

Members:

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- ✓ Bob Robbins (Chair) – Hudson
- ✓ Kathryn Nelson (Vice Chair) -- Nashua
- ✓ Karen Archambault (Secretary) -- Nashua
- Jim Barnes (Treasurer) – Hudson
- Glenn McKibben – Litchfield
- ✓ George May - Merrimack

Associate Members:

- ✓ Mildred Mugica – Nashua

Also in attendance:

- Richard Fixler, P.E., Assistant Airport Director, Engineering and Planning, Manchester-Boston Regional Airport
- John Hagopian, P.G., Environmental Compliance Specialist, Manchester-Boston Regional Airport
- David Scaer, corridor resident and Nashua Country Club manager, Hudson
- Lucy St. John, Deputy Planning Manager, City of Nashua

The meeting was called to order at 7:07pm downstairs in the east wing downstairs of the Nashua Library.

Manchester-Boston Regional Airport – Discussion on Stormwater

Mr. Hagopian and Mr. Fixler introduced themselves. Members briefly discussed past contact with airport representatives. LMRLAC had written a letter this summer in response to Smart Associates, environmental consultants working on the airport Master Plan Update. The letter requested the airport work on improving on-site treatment of runoff.

Mr. Fixler explained that there is currently a 1-year program underway to perform monitoring, modeling and testing of outfalls to Cohas Brook, Little Cohas Brook, and the Merrimack River. Two of those outfalls collect most of the deicing fluid (propylene glycol). One, outfall #9, receives about 2 percent of the deicing fluid runoff and discharges into Cohas Brook. Outfall #19 receives close to 98 percent of the deicing runoff and discharges into the Merrimack River. Most of the deicing takes place at the gate area and apron, and there is a trench drain around the terminal which drains to detention pond #12 and flows into a pipe that leads to outfall #19. Some fluid may drip off the wings on the runway and taxiway, ending up at other outfalls, so all outfalls are being tested.

Mr. Fixler and Mr. Hagopian explained that, in 2004, the airport expanded the terminal apron area but did not modify the area's drainage at that time. The current project changes the drainage in that area, as well as drainage at an overnight area and an area near UPS, which had been going to outfall #1, which flows into a tributary of Little Cohas Brook. This drainage is now being directed to detention pond #12. The long term plan is to do something with the deicing runoff, first by directing it to one spot as much as possible. The FAA is paying for 90 percent of the work.

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A previous project installed a 36" line to the Merrimack River, taking stormwater that previously went to Little Cohas Brook. The outfall to Little Cohas Brook had at least a 30-foot drop. Little Cohas Brook is listed as an impaired water body. Monthly monitoring is taking place at all outfalls. There is both permit-required sampling and study sampling taking place, with specific items being sampled at each outfall.

Members briefly discussed dissolved oxygen (DO) and whether the impaired DO levels in the Merrimack River may be coming from the (Manchester) Waste Water Treatment Facility. Kath mentioned that DO sag is usually attributable to waste water treatment plants.

Bob asked what else was being sampled. In addition to glycol, some of the other substances being sampled are aluminum, pH, and benthic macroinvertebrates. Tolytrazole and nonylphenols were also being tested for but are no longer, as they are not detectable.

Mr. Hagopian mentioned that he had discussed benthic macroinvertebrates with staff at the UNH Stormwater Center and asked what would cause a drop in reproduction rates of the organisms. He indicated their response was chloride, which would come from salt, which is not used at the airport since it's corrosive.

Members briefly discussed with Mr. Hagopian and Mr. Fixler the difficulties of collecting benthic macroinvertebrate samples, which requires using a boat, since placement of the rock baskets to collect the samples is important. Kath mentioned that UMRLAC (Upper Merrimack River LAC) has extensive experience with benthic macroinvertebrate sampling.

Mr. Hagopian informed the LAC that the Environmental Protection Agency (EPA) currently has its Effluent Limitation Guidelines (ELG) out for comment. Comments are due back to the EPA sometime in December 2009.

Under the National Pollution Discharge Elimination System (NPDES) permit, the airport reports directly to the EPA, working with DES and EPA. The airport received its latest NPDES permit in late 2008 or early 2009, before the new ELG was sent out for comment.

Mr. Fixler indicated that the proposed ELG has two tiers for treatment. The tiers are based on the number of gallons of deicing fluid used per year and number of aircraft departures. The Manchester-Boston Regional Airport falls into the tier requiring collection of 20 percent of the deicing fluid applied. (The other tier requires collection of 60 percent of the fluid applied.) The ELG, once approved, may be incorporated into the current permit, or might be incorporated into the next NPDES permit required by the airport. It could take up to two years for the proposed guidelines to be implemented.

In the meantime, the airport is studying modeling the DO impacts to Pine Island Pond and to the Merrimack River. Mr. Hagopian indicated the airport had done DO studies of Little Cohas Brook and the levels never went below the saturation level in the snapshot or modeling. He also cited a report conducted for the Detroit airport that indicated 20 to 30 percent of the deicing fluid could not be accounted for – presumably due to evaporation.

Mr. Hagopian explained that there are two concentrations of propylene glycol used. One is referred to as deicing fluid and consists of propylene glycol mixed roughly half and half with water. The other is referred to as anti-icing fluid and is 'pure' propylene glycol. He stated the specifics of the formula are proprietary but the most significant component is propylene glycol.

The analysis is based on what's applied not by volume but by concentration. Each airline has to report to the airport how much fluid is used.

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Kath asked how much deicing fluid is applied each year. Mr. Hagopian replied that it varies with weather and number of aircraft; the range is around 100,000 – 150,000 gallons per year. Those figures are for 'normalized' glycol. Logan Airport, in comparison, uses millions of gallons per year. Kath asked how the airport will figure out what is 20 percent of the glycol for ELG compliance. Mr. Hagopian replied they do not yet know how this will be accomplished.

Mr. Hagopian stated the ELG is established for facilities with effluent, such as manufacturing plants. He indicated such an operation has control over the amount of its effluent, where the airport's effluent amount is driven by stormwater.

Mr. Hagopian indicated there are many options for treatment. He stated the problem with recycling is that it's currently not financially viable because the propylene glycol is so diluted in the stormwater. He gave an example of a treatment plant built at the Albany airport that costs one million dollars per year to operate and cost ten million dollars to construct in the 1990s.

Mr. Hagopian next brought up a study at the UNH Stormwater Center, where they collected both type 1 (50/50 glycol and water) and type 4 (100 percent glycol) and put them in an engineered wetland. When Mr. Hagopian followed up with the UNH Stormwater Center, they told him that the glycol "messed up" their wetland. Aerobic treatment generates sludge; anaerobic treatment generates less sludge, but generates methane. He indicated Buffalo looked at an engineered wetland the size of two football fields to take the volume of glycol used at its airport.

Mr. Hagopian indicated that the Manchester WWTF indicated they would take the glycol but not the stormwater from the airport.

Kath asked whether there was space at the airport for on-site treatment. Mr. Hagopian indicated difficulties with that approach, since application of propylene glycol is seasonal and treatment generally requires continued operation for most effective results.

George asked whether the glycol could be treated if the drainage water was removed from detention pond #12. Mr. Hagopian indicated the purpose of the pond was to capture stormwater. The terminal building was constructed in 1993-1994 and the pond was built to capture the stormwater, including the deicing fluid.

Mr. Hagopian discussed glycol recovery vehicles (GRV) as another collection option. However, he indicated the airport layout does not lend itself easily to using those vehicles, since they would have to drive around the ramp area in conflict with all the other traffic (including the airplanes themselves) at the ramp. The GRVs are roughly the size of a Zamboni and vacuum the glycol from the surface before it has a chance to combine with very much of the stormwater. Other airports, such as Denver, which have a centralized deicing pad, are more conducive to GRV use, Mr. Hagopian explained.

Mr. Hagopian indicated the airport's hope that the modeling and study will show there is no impact to the Merrimack River.

Members briefly discussed the issues of foaming and odor and surface water quality standards. Mr. Hagopian indicated that quarterly visual monitoring is part of what's being done under the study. The odor comes from the breakdown of the glycol – it's volatile, dissolves in water, and breaks down in sunlight and in warmer temperatures. Mr. Hagopian also indicated he has seen foam in the Merrimack from upstream of the airport.

Mr. Hagopian indicated there is real-time sampling data for only outfalls #9 and #19. He also showed the sampling matrix to the LAC, indicating that what's being monitored varies from outfall to outfall. As discussed in part earlier, the sample list includes: DO, temperature, pH,

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biochemical oxygen demand (BOD), chemical oxygen demand (COD), flow, foam, odor, color, glycol, macroinvertebrates.

Effluent toxicity is measured quarterly. Mr. Hagopian indicated it does not reproduce what's going on in the field. For example, the control sample sometimes displays mortality. George asked where the test fish come from. Mr. Hagopian indicated the water comes from the brook, but the test fish come from the lab, not from the brook.

Kath commented that a concentrated area for the glycol makes sense for a collection approach, but a distributed area makes more sense for treatment. Mr. Hagopian again raised a concern about sludging. Subsurface treatment should be anaerobic, so sludging would be less of an issue, but methane could result. The methane could potentially be trapped and used.

Kath asked about funding for possible treatment. Mr. Fixler indicated there was some funding budgeted for some form of management of stormwater. Mr. Fixler also indicated there was about 350K in this year's budget for the study and modeling.

George asked whether the study was looking at alternatives. Mr. Fixler replied that alternatives were already looked at; the airport will update that study based on new technology. Mr. Fixler stated the new master plan identifies areas for treatment and collection and indicated the collection system is pretty much in place.

George asked about the availability of reports. Mr. Fixler indicated they are public information and are available at the office. The tabulated data is available monthly. LAC members agreed that the tabulated data would be of little use without context.

George asked whether the LAC should comment on the ELG and Mr. Hagopian replied that the ELG can be found by going to the EPA NPDES main page.

Kath asked what the LAC can expect in the meantime. Mr. Fixler replied that no real change is planned at the airport until the guidelines are implemented. The reports on the sampling and study will be available. Mr. Hagopian mentioned that they have not yet collected any analytical data at outfall #19 because the study did not start until after the last deicing season had ended.

Mr. Hagopian asked what the LAC's concerns were. Kath indicated that DO is significant and that George does DO sampling in Nashua. Kath also stated that the LAC looks at rivers as a bigger system. She mentioned that with a dam downstream in Lowell this part of the Merrimack River doesn't flush like a regular river. Bob added that this part of the Merrimack has a lot of non point source pollution. Members also commented that the amount of impermeable surface in the watershed contributes to the pollution in the Merrimack River. George mentioned that the LAC's job is to protect, restore, and to speak for the river and its tributaries. George also mentioned that the glycol has been seen bubbling all the way to Nashua, and was traced back, using boats, to the airport.

Mr. Hagopian again mentioned that he has observed foam from upstream with nothing coming out of the outfall.

Mr. Hagopian indicated the airport does not use salt but does use sand and uses very little pavement deicing solution (potassium acetate). The approach for clearing snow/ice from pavement at the airport is first to broom, then brush, sand and finally to use pavement deicing solution. He further stated the airport does not use fertilizer – that the airport does not want to encourage plants, which lead to insects, which lead to birds (and possible conflicts with aircraft).

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George asked what the drop was of the outfall at the Merrimack. Mr. Hagopian replied that the pipe has a gradual slope to it and the final outfall is level with or under the water.

Lucy mentioned that every site should do as much as possible to treat its stormwater on site. Mr. Hagopian replied that the airport is sensitive to the situation. He also indicated that in order to be certain to have 20 percent of the glycol captured they will have to capture more than that.

Members discussed an appropriate time frame for a return visit, and Mr. Fixler suggested 10 months to a year from now.

Members thanked Mr. Fixler and Mr. Hagopian for coming to speak with the LAC.

Meeting adjourned 8:55pm.

The next regular meeting is scheduled for Thursday, January 28, 2010 at 7pm at the Nashua Public Library.

Respectfully submitted,
Karen Archambault
secretary