



*Protecting our water, our land, our communities*

**Date:** 14 July 2022  
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**RE:** Informal NRWA Review  
Housing for Older Persons Development  
23 Main Street, Brookline, NH

The following comments derive from a review of the proposed site plans (dated: 13 May 2022), publicly available maps on NH Granit and GoogleEarth, the GZA Wildlife Assessment Report (dated: February 2022), and the Meridian Land Services Vernal Pool Assessment (date: 6 July 2022). We prepared this informal review at the request of Michele Decoteau, Town Planner of Brookline, NH.

### **Conservation Value**

The site is largely forested, with the Nissitissit River bordering its southern edge; Village Brook bordering its western edge; and Stone House Brook bordering its northern edge. Village Brook and Stone House Brook are both tributaries to the Nissitissit River. Additional bordering and isolated wetlands are also present on-site. Two confirmed vernal pools are located just south of the proposed buildings and a potential vernal pool is located just off-site north of Stone House Brook.

According to NH Granit, the site is highly ranked for wildlife habitat and connectivity. Under the NH Wildlife Action Plan, the southern portion of the site is designated as “highest ranked wildlife habitat in NH”, and the northern two thirds of the site are designated as “highest ranked wildlife habitat in the region.” The site is also considered high priority habitat for a wildlife corridor and highly permeable to wildlife movement.

The site’s conservation value stems, at least in part, from its landscape context. East and west of the site are significant blocks of undeveloped and/or permanently conserved land (e.g., Hobart-Fessenden Woods, Camp Tevya, Andres Institute of Art). To the north and south, however, the site is sandwiched between Brookline village, the Powell Sand & Gravel commercial yard, and a similarly large, altered parcel along South Main Street. The project site provides a critical link along an east-west axis, between large blocks of undisturbed habitat in Brookline. Additionally, the site provides migratory habitat for both aquatic and terrestrial species.

Underscoring the site’s wildlife-habitat value, the GZA report indicates that the site contains suitable habitat for 3 state-listed rare species, and states that two of these species are “possible...to occur” on-site: the American eel and the black racer snake. The Meridian report further indicates that three primary vernal pool indicator species are present on-site: wood frogs, spotted salamanders, and fairy shrimp.

## Project Comments

1. Nearly every proposed building is located within 100' feet of bordering vegetated wetland. Brookline has a 50' buffer zone associated with its Wetland Conservation District, but a large body of research shows that larger buffers (i.e., > 100') are needed to support water-dependent wildlife species.
2. Two known vernal pools are located in very close proximity to proposed buildings and other disturbances on-site. Both pools host breeding populations of spotted salamanders and wood frogs; one pool also contains a breeding population of fairy shrimp. Wood frogs and spotted salamanders breed in vernal pools, but the adults and juveniles spend most of their lives in the upland forest surrounding vernal pools. Without undisturbed upland forest, on-site populations of these species will likely not persist. The site is hemmed in by residential parcels, the Nissitissit River, and a large wetland complex. Although the wetland is highly permeable to these amphibian species, none of the other bordering land uses offers quality upland habitat for the overwintering, migratory, and foraging needs of the wood frog and spotted salamander. The wetland complex is largely unsuitable for overwintering of these species. Consequently, the on-site upland forest is the most likely year-round habitat of the amphibians breeding in these pools.
3. Overall, the project's impacts to wetland resources and adjacent wildlife habitat could be markedly decreased by eliminating at least one of the proposed buildings along the southern edge of the project. Moving the fire protection system and other disturbances in the forest (between the southern wetlands and the buildings) farther from the wetlands, especially from the vernal pools, would also be quite beneficial. These steps would protect some of the upland-forest amphibian habitat. Any reduction in parking lot size at the club house and the length of the northern driveways (shifting the northern row of houses away from Stone House Brook) would also reduce impacts to the Brook and its associated wetlands. To facilitate the movement of buildings away from the wetlands, the driveways to the southern buildings may need to be shortened. These changes would also decrease the amount of impervious surface on-site. Minimizing impervious surfaces allows for greater groundwater recharge and slower stormwater flows, both of which benefit the wetland systems and the community at-large.
4. The expected effects of having the pumping station approximately 170' from the northern edge of the Nissitissit River are not described. We recommend that a pump test be conducted to demonstrate the effects of the well on the River, Village Brook, and the associated wetlands (if a pump test has not already been conducted).
5. The site is entirely within the Aquifer Protection Overlay District. It is not clear where the protected well is located in relation to the proposed septic system, but the Town should consider requiring modeling of nitrogen loading to the aquifer from the septic system.
6. Two types of curbing are described in the site-plan constructions details, but it is not clear where each type will be used. This site is highly ranked wildlife habitat and is likely home to turtles, snakes, and amphibians (among other wildlife species). These herpetofauna have difficulty climbing up and over traditional curbing (such as the vertical curb proposed). Amphibians also suffer mortality when directed by traditional curbing towards and into storm drains. Sloped or no curbing should be used wherever possible to facilitate animal movement. It is particularly important to use sloped or no curbing for a few feet on either side of a storm-drain.
7. The GZA wildlife habitat assessment was conducted on a single day in February. As GZA indicates, it is unlikely that any of the three identified rare species or other herpetofauna could possibly be sighted on a single day in the winter. GZA produced a solid report from available data, but we suggest that additional, season-appropriate wildlife survey work is needed.

Though nearby roads and the River may be potential barriers to snake movement (as GZA states), the quantity of data on these species' ability and propensity to actually cross roads, rivers, and wetlands is meagre. Given the potential snake habitat on-site and the nearby known locations of both rare snake species, it is quite possible that eastern hognose and black racer snakes use the site. Additionally, with two known vernal pools on-site and another potential vernal pool just north of the site, it is possible that rare amphibian/invertebrate species may be present on-site and highly probable that the site produces abundant amphibians, which are a major food source for eastern hognose snakes. Note that vernal-pool-dependent amphibians spend 90% of their lifetime in the forested uplands surrounding vernal pools. As quoted from the NH Natural Heritage Bureau letter: "A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences... However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present." More extensive surveys for snakes during known active periods are warranted.

8. Open space: It is not clear where the protected open space will be located, how it will be used, how it will be permanently bounded in-the-field, and how it will be permanently protected. These items should be indicated on the site plans.
  - a. From an environmental perspective, it is also important to clarify how much of the open space will be devoted to active recreation (if any). Under the Brookline Zoning and Land Use Ordinance, at least 10% of the lot must be reserved for recreation. How much area will actually be devoted to recreation? Where will it be located? Will it be for active or passive recreation? Passive recreation is preferred, as it exerts far fewer environmental impacts.
9. If possible, the water line for the buildings should be moved to the front of the buildings (perhaps even under the road), instead of being placed behind the buildings. This would require less disturbance in proximity to the wetlands and fewer feet of piping material.
10. Unless required for ADA purposes, the sidewalk should be less than 5-feet wide. This would decrease the total impervious area on the site, yet still provide a walkable neighborhood.