

TOWN OF HUDSON

Conservation Commission

Jim Battis, Chairman

Nancy Brucker, Selectmen Liaison

12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-816-1291



2 February 2014

To: The Planning Board

Subject: Environmental Issues Regarding the Conceptual Circumferential Roadway

1. In August 2012, Selectman Richard Maddox informally requested that the Conservation Commission review the proposed routing of a two lane roadway extending from NH 3A (Lowell Road) at the Sagamore Bridge to NH 111 and to highlight areas of the route that might present significant environmental issues. The conceptual route of this road was presented in a Hudson CTAP Discretionary Project Report dated October 2009 generated by the staff of the Nashua Regional Planning Commission (NRPC) with support from Vanasse Hangen Brustlin, Inc.
2. The conceptual roadway layout was restricted to the existing Nashua-Hudson Circumferential Highway (NHCH) right-of-way. The route was selected to minimize wetland impacts based on existing GIS mapping and aerial photography available to the NRPC (Attachment 1). This concept assumed that reducing the width of the roadway to two lanes, in contrast to the proposed multilane NHCH highway, many of the adverse environmental effects that resulted in the cancellation of the NHCH project could be reduced or avoided.
3. Over the past year members of the Conservation Commission have walked the entire length of the right-of-way to assess areas of potential impact. In addition to on-the-ground recognizance, we have reviewed information published in the original Nashua to Hudson Environmental Impact Analysis (October 1993), the Prime Wetlands Assessment and Designation: Hudson, New Hampshire (May 2009), and other available Town and State resources.
4. The Commission identified areas that we consider having the most significant potential environmental impact as being located in the right-of-way south of Bush Hill Road crossing Musquash Road and continuing on toward Lowell Road. The conceptual routing would result in several significant wetland impacts in this area.
5. Of particular note are the proposed crossings of Limit Brook Swamp and Miles Swamp (Attachment 2) both of which were identified as having significant functional value during the Prime Wetlands Assessment conducted in 2008 for the Hudson Conservation Commission. This evaluation was made using a scientifically defensible process know as the *Method for Comparative Evaluation of Nontidal Wetlands in New Hampshire* (Ammann and Stone, 1991). These two wetlands had functionality rated as in the upper half of the 28 major Hudson wetlands examined in this study.
6. The Commission noted several areas of steep slopes in this segment of the right-of-way

whose modification for roadway construction would result in alteration of terrain also likely to produce adverse drainage and wetland impacts (Attachment 3).

7. Of concern for the proposed routing is the fact that the existing mapped wetlands throughout the corridor is deficient and does not accurately represent the on-the-ground situation. This possibility is acknowledged in the CTAP Report. One significant example of this mapping deficiency and its possible effect on design can be seen at a wetland pocket located in the corridor to the north of Speare Road is illustrated in Attachment 4. Minor impact is suggested by the CTAP Report but ground recognizance suggests a more significant effect. Obviously, in this case and others, further study by certified wetland scientists is required.
8. A preliminary assessment of known locations of rare species and exemplary natural communities was performed through the New Hampshire Natural Heritage Bureau DataCheck Tool (<http://www.nhdfi.org/about-forests-and-lands/bureaus/natural-heritage-bureau/services/>) This assessment suggests that this project could have potential impacts on such communities and, similar to the wetland impacts, requires further study by qualified experts.
9. The Commission noted that news reports, particularly the Hudson-Litchfield News (18 October 2013), suggest the possible reconsideration of the full four lane design of the HNCH. In that event, we believe that the proposed roadway would face the same issues as the original NHCH and would require significant rerouting outside the existing corridor particularly in the southern half of the route. This situation is clearly echoed in the New Hampshire Department of Transportation NHCH routing map accompanying the Hudson Litchfield News article of 18 October 2013 (Attachment 5).
10. Finally, for the record, we have attached a list of specific observations compiled from the site walks by Commissioner Dickinson for your consideration (Attachment 6).
11. We believe that none of these observations are original to the Commission and merely reiterate potential issues raised by others. If you have any questions concerning this letter, the Conservation Commission is ready to discuss the content at your convenience.

For the Conservation Commission

James Battis, Chairman
Hudson Conservation Commission

Unanimously approved by members of the Conservation Commission present and voting, 13 January 2014.

CC: Board of Selectmen

Attachments

Attachment 1 – Conceptual route for circumferential roadway

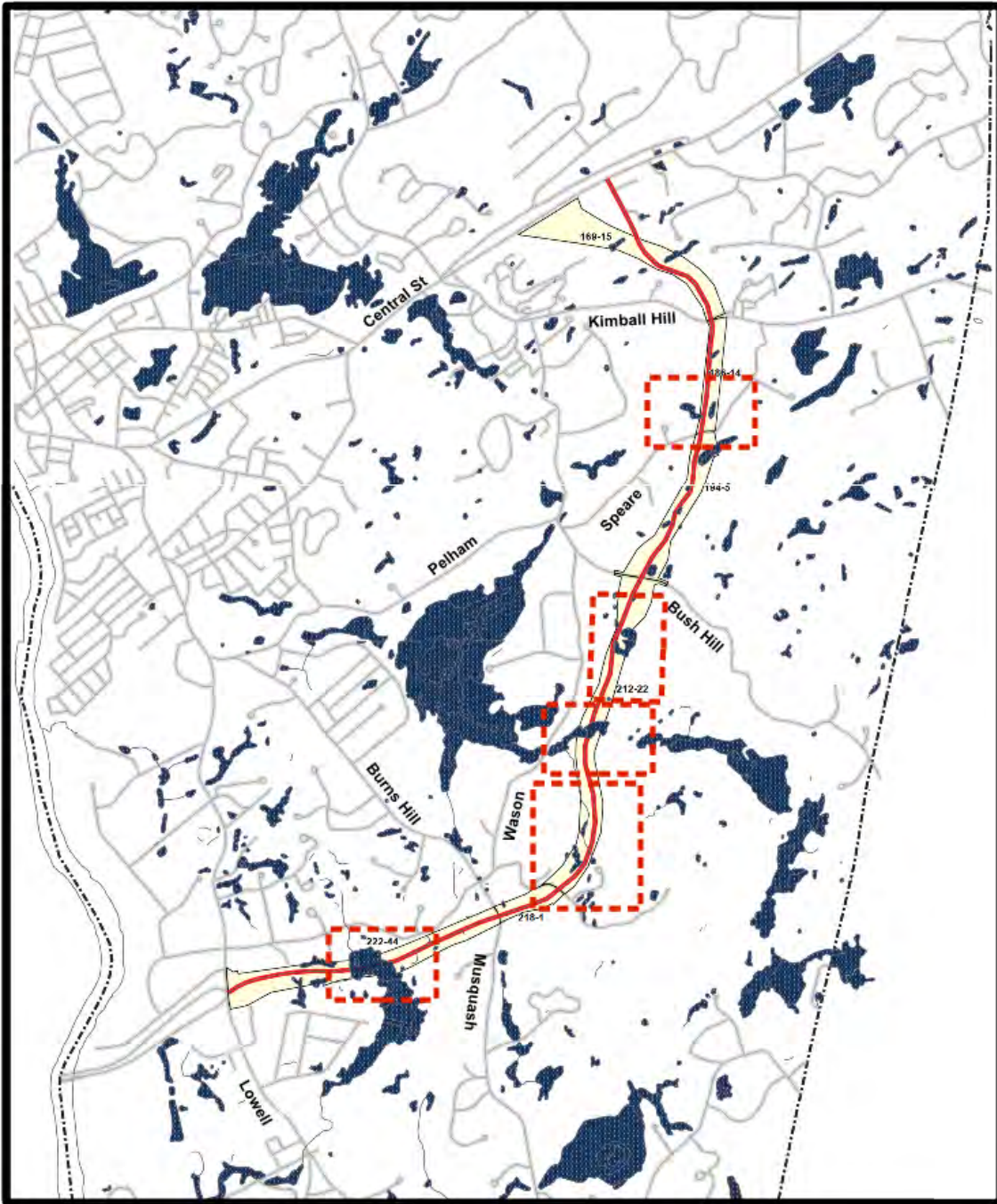
Attachment 2 – Potential significant wetland impacts in the Lowell Road to Bush Hill segment of the corridor.

Attachment 3 – Potential significant terrain alteration impacts in the Lowell Road to Bush Hill segment of the corridor.

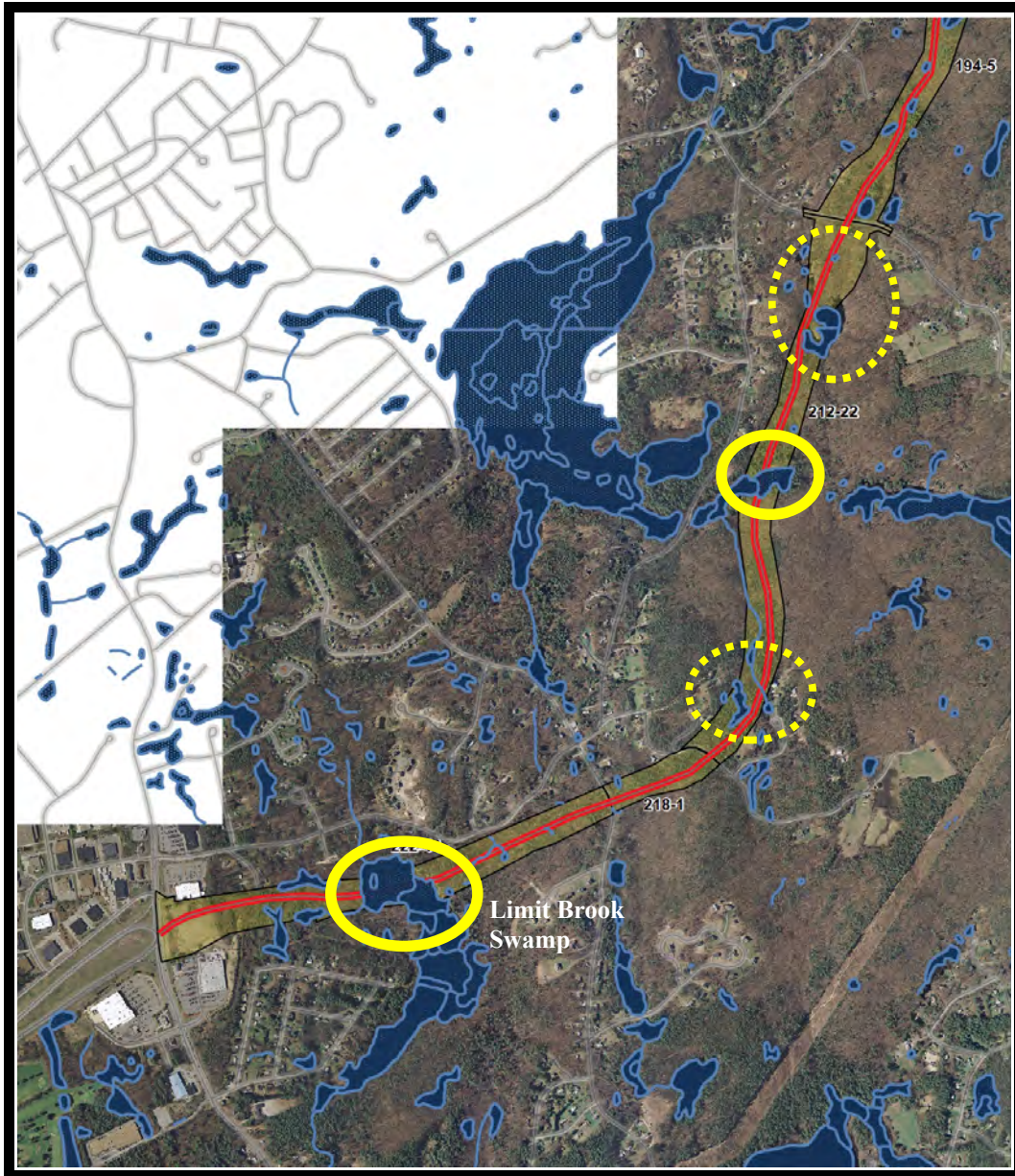
Attachment 4 – Example of wetland mapping issues near Speare Road

Attachment 5 – NH DoT proposed NHCH route

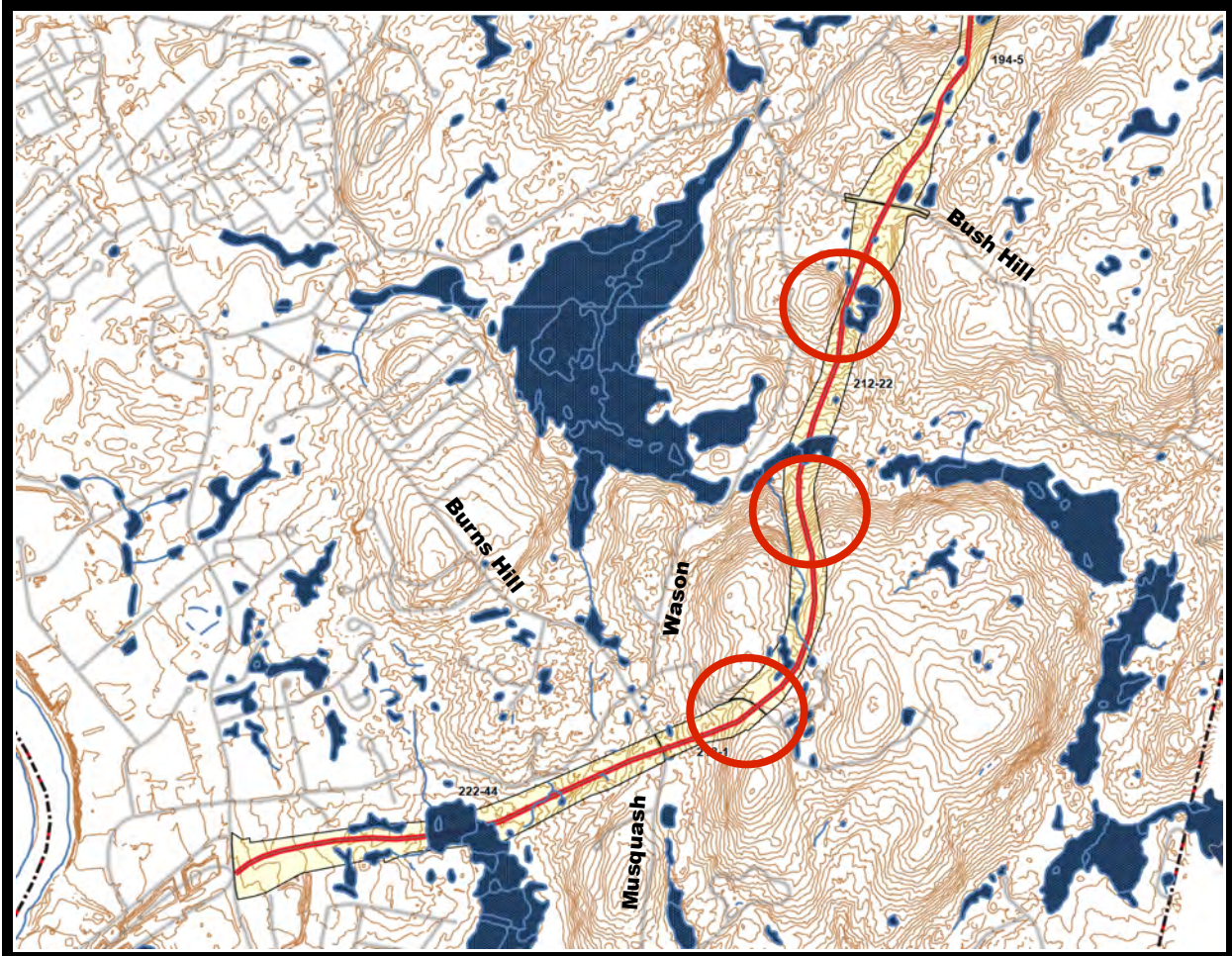
Attachment 6 – Site Observations



Attachment 1 – Conceptual route for circumferential roadway (red line) as defined in the CTAP Hudson Discret Project Report (Oct 2009) with the existing Nashua-Hudson Circumferential Highway right-of-way (yellow areas). Blue areas are US Fish and Wildlife National Wetland Inventory wetlands in Hudson. Red dashed boxes indicate areas discussed in this memo.



Attachment 2 – Plot showing NWI wetlands on 2010 aerial photos showing the Limit Brook and Miles Swamp wetlands crossings (solid yellow ovals). Both wetlands are considered to have relatively high functional value. Two other potential significant wetland impact areas are highlighted in dashed yellow ovals.



Attachment 3 – Topographic contours underlying the conceptual route of a circumferential roadway (red line) highlighting (red ovals) several areas which might require terrain alteration during construction that could have potential impacts on wetlands and streams.

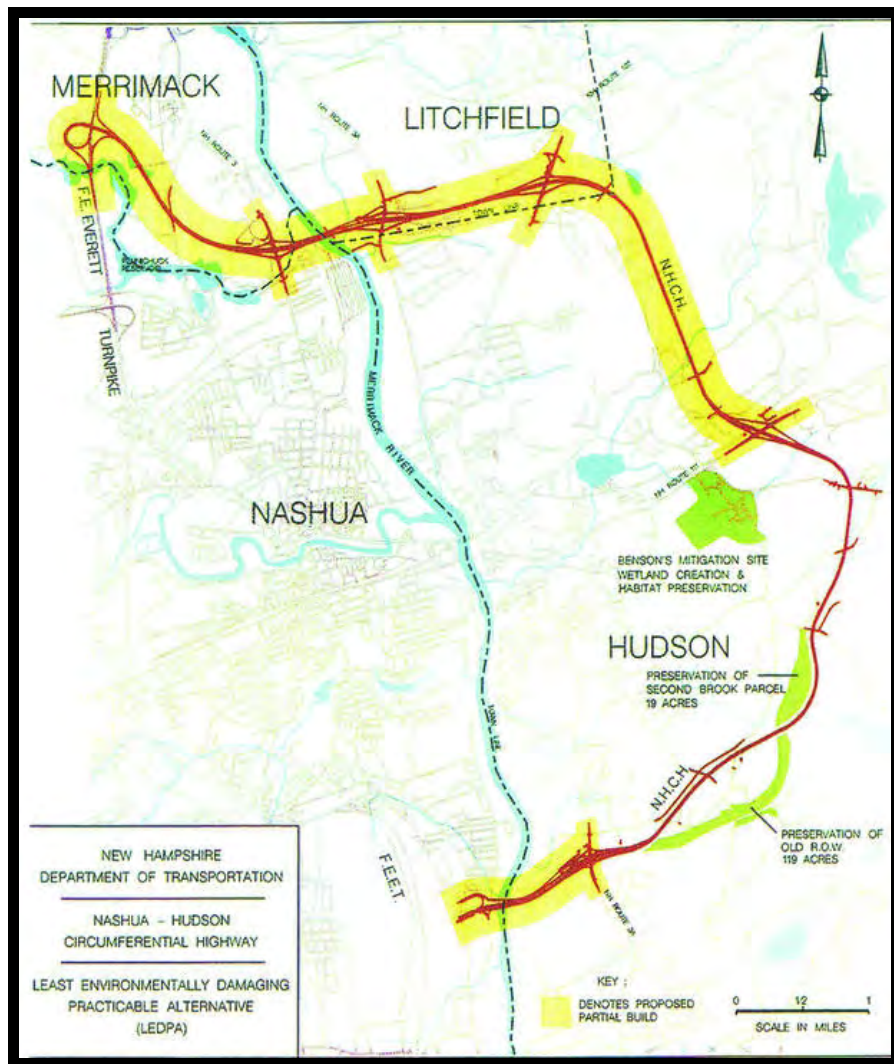


A



B

Attachment 4 – Figure A compares the National Wetland Inventory (NWI) wetlands (blue shapes) near Speare Road (gray road at bottom of figure) as compared to a 2010 aerial photo of the same area showing more extensive wetland development. (Misregistration of the wetlands is likely due to the scale of mapping used for the NWI). The NHCH corridor is defined by the yellow overlays and the proposed roadway by the near vertical red line. Note that the roadway appears to stay out of the wetlands as defined by the NWI while it passes through the wetlands in the photo. The second photo (B) shows the only dry land between the two wetland bodies north of Speare Road is a small dam.



Attachment 5 - NH DoT Proposed NHCH route showing the “Least Environmentally Damaging Practical Alternative” (in red) and showing the existing corridor land that would not be used in construction to minimize environmental damage (in green). This appears to correspond to the areas highlighted as environmentally sensitive by the Conservation Commission. (Source: Ober, Lynn, “Will the Circumferential Highway Rise from the Ashes?”, **Hudson - Litchfield News**, 24.15 (2013))

Site Walk Observations concerning a Proposed Town Roadway along the existing Circumferential Highway Corridor

compiled by

Ken Dickinson

Hudson Conservation Commission

In general, the corridor has many wetlands and waterways of various types. The primary focus of this preliminary study is limited to the larger areas of wetland impact along this corridor. Impacts are based construction of a four lane roadway (as proposed in the Nashua Telegraph in 2013), however this study is limited to the current State owned corridor. Each wetland area contains native species as noted in the Hudson Prime Wetlands Study report conducted by VHB. Specific vegetation and/or animals were not further identified, however there is visual evidence of typical local wildlife present throughout the corridor. This is consistent with earlier reports that were conducted by various governmental agencies.

During the HCC site walks conducted in 2012-2013, there was a general consensus of concern that several areas of the proposed roadway corridor have steep gradients. Extensive modification of these slopes has the potential to significantly impact drainage patterns into the adjacent wetlands and waterways. Any roadway design will require extensive engineered systems to handle the impact of roadway runoff and its related contaminants. Infiltration basins and other appropriate BMP's will be required extensively throughout the corridor to maintain existing water quality. Therefore, several areas of the corridor will require extensive development (blasting, grading, etc.) of the corridor itself and potentially to adjacent properties as well. Our current documentation is limited, however it is intended that the Commission will further monitor these areas, as plans for the corridor are further developed.

Wetland Crossing #1 – Limit Brook Swamp:

Approx. Length of Wetland Crossing = 200 LF and 300 LF (if proposed route is limited to the southern portion of R.O.W.) or 800 LF Max (if proposed route is centered along the middle portion of R.O.W.).

Option A – Provide Bridge. This option would have the least permanent impact to the watershed.

Option B – Provide Causeway. This option would bisect the swamp and could permanently alter the perimeter buffer of the existing swamp/pond downstream. Substantial amount of structural fill (permanent wetland impact) required.

Option C – Provide crossing at existing beaver dam found south of State Property. This option would require purchase of undeveloped private land (Monahan), however it is the narrowest point to cross Limit Brook and most likely would be the “point of least impact”.

Note: Fish population is still present as there is recent evidence of fishing along the northern edge of this wetland. Northern portion of this wetland area and brook have some impacts from residential development along Wason Road, however the wetland remains a quality system. Long term environmental impacts to the Limit Brook Watershed are a concern.

Wetland Crossing #2 – Second Brook:

Approx. Length of Wetland Crossing = 350 LF - potentially avoided with only two stream crossings

Option A – Provide Bridge. Slopes ranging from steep to moderately steep, located on both sides of Second Brook, will require substantial modification. Bridge construction is necessary to minimize impact to this crossing. This brook handles a significant amount of stormwater runoff within a large watershed area.

Option B – Provide Causeway. This option would require a large amount of fill (permanent impact) and would further impound this stream causing negative impacts to both wetland area and the stream itself.

Note: Fish population is still present as there's recent evidence of fishing along this wetland and downstream along Miles Swamp. Long term environmental impacts to the Miles Swamp/Second Brook Watershed are a concern.

Wetland Crossing #3 – Pond found East of Second Brook (Bush Hill Pond #1):

Approx. Length of Wetland Crossing = 500 LF

Option A – Provide Bridge. This pond is located between two significant hills. The surrounding moderate steep & steep slopes found on both sides of pond lend itself to the construction of a bridge.

Option B – Provide Causeway. This option would require a substantial amount of structural fill and would effectively remove the pond.

Option C – Avoid Pond . This option would require purchase of private property and would most likely require blasting into the existing slope. The southern slope has a moderately steep grade versus the northern slope, thus it requires less blasting and would lessen the potential impact to the existing pond. Another wetland, located upstream on the northern side of the pond, could be avoided by a southerly route as well.

Wetland Crossing #4 – Brook found South of Speare Road

Approx. Length of Wetland Crossing = 100 LF (within R.O.W. itself)

Option A – Provide Bridge. Brook appears to have less flow than Second Brook, however it should not be impeded for this same reasons as noted above.

Note: Steep slope descends from southern side of Bush Hill (South Side of Brook).

Potential Stream Crossing = less than 50 LF at narrowest point, found upstream of wetland which appears to be historically modified (impounded as a farm pond).

Wetland Crossing #5 – Pond and adjacent wetlands found North of Speare Road

Approx. Length of Wetland Crossing = less than 100 LF

Wetlands associated with brook meander upstream adjacent to the corridor for a greater length.

Construction of a four lane roadway versus a two lane roadway would impact wetlands found upstream of the pond.

Option A – Provide bridge.

Note: Moderate slope descends from Kimball Hill on north side of brook

Potential Stream Crossing = less than 50 LF at narrowest point.

Option B – Provide large arched culvert and causeway.

If a two lane roadway is proposed, this brook crossing may not require a bridge. However, the brook crossing is near Speare Road. If the proposed roadway is elevated over Speare Road, then bridging should be considered for the brook as well.

