

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: January 19, 2011
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT

Christine Perron
Don Lyford
Jerry Moore
Jon Evans
Jon Hebert
Kevin Nyhan
Marc Laurin
Matt Urban
Peter Salo
Tony Weatherbee

**Federal Highway
Administration**
Jamie Sikora

Army Corps of Engineers
Rich Roach
Mike Boiardi
Angela Repella

EPA
Mark Kern

NHDES

Gino Infascelli
Lori Sommer

NH Fish and Game
Carol Henderson

McFarland-Johnson
Gene McCarthy
Vicki Chase

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:

(minutes on subsequent pages)

Finalization of December 15, 2010 Meeting Minutes.....	2
Londonderry (Evans/ Verani Culvert), 66021A (non-Federal).....	2
New Hampton, X-A000(076), 13678.....	4
Bow, 13742B.....	5
Warner, 99064Z (non-Federal).....	7

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

NOTES ON CONFERENCE:

Finalization of December 15, 2010 Meeting Minutes

The December 15, 2010 meeting minutes were finalized.

Londonderry (Evans/ Verani Culvert), 66021A (non-Federal)

Larry Keniston presented the Bureau of Rail and Transit's plan to replace a buried and collapsed 3' x 3' stone box culvert along the Manchester & Lawrence Railroad corridor in Londonderry. The existing culvert, likely the original stone box constructed in the 1840s, is located about 700 feet north of Auburn Road and 100 feet north of the point where Verani Way turns into the Verani Development

The Department proposes to restore the original flows through the railroad embankment by constructing a round concrete culvert with equivalent flow characteristics as the original 3' x 3' stone box culvert. The railroad maintained the existing 3' x 3' stone box culvert against beaver activity and sedimentation from the mid 1800s until some time before the tracks were formally abandoned in 1986. In the years since the abandonment of the railroad, development in the area below the culvert (V & F Investments) filled in much of a floodplain area that had been a receiving area for sediments and wood from the watercourse flowing through the culvert. The downstream fill confined the stream below the culvert to a narrow channel, which has over the years filled with 4 feet of sediment at the existing stone box culvert outlet. The sediment has now completely buried and blocked the stone box culvert. The top of the stone box culvert outlet header and a trickle of water bubbling up from underground at the outlet are the only evidence left indicating the location of the original stone box.

The existing RR embankment profile averages about 10 feet above the floodplain surrounding the brook and effectively acts as an 800-foot long dam to upstream waters. Flood waters would overtop the embankment except that after rising just over 5 feet, there is an alternate outlet that runs on Evans' property along the east side (upstream side) of the railroad corridor where the water can breach a height-of-land and exit the local area.

In 1988, the Department acquired the available portions of the existing culvert and related railroad embankment. The acquisition was made in the public interest in order to preserve the railroad corridor for possible future re-use as a railroad, and to allow recreational (rail trail/bikeway) use in the interim. The owner of the adjacent property east of the railroad embankment, Charlie Evans, has registered complaints at least since 2004 about the blocked culvert and the associated flooding on his property. The additional 5 vertical feet of water elevation has resulted in several acres of perpetually flooded land on his property. Dying trees in the impoundment area testify to the recent nature of the flooding.

Besides the flooding to upstream property owners, the impounded water causes structural damage to the embankments. Even if there isn't an overtopping of the embankment followed by a catastrophic washout, the railroad embankments were not designed for perpetual inundation. The

steep slopes slough away and piping occurs through the embankment soils, slowly weakening and progressively collapsing the embankments and causing sinkholes.

In order to be a good neighbor - and avert potential litigation in the matter - the Department's Rail and Transit Bureau attempted to remedy the upstream flooding situation in 2005. The Department proposed to install twin 24-inch plastic culverts. Prior to the construction, the Department believed that AT&T had installed their cable below the original stone box culvert. Unfortunately, it turned out that the AT&T cable had been installed above the original stone box culvert. Since both AT&T and the contractor on the site were unprepared to expose, support and relocate the AT&T cable the new 24-inch pipe invert was forced about a foot above the AT&T cable and 5 feet above the original stone box invert elevation.

Now that the Department has an accurate understanding of the actual depth of the AT&T cable, the Department proposes to construct a new culvert (likely partially buried in order to meet existing 3' x 3' stone box culvert hydraulic properties to produce a natural bottomed channel at the location of the existing stone box). This time, AT&T and the Department will be prepared to expose, support and relocate the AT&T cable as necessary.

On January 6, 2011, the Department coordinated with the NH Division of Historical Resources and the Division had no objections to the removal of the existing stone box culvert. Based on the recommendation of the Division's Linda Wilson, the Department is researching the possibility of securing V & F Investments' property rights and/or financial participation toward the proposed culvert replacement through the Londonderry Conservation Commission.

Richard Roach recommended that the Department contact Fish & Game for assistance in developing a "beaver solution" that would ensure relief for at least some flow even if beavers were to try and dam the new culvert. Maintenance and cleaning of the new main culvert could then at least occur after the surface elevation of the pond returned to a safe working level. L. Keniston subsequently contacted Robert Calvert of the cooperative office of USDA/NH Fish and Game for assistance. R. Calvert referred the Department to several websites for additional information. The Department will select the most appropriate beaver solution for this culvert and incorporate it at the the proposed culvert if feasible.

R. Roach further recommended that the culvert replacement include adequate grading work to facilitate meaningful downstream conveyance below the local culvert crossing. To allow for future maintenance, R. Roach recommended that the Department obtain permanent riparian rights on the V & F Investments property. Based on R. Roach's recommendation, the Department will seek to formalize the property rights by donation, as there are limited resources available in the Department's Railroad Fund.

The project design will, therefore, include grading the existing channel as necessary to effectively convey the flows downstream to a point where the flows can outlet. This will require excavating and re-grading a segment of the existing channel through the V & F Investments property to convey flows to the next culvert crossing, located approximately 700 feet downstream. Although the additional grading will involve more impacts to the V & F investments property, the grading will restore conveyance through the property, thereby eliminating the possibility of simply transferring the flooding situation from Evans downstream through the new culvert to the V & F

Investments property. P. Salo noted that beyond the next downstream culvert, the brook enters a pond located just east of the I-93, Exit 5 NB on ramp. From this pond, the flows pass under Interstate 93 and ramps through a 48-inch culvert. Beyond I-93 to the west, the flows enter a large wetland on the west side of Interstate 93.

Based on the recommendations presented at the NRA meeting, P. Salo agreed to perform some storm water modeling to supplement the hydraulic analysis associated with the design of the proposed culvert. The Highway Design Bureau agreed to process a survey request to be submitted by the Bureau of Rail and Transit for the area between the Evans-V & F Investments culvert and the next culvert (a 4' x 4' stone box) crossing the railroad embankment downstream. The Department will design the grading required to make meaningful conveyance of flows. The Department anticipates that the V & F Investments property owners will welcome the solution as revised by NRA since the restoration of the historical flows onto V & F Investments property will be mitigated by a suitable conveyance. The Department's right-of-way process will proceed on the basis of the new expanded project limits on the V & F Investments property.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

New Hampton, X-A000(076), 13678

Jon Hebert began by giving a brief overview of the project. This project involves the expansion of the New Hampton park and ride, and may also include minor shoulder widening and safety improvements along a 1,000' section of NH Route 104 in New Hampton.

The existing park and ride facility is mostly gravel and can hold approximately 17 vehicles. This facility is routinely full and often requires additional users to park along the roadway leading to the NHDOT New Hampton patrol shed. The proposed facility would be located in the same location as the existing facility however it would be expanded to accommodate for approximately 100 spaces. The facility has also been designed to accommodate for the addition of a bus shelter and dedicated bus lane, should it be found necessary in the future. All work would be contained within the existing property of the NHDOT patrol shed. No wetlands, endangered species or archaeological concerns have been identified within the proposed disturbance area. This effort is anticipated to result in a surplus of approximately 8,000 to 10,000 cubic yards of fill which may temporarily be placed within the patrol shed's pit until it can be used by the Department in the future.

It is also anticipated that this project will include some minor shoulder widening and safety improvements along a 1,000' section of NH Route 104 approximately 1 mile east of the park and ride facility. These efforts are anticipated to require some minimal impacts to two wetlands. One of these wetlands is a perennial (R2UB2) stream which currently passes beneath the roadway via a 15" RCP. This pipe may need to be extended depending on the final design of the project.

Rich Roach asked if the park and ride facility could somehow be connected to the adjacent Irving gas station property as this is currently where buses stop to pick up passengers. J. Hebert indicated

that the Department would look into it, but noted that this would require entry rights from the Irving station owners.

(Natural heritage: NHB11-128/129) This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Bow, 13742B

This project involves the replacement of the two red-listed bridges that carry Interstate 93 over Interstate 89 and over the Turkey River (Br. No. 135/160 & 136/160). Proposed improvements include ramp work, drainage improvements, and rehabilitation of the culvert that carries Bow Brook under Interstate 93. Gene McCarthy provided an overview of the project and described the proposed bridges and roadway approaches. Because of roadway widening, the roadway will be shifted 40 feet to the west

Waterways in the study area are Bow Brook, which crosses under I93 just north of the study area, and Turkey River, which is crossed by the bridges to be replaced. There are wetlands within all four interchange infields and vegetated swales along the off ramp from I93 south onto I89 north. There are also wetlands associated with Bow Brook.

Because of the road widening and shift in alignment, there will be approximately 33,111 square feet of wetland impact.

Existing impervious area within the project area measures 13.9 acres. Proposed impervious area measures 15.5 acres, a difference of 1.6 acres. Currently, none of the stormwater from this area is formally treated. Stormwater treatment will be provided by two detention basins in the northeast and northwest interchange infields and by using the existing depression (wetland and upland) in the southeast interchange infield. This area, a portion of which is wetland, provides informal treatment and detention, and stormwater is directed toward it from two stormwater drains directing flow from I93 north. The area drains via an 18" pipe that directs flow from the infield under the off ramp into the Turkey River. During previous meetings, the approach for stormwater treatment in this area had been discussed.

Following direction provided at those meetings, MJ studied options for stormwater treatment. One option (plan alternative 2), which would involve excavating a portion of the existing wetland to create a wet pond and constructing an outlet structure at the pipe that flows to the Turkey River, would provide full treatment to stormwater flows, but would have the greatest direct impact to the wetland.

A second option (plan alternative 1) that utilized treatment swales at the outlets of the two storm drainage pipes, which NHDES had suggested during a field meeting, had been studied – however, this option did not provide stormwater treatment that DES Water Quality personnel Phil Trowbridge had requested, because the swales needed to treat the projected flows would not fit into the available space without constructing large headwalls at the culvert outlets.

A third option (plan alternative 3) used two forebays at the outlets of the drainage pipes, a treatment swale in the northeast corner of the infield, and a micro pool at the culvert outlet to the river. This combination of methods had minimal impact to the wetland, but achieved full water quality treatment. NHDOT proposes to use this method for water quality treatment at the site.

Mark Kern asked if the area is currently ponded. The area supports scrub shrub and herbaceous vegetation. Lori Sommer asked about the change in water elevation. The proposed water elevation will be 0.75' higher during the 2 year storm, but standing water will be mostly contained in the micro pool. Gino asked for clarification about the proposed berm layout, as there is an existing culvert which would be directing flow into the berm and that it would have to be relocated for the proposed berm design.

Gino had discussed the proposed design with the Alteration of Terrain Bureau, who thought that the 50 year flow of 10 cfs from one outlet could be treated using a swale with a level spreader and using the remainder of the wetland. Gene indicated that these flows were not low for a vegetated swale, and that vegetated swales would not typically be used for flows this high. . Gene stated that the direction NHDOT had been given was to provide as much water quality treatment as possible to protect the downstream resources (the Turkey River and the Merrimack River). Rich Roach agreed that that was the intention he had expressed at the previous meeting. Gino indicated that the cost of building large headwalls appeared to be why that option was not preferred by the DOT. If that design was changed to maintaining the embankment, redirecting flows to swales outletting to a level spreader and adding in the swale shown in option 2 that most of the treatment would be gained without impacting an estimated 33,000 sq. ft. of wetlands. There was a question regarding the approvability of the plan to flood the wetland by installing an outlet structure. Gino indicated concerns that it may change the vegetative composition of a wetland which is already providing water quality treatment and may introduce invasive species over time. If the DES approved this concept vegetative monitoring for 5 years may be needed. Kevin Nyhan asked that if that were so, would the water quality improvements be "self mitigating", since the overall goal of protecting water quality in the Merrimack River was being met, so that additional mitigation should not be necessary. Peter Salo offered that we could model the stormwater treatment without constructing the control structure. Gene stated that there would still be a change in elevation of the water because of the increase in the volume of water directed to the site.

Rich offered that perhaps the appropriate approach would be to cut the typical in-lieu fee in half. Kevin expressed concern with this option.

Peter Salo stated that the control structure also worked to control peak flows, so without them peak flow volumes would not be controlled. He also stated that without the pre-treatment of the forebays, some of the stormwater would not be treated.

Discussion followed about the treatment that is currently occurring, treatment under the various scenarios, changes in hydraulics that will occur, and what would be appropriate mitigation. It was decided that a meeting with AoT would be beneficial to discuss stormwater treatment options before moving ahead with design. Gino stated again concerns about the micro pool design but if the DES allowed it conditions would include monitoring changes in vegetation for five years. The discussion was tabled until after the additional mitigation options had been discussed.

Bow Brook Mitigation

Impacts to Bow Brook will occur due to the roadway shift to the west. Approximately 230 linear feet (7,715 s.f.) of perennial stream will be shifted westward. The area slopes steeply to the west, and the stream relocation is confined by this slope and by existing right of way. This portion of the stream was previously shifted and is a rock lined swale. In addition, the culvert carrying Bow Brook under I93 will be extended, and due to deterioration of the existing culvert, sliplining is proposed.

At the direction of Rich Roach, staff from NHDES, NHDOT, and MJ did a watershed walk of Bow Brook. The southern portion of the brook has a relatively intact riparian area and is well vegetated. The central portion, as it flows through the New Hampshire State Hospital, is the most compromised, with several long culverts and with very little vegetation along the stream banks. The upstream portion is well vegetated with very little surrounding development. Based on the field review it seemed obvious that the State Hospital grounds provide the best opportunity for riparian improvement. The Department and MJ met with David Clapp of the State Hospital who was amenable to the idea, although he said that there are safety concerns with allowing vegetation to grow around the stream. Options for improvement of the stream would be to plant a riparian buffer for about 750' of the stream channel as it flows through the southern portion of the State Hospital campus, and at the northern end of campus, remove an unused culvert crossing, eradicate existing Japanese knotweed, and remove about 3,100 square feet of pavement.

Rich Roach appreciated that mitigation was being proposed for the affected resource, which the in-lieu fee program does not necessarily do.

Lori Sommer asked how the Bow Brook impacts figured into the total impacts for the project – the impacts to Bow Brook account for 7,715 square feet of impact (about 230 linear feet). Lori said that the Bow Brook mitigation would be positive, but would be mitigation only for the impacts to Bow Brook, and that an in-lieu fee payment might be necessary for the additional impacts. Discussion followed about what the mitigation package might include, and how much in-lieu fee would be required in addition to the proposed mitigation. It was agreed that additional discussions would occur between NHDOT and NHDES prior to submittal of the wetland application to come to a decision about stormwater treatment and what would be appropriate for wetland mitigation.

This project was previously reviewed on the following dates: [6/16/2010](#), and [11/17/2010](#).

Warner, 99064Z (non-Federal)

Matt Urban along with Anthony Weatherbee introduced the subject Bridge Maintenance project which is located off of NH Route 103 over Colby Brook in the Town of Warner. The project, as proposed, is a maintenance effort that will consist of installing a concrete invert to an existing 10'-6" x 164' Long CMP. In addition, the project includes work that will repair the existing cutoff and wing-walls. The installation of a fish weir will also be included as part of this project to create a backwater that will prevent a perched outlet.

M. Urban mentioned that he has already initiated coordination with NH Fish and Game. Stating that he has already received a good amount of participation in regards to the proposed fish weir. Carroll Henderson confirmed that John Magee and Kim Tuttle have shared the communications received between the two agencies. C. Henderson stated that those at Fish and Game are pleased with the proposed project at this time. M. Urban reassured C. Henderson that he would continue with further coordination to ensure that all aspects of the project associated with the fish weir are discussed.

A. Weatherbee mentioned that this project will be much like the project that was completed last year adjacent to the Fish and Game Hatchery off of NH route 302 located in the Town of Carroll (Twin Mountain).

For Mark Kern's clarification M. Urban explained that this project is not a sliplining, that it in fact is a concrete invert lining.

C. Henderson mentioned that J. Magee noticed another stone arch structure downstream of the proposed work. Fish and Game was curious if the DOT would also be addressing that structure with the Town. M. Urban replied by asking if Lori Sommer knew of any DES Watershed Funding that may be available to the Town at this point. L. Sommer did not anticipate any available funds in this area for quite a while. As such, M. Urban stated that the DOT has neither intentions nor the budget to address the Town's historic stone arch structure at the same time as this proposed work.

M. Urban asked if anyone else had any concerns with the fish weir and/or wetland impacts that will be associated with the proposed work. Gino Infascelli expressed no concerns. Kevin Nyhan asked Rich Roach if the project as proposed was okay SPGP and R. Roach confirmed.

(Natural Heritage: NHB-10-2859) This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.