

Forebay Inlet Pipe Discussion

This is a summary of the discussion on the inlet pipe into the forebay of the redesigned College Gardens Park and SWM pond. The meeting took place on November 17, 2006, at approximately 11:30am at City Hall. It lasted about an hour.

I met with Craig Simoneau and Dwayne Jenkins of the City of Rockville. Craig is the Director of Public Works and Dwayne is our Neighborhood Resource Coordinator. This was a meeting to discuss the technical details of the inlet pipe, how it relates to the overall SWM concept and design principles and how it relates to a safety issue. The meeting served as a fact-finding meeting and as an opportunity to brainstorm. Nothing was decided and we did not expect to reach any decisions.

The issue raised by the CGCA since 2001, and by residents of Plymouth Woods following the September 21 City meeting is whether it is safe to have an unprotected inlet pipe into the forebay. The concern is with children who might be tempted to enter the pipe. The proposed SWM pond would be in a public park and adjacent to an elementary school. Children walk to and from school on the path that goes through the park and which would lead them past the inlet pipe.

Facts (all from Mark Pierzchala notes from the meeting):

1. The diameter of the inlet pipe into the forebay would be 36 inches.
2. The diameter of the existing underground master pipe that already runs under the park is 54 inches.
3. The split of the inlet pipe from the existing master pipe would be just a split. There would be no internal mechanism of any kind where the two pipes would join. There would be nothing inside the pipe other than the walls of the pipe and whatever moisture and other residue from the latest storm.
4. Doing the math, the cross sectional area of the 36-inch pipe is 7 square feet while that of the 54-inch pipe is 15.9 square feet. The fact that the larger pipe can handle twice the volume of the inlet pipe was an important factor in the discussion.
5. The existing master underground pipe is to be kept in place. It has a proven history of handling the most severe storms that have hit the area since it was put in about 40 years ago or more.

Concerns from the SWM and engineering perspