

Tuftonboro Conservation Commission
Town Office Building
304 Middle Road-P.O. Box 98
Center Tuftonboro, New Hampshire 03816

Mr. Dave Ford, Director
Wolfeboro Public Works Department
9 Union Street
Wolfeboro, NH 03894

July 31, 2009

Subject: Rapid Wastewater Infiltration Disposal System (RWIDS)

Dear Mr. Ford:

Now that the RWIDS has been in operation for a few months, members of the Tuftonboro Conservation Commission (TCC) and their environmental consultants have visited the Nineteen Mile Brook area directly adjacent to the RWIDS in order to evaluate brook conditions. Our observations during these visits cause us concern, and we are consequently writing to share them with you. Given the proximity of the RWIDS to Tuftonboro, we are very interested in hearing what is being done to remedy any functional issues. Our observations and understanding of these issues are as follows:

1. On July 1st and 2nd, 2009 we observed several "seep" areas where groundwater from the basins was "breaking out" of the ground down-gradient of the borrow pile and flowing across the ground towards the down slope wetlands adjacent to Nineteen Mile Brook. We are given to understand that Woodard and Curran is presently sampling some of those seeps and that that seep water may be re-infiltrating at the wetlands before entering the Brook. We also noticed that Wolfeboro is stabilizing these seeps areas as best as possible. We cannot conclude that the heavy rainfall we have had during June and July could be exacerbating this problem, but overall, our feeling is that rainfall should not be causing design malfunction.
2. On July 18th, 2009 we continued to observe seeps down gradient of the borrow pile (Photos 1 and 2). These seeps were continuing to flow across the topsoil and towards the Brook. At this time the rainfall had subsided for over a week or so. Algae were observed at the base of grasses that were beginning to grow in the stabilization cloth (Photo 3). At the time, we were unable to confirm whether the seeps had infiltrated the wetland soils prior to entering the Brook. However, in another location closer to the access road, a surface drainage channel was flowing out of a wetland area directly below the RWIDS and then directly into the Brook; algae were observed in the Brook at the point of confluence and in areas downstream (Photos 5 and 6).

3. On July 29, 2009 we continued to observe seep activity at locations down-gradient of the borrow pile. Flows at this time were much greater than those observed during July 18th. During this site visit we walked along the seeps into the wetland areas to confirm observations that seeps were “re-infiltrating” back into the wetland. Again, we were unable to confirm if re-infiltration was occurring, and significant surface water was present in the wetland and in some depressions ponding of seep effluent was evident. We did not notice algae in upstream portions of Nineteen Mile Brook, but we did confirm that algae below the drainage channel mentioned above were still present.

We are concerned that the foregoing observations are inconsistent with the final, DES approved (permitted) design of the RWIDS facility and several claims made in the Surface Wastewater Disposal Feasibility Study (SWDFS) by Wright Pierce, such as:

"Outbreaks" will not occur at non-existing groundwater discharge areas at this (600,000 gpd) discharge rate. (Wright Pierce, 2007);

"Approximately 50% of the effluent discharge to the site would flow vertically upward through silt, clay, sand and organic deposits underlying the wetlands." (Wright Pierce, 2007); and

"Significant additional treatment should occur as the groundwater travels downward and horizontally through the sand sediments and vertically upward through silt, clay, sand and carbon rich organics that underlie the wetlands and Nineteen Mile Brook." (Wright Pierce, 2007)

Furthermore, the seep activities that we observed suggests that groundwater is not moving completely through the subsurface as planned and that the minimum travel time of the effluent impacted groundwater (estimated at one to three months in the SWDFS) to reach the wetland and surface waters of Nineteen Mile Brook is not occurring. Our belief is that this premature release of groundwater may be traveling through the network of seeps identified by a letter dated February 14, 2006 sent by Watershed Hydrogeologic to Wright Pierce's Gary Smith. That letter states:

"There are numerous wetlands and groundwater seeps (springs) at the break in slope about three quarters of the way from the top of the ridge to Nineteen Mile Brook. These groundwater seeps and springs serve as discharge areas for groundwater flow. They begin to appear along the slope at an elevation of about 580 to 560 feet." (Watershed Hydrogeologic, 2006; Appendix O of the SWDFS)

The location of the seep areas that we observed appears to be consistent with those identified by Watershed Hydrogeologic. Obviously, these seeps may be facilitating untreated groundwater prematurely from the basins, and we are very concerned if they will promote ponding or channeling in the wetlands. Moreover, the untreated groundwater in these seeps is discharging to Nineteen Mile Brook before full *in situ* treatment through the aquifer. We recognize that Wolfeboro is trying to remedy this situation, but we are very concerned that these functional issues are appearing at such early operation of the RWIDS (and presumably at a loading rate well below the maximum of 600,000 gpd).

Our primary concern is sustaining the high-level of baseline water quality that exists in the Nineteen Mile Brook, Whitten Pond and Nineteen Mile Bay in Lake Winnepesaukee. Surface Water Quality Regulations for the State of New Hampshire clearly state:

“There shall be no new or increased discharge(s) containing phosphorus or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds.” Env-Wq 1702.15 (NH Code of Administrative Rules)

The algae shown in the attached photos that we observed in the Brook does not appear to be naturally occurring, was not observed in other reaches, and may be directly related to elevated nutrients from the surface drainage channel. Surface water sampling and analysis of this channel (which we believe Wolfeboro is conducting) can confirm this, but the visual evidence even without such analytical data appears to support our concern that the growth of algae in Nineteen Mile Brook is a result of the runoff in this channel. (As an aside, as far as we can tell this surface drainage channel is not specifically identified in the text or figures of the SWDFS and we are lead to believe that this has been overlooked in the design.)

We note that you have mentioned these functional issues to the Wolfeboro selectmen (Item G in minutes of the regular July 1, 2009), and we are pleased that Wolfeboro is not taking these issues lightly. We too are very concerned about sustaining the water quality in Nineteen Mile Brook for the people of Tuftonboro. We ask that Wolfeboro will soon share with us what steps will be undertaken to analyze and cure these functional issues, and we hope to hear from you shortly in such regard.

Very truly yours,



Garreth Chehames
Tuftonboro Conservation
Commission



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Sr. Water Resources Eng.
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Stephen Truchon
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CC:

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Photo 1. Stabilized burrow pile from RIB excavation



Photo 2. Breakout flow from underneath the burrow pile (foreground of photo)



Photo 3. Close-up of breakout flow over topsoil (algae at base of developing grasses)



Photo 4. Algae located at the confluence of the runoff ditch from the RIBs to 19 Mile Brook



Photo 5. Algae located downstream of the confluence of the runoff ditch from the RIBs to 19 Mile Brook