

## Needed clarifications on BMPs for Mill Pond

There are several areas where I have questions concerning your recommendations.

### Area MP-1

1. The conveyance swale from the end of the MP-1 culvert to Mill Pond is a higher elevation than the terminus of the culvert. So, sediment fills up the culvert terminus. There was No recommendation here. Would you recommend cleaning out the culvert, re-trenching the swale to lower it and allow unobstructed flow from the terminus of the culvert to Mill Pond and then institute annual maintenance to keep the swale clean? **Currently, with the swale bed sitting higher than the outfall invert, debris, such as trash, sand, salt, leaf litter, etc. can settle prior to discharging into Mill Pond. We recommend installing a simple level spreader to maintain the "sediment trap," and eliminate scouring/gullyng from concentrated flow. We also recommend cleaning the settling basin annually. We do not recommend re-trenching the swale.**  
**Since the swale and outfall are lower than the finished road grade, we do not see this as a potential flooding concern and therefore the current condition is favorable for the above reasons. If flooding is a concern in this location, dropping the swale bed elevation would be recommended, however, to improve water quality, the settling effect and manageable area for maintenance is beneficial.**
2. School Street Bus stop. I think I understand this but let me be sure. You recommend investigating the traffic patterns for using the bus stop and where opportunity arises , reducing the area of School Street pavement at the bus stop and creating a flow-in flow-out swale in the center where the fence is located currently? **Exactly.** This was introduced as a pilot project and I see that you also make statements about other upgradient BMPs on School Street and Church Street and Pine Street especially where stormwater infrastructure already is present. So, my interpretation is that you envision other BMPs in the upgradient portions of these three streets possibly involving retention basins, swales, check dams, or sediment forbays ahead (upstream) of the catch basins. Is this correct? **Yes. Once runoff reaches the intersection of Church Street and School Street, the road corridor and existing slope constraints will be too cost-prohibitive to implement productive stormwater treatment. BMPs would be more cost-effective up-gradient from the intersection of Church and School.** The estimated costs is just for the pilot project...correct? Nothing estimated for the rain garden at the Church? You also mention using permeable pavement retrofit in this area, is this part of the pilot project after a portion of the impervious pavement has been removed? **We would need more information to determine where exactly permeable pavers may be best implemented. Soil conditions (A/B), depth to groundwater (>3' of separation), and areas without run-on from adjacent impervious surfaces are best. For our planning-level cost estimate, we assumed an infiltrating bioretention basin/swale (location to-be-determined) would treat runoff from 0.1 acres (around 4,400 sq. ft.).**

Area MP-12 Western shoreline to Mill Pond from the Alton Highway Department to the Parking Lot across from the Fire Station.

1. Numerous gullies are found between the parking lot and Mill Pond. Bank erosion and vegetation is failing along Letter S Road due to undefined parking and recreational uses.

Letter S Road does not have a curb and gutter system. Country drainage approach and limited space leads to direct discharge into Mill Pond. Recommendations include better design considerations to balance recreational demands and environmental protection. In the parking area install permeable pavers from the Rt 140 road edge to prevent overflow across the parking area. Permeable paver swale should divert stormwater flows to Outfall 1 or 10. Minor regrading of the road shoulder and parking area will be required to promote positive drainage towards an existing point source input (I assume the existing outfalls). **Yes, we should aim to eliminate runoff flowing overland directly into the pond without pretreatment/maintenance.** How far in from RT 140 do you think the pavers should go? **We would need to develop a concept design to provide specific answers. Based on our field observations, permeable pavement could be installed on the entire length of the parking lot/roadway transition.** Do you envision any problems pulling up these pavers with the snow plowing taking place here? This is a recreational ice skating site during the winter. **This is a valid concern. Pavers should be plowed with the plow slightly raised or with a rubber blade. We have used several products on past projects and they have been able to withstand winter plowing. One product worth looking into is driveable concrete system by Soil Retention. The core material of this product is concrete and the pavers are cast together with woven galvanized metal wires. We have also used geogrid (which is embedded a few inches below finished grade) to distribute heavy loads – this solution would certainly be unimpacted by plowing.**

2. There appear to be a lot of problems here and FBE identifies this area as the worse in terms of water and phosphorus loads into Mill Pond. You mention the failing vegetation along Letter S road but do not mention the limited riparian buffer zone on the entire Western side of the shoreline. About half way down the parking lot there is a degraded boat landing site which is crumbling and eroded into the pond. I think you may mention re-building this up using permeable pavers down to the shoreline, installing signage indicating this is the boat introduction site and discouraging the introduction of boats into Mill Pond at all other sites. **Agreed. I think signage is a great way to spread awareness and enlighten folks to the issues both natural and manmade adversely affecting Mill Pond.** There are parking spaces along Letter S Road along the banks of Wentworth Pond within 100 feet of the intersection with Rt 140 which could be converted into extended buffer zones with vegetation planted. Along the parking lot much of the embankment of Mill Pond is terribly degraded and should be rebuilt into a vegetated buffer. **Agreed. This entire area should be analyzed from a circulation, drainage, and bank restoration standpoint.** Perhaps car spaces could be detailed in the parking area after the pavers are in place and signage to encourage all recreational parking should take place here. **Programing the space is wise to encourage people to be where they belong and to allow for the restoration of sensitive areas that people do not belong.** Along Letter S Road is it possible to introduce a limited roadside swale system to allow infiltration of water before overflow into the pond? Where the road shoulders are the most narrow, can a guard rail be placed to discourage fishing or will this interfere with snow plowing? Are there special things which can be done while snowplowing to keep snow, water, sediment, sand and salt out of the pond? **Due to the limited horizontal space, a linear bioswale/sand filter may be our best solution here. But again, I think a more detailed design process should be considered to survey the landscape, assess the current conditions**

and future desired state, and determine the best uses/partitions of these spaces to accommodate people and plants.

3. In the BMP Matrix, but not in the memorandum, you mention a bioretention basin at the Alton Highway Facilities with pretreatment and sizing capacity for increased water quality volume at the existing low point. I'll try to go there and take a picture before Thursdays meeting. I do not think your cost estimate for MP-12 which is \$5000.-\$7000., includes anything at the Highway Department system....right? **Correct. This planning-level cost estimate only included permeable pavement.**
4. I'll try to get a picture of the problem at 3 Hutchins Circle ( Area MP-13), I was not familiar with this situation. **This is a minor issue. We saw it more as a nuisance for the homeowner than anything else.**
5. You mentioned to me at the time that some of these projects would make nice civic organization volunteer projects, I suspect the Church rain garden is such an instance. Do you want to mention this? Alton also has an active Garden Club with over 100 members. Thanks for mentioning the educational opportunities available at Alton Central School regarding the planned water infiltration site to be located there. **Any small-scale BMP (those that do not require vast earthmoving or technical heavy equipment use) should be considered for volunteer engagement. A rain garden at the church or fire station are perfect examples.**