage. The selected design acknowledges the necessity of one limited direct impact to Mill Brook while avoiding additional direct impacts to the perennial stream, concentrating other unavoidable impacts within moderate-value wetland systems and previously disturbed areas, consolidating wastewater infrastructure, maintaining substantial undeveloped areas around the shared leach fields, and incorporating crossing designs and stormwater controls that minimize impacts to hydrologic and habitat connectivity.

While the project will necessarily result in changes to portions of the existing landscape, the applicant has minimized both direct and indirect effects to Mill Brook by limiting the direct perennial stream impact to the area necessary for access to the additional shared leach field, maintaining the existing grade through the at-grade stone ford, utilizing an open-bottom box culvert at Impact E to maintain wetland and vernal pool connectivity, consolidating wastewater infrastructure, retaining shared leach field areas as otherwise undeveloped open space, and implementing comprehensive erosion, sediment, drainage, and stormwater controls. Based on the functional assessment, constraints analysis (see section 6.0), and alternatives evaluated herein, the proposed design minimizes impacts to Mill Brook, its contributing wetland systems, and their associated functions and values to the maximum extent practicable while maintaining the basic purpose of the project and complying with applicable local and State requirements.

6.0 PROJECT CONSTRAINTS ANALYSIS

Avoidance of all wetland impacts was evaluated, but determined to be unpracticable due to the following site constraints:

Septic & Soil Suitability Limitations:

Detailed soil investigations conducted across the site indicate that well-drained upland soils suitable for on-site wastewater disposal are limited in extent and location. Much of the site is characterized by shallow seasonal high-water table (SHWT) or somewhat poorly drained soils. The Town of Stratham requires a minimum of eighteen (18) inches of natural, permeable soil above the SHWT beneath both the primary sewage disposal area and the required reserve area. In addition, State of New Hampshire requirements establish a minimum separation distance of twenty-four (24) inches to the SHWT for subsurface wastewater disposal systems. Compliance with these requirements is mandatory and further constrains the location of viable septic system areas on-site. Test pit data by Gove Environmental Services (TP-1 through TP-12) confirm that areas failing to meet the 18" separation requirement are confined to the existing field, north of wetland C (attached GES test pit data and locations). Test pit data by Hurley Environmental (TP-7, TP-8, TP-11, TP-12, TP-13, and TP-21) shown on plan sheet C2 confirm that areas meeting the 18-inch separation requirement are confined to south of Wetland C, which necessitates the proposed crossing locations.

To meet these regulatory requirements while minimizing overall site disturbance, a shared septic system was utilized. This approach consolidates wastewater infrastructure within the only areas containing suitable soils, reduces the need for multiple marginal or noncompliant systems, and minimizes overall land disturbance relative to dispersed individual systems. Due to the limited and spatially separated distribution of suitable soils meeting both Town and State separation requirements, the proposed development areas cannot be fully co-located with compliant septic system locations. As a result, the three wetland crossings associated with Wetland C are required to provide access between buildable areas and the shared septic system location. These crossings allow the project to maintain compliance with applicable separation requirements while avoiding placement of septic systems in unsuitable or noncompliant soils. Avoidance of these crossings was evaluated but determined to be not practicable, as it would require either locating septic systems in areas that do not meet Town and State regulatory requirements, or substantially increasing environmental disturbance to create alternative compliant locations. Therefore, the proposed impacts to Wetland B & C are unavoidable and have been minimized to the maximum extent practicable, consistent with the permitting criteria of the New Hampshire Department of Environmental Services.

Resource Distribution

The distribution and configuration of wetlands and surface waters across the site represent a primary constraint to complete avoidance of aquatic resource impacts. Wetlands and streams are not confined to a single portion of the site, but instead form a continuous and interconnected network that influences site access, layout, and infrastructure placement.

Wetland C and its associated intermittent stream system extend across the central portion of the site, physically separating upland areas suitable for development from those containing soils

suitable for septic system installation. This creates a condition where hydrologically constrained areas and buildable uplands are spatially segregated, limiting opportunities to co-locate development and wastewater infrastructure.

The broader wetland system, including Wetlands A, B, D, and E, as well as the Mill Brook corridor, forms a connected mosaic of natural and constructed features that further reduces the availability of large, contiguous upland areas free of environmental constraints.

Due to this distribution:

- Avoidance of all wetland and stream crossings would preclude reasonable site access and infrastructure connectivity.
- Relocating development to avoid one resource area would shift impacts to other wetland systems or require greater overall disturbance.
- The number and location of crossings are largely dictated by the physical separation of constrained and developable areas.

Based on the combined soil, regulatory, and resource distribution constraints, a range of development and infrastructure layout alternatives was evaluated to determine whether wetland and stream impacts could be fully avoided or further reduced. These alternatives included reconfiguration of building locations, relocation of wastewater disposal areas, and modification or elimination of proposed crossings. However, due to the limited availability of suitable soils, the physical separation between buildable uplands and compliant septic areas, and the interconnected distribution of wetlands and surface waters across the site, complete avoidance of impacts was determined to be not practicable. The following analysis summarizes the alternatives considered and demonstrates that the proposed design represents the least environmentally damaging practicable alternative by minimizing the number, extent, and location of impacts while maintaining compliance with applicable local and state requirements.

7.0 ALTERNATIVE ANALYSIS

A range of practicable alternatives was evaluated to avoid or further minimize impacts to wetlands and surface waters, including alternative site layouts, septic system locations, and access configurations. Each alternative was assessed based on its ability to meet project purpose and need, comply with local and state regulatory requirements, and reduce environmental impacts.

Alternative 1: No-Impact / Avoidance Alternative

An alternative avoiding all wetland and stream impacts by limiting development to upland areas was evaluated. This approach was determined to be not practicable because it would preclude access to areas containing suitable soils for septic system installation, resulting in noncompliance with required separation distances to the seasonal high water table. As such, this alternative would not meet the basic project purpose of creating buildable lots with compliant wastewater disposal.

Alternative 2: Relocate Septic Systems

Relocation of septic systems to avoid crossings the perennial and intermittent stream was considered. However, soil investigations confirm that areas outside the proposed septic locations do not meet the minimum separation requirements established by the Town of Stratham and the New Hampshire Department of Environmental Services. Implementing this alternative would require placement of systems in noncompliant soils or extensive site disturbance to create marginally suitable areas, resulting in greater overall environmental impact. Therefore, this alternative was determined to be not practicable.

Alternative 3: Dispersed Individual Septic Systems

The use of individual septic systems for each lot, rather than a shared system, was evaluated as a means to reduce the need for crossings. This alternative was determined to be less environmentally protective, as it would expand the overall disturbance footprint, require utilization of marginal soils in multiple locations, and increase impacts to wetland buffers and adjacent resource areas. In comparison, the proposed shared system consolidates infrastructure within the only suitable soils and minimizes total site disturbance.

Alternative 4: Reduce or Eliminate Crossings

Site layout modifications to reduce or eliminate the number of crossings at Wetland B and Wetland C were evaluated. Due to the spatial distribution of wetlands and upland areas, as well as the separation between buildable areas and compliant septic locations, reducing the number of crossings would either limit access to otherwise developable portions of the site or increase impacts to higher-value resources. The proposed design represents the minimum number of crossings necessary to achieve site access and regulatory compliance.

Alternative 5: Alternative Crossing Locations

Shifting crossing locations to other areas of the site was also considered. Alternative locations would result in increased impacts to higher-value wetlands or perennial stream systems, or would increase the overall length and extent of impacts. The proposed crossings are located within previously developed areas or are positioned to minimize crossing length and associated disturbance. As such, alternative crossing locations were determined to be more environmentally damaging.

This concludes the wetland functional assessment, comparative wetland analysis, and project constraints and alternative analyses for this site. If you have any questions or concerns, please feel free to contact me at (603) 436-3557.

Sincerely,

Morgan Moody Digitally signed by Morgan Moody
Date: 2026.09.08 12:16:47 -04'00'

Morgan Moody, CWS
James Verra & Associates, Inc.