Wetland Crossing #6 – Isolated wetlands (potential vernal pool) found south of Kimball Hill Road

Approx. Length of Wetland Crossing = 100 LF

Environmentally best solution would be to avoid area by relocating roadway westerly of the wetland area. The surrounding area is undeveloped woodland.

Note: Steep slope descending from Kimball Hill on north side of wetland area will require extensive modification for roadway construction.

Wetland Crossing #7 – Pond and wetlands found south of Constitution Drive

Approx. Length of Wetland Crossing = less than 50 LF (narrow stream crossing)

Steep slopes located immediately south of Constitution Drive descending to the brook and wetland could require substantial structural fill and modification to this area to provide a sufficient road gradient.

NWI WETLAND INVENTORY

Hudson, NH Circumferential Highway Corridor

SOURCE: <http://www.fws.gov/wetlands/Data/Mapper.html>

Merrill Brook Watershed:

- 1) PFO1E @ Hudson Park Drive (W. of "Life is Good" Bldg.) – Merrill Brook Crossing #1
Area: 0.82 AC
- 2) PFO1E + Merrill Brook Crossing #2 @ between Constitution Park and Catalpa Circle.
Area: 1.89 AC

Miles Swamp/Speare Road Brook Watershed:

- 3) PEM1E (isolated) found at bottom of steep slope found between Speare and Kimball Hill Roads. Area: 0.33 AC
- 4) PFO1E @ beaver pond / brook leading to Miles Swamp Crossing #1 found N. of Speare Road. Area: 0.78 AC
- 5) PSS1E/ PEM1Eb @ brook leading to Miles Swamp Crossing #2 found S. of Speare Road. Area: 3.68 AC
- 6) PFO1E + (3) PSS1E (linked / isolated) @ Caldwell Rd. (dirt road on Bush Hill)
Area: approx. 1.00 AC combined

Miles Swamp/Second Brook Watershed:

- 7) PFO1E @ beaver pond found east of Bush Hill Road.
Area: 0.82 AC
- 8) Stream Crossing leading to Second Brook and PF01Eb @ beaver ponds found w. of Bush Hill Rd. Area: approx. 0.5 AC combined
- 9) PFO1Eb/PUB/FO5Fb @ largest beaver pond found west of Bush Hill Road (S. of Wason)
Area: 3.55 AC
- 10) PEM1/SS1Eb @ Second Brook Crossing
Area: 2.68 AC
- 11) PUB/ FO5Fb and FSS1Eb associated w/ Merrill Hill Brook leading to Second Brook (Miles Swamp) Area: approx. 0.5 AC combined
- 12) PF01E + PUBHh + PEM1E @ Homestead Lane Area: approx. 2.5 AC combined

Limit Brook Swamp Watershed:

- 13) PEM1E found along Wason Road (stream #1 leading to Limit Brook Swamp)
Area: 0.13 AC

14) PSS1E found along Wason Road (stream #1 leading to Limit Brook Swamp)
Area: 0.13 AC

15) PEM1Eb/PFO5Fb @ Limit Brook Swamp Area: 11.73 AC combined

16) PSS1C and PSS1E @ Gregory St. (stream #2 leading to Limit Brook Swamp)
Area: approx. 3.0 AC combined

17) PEM1Fh @ Colson Road (stream #2 leading to Limit Brook Swamp)
Area: 1.45 AC

Codes:

PFO1E: Palustrine Forested / Broad-Leaved Deciduous / Seasonally Flooded/Saturated

PEM1E: Palustrine Emergent / Broad-Leaved Deciduous / Seasonally Flooded/Saturated

PSS1C: Palustrine Scrub-Shrub / Seasonally Flooded

PSS1E: Palustrine Scrub-Shrub / Seasonally Flooded/ Saturated

PSS1Eb: Palustrine Scrub-Shrub / Seasonally Flooded/ Saturated / Beaver

PFSS1Eb: Palustrine Forested / Seasonally Flooded/ Saturated / Beaver

PUB: Palustrine Unconsolidated Bottom

PUB Hh: Palustrine Unconsolidated Bottom / Permanently Flooded/ Impounded or Diked

PFO5Fb: Palustrine Forested / Dead / Semi-Permanently Flooded / Beaver

PEM1Fh: Palustrine Emergent / Broad-Leaved Deciduous / Semi-Permanently Flooded
/Impounded or Diked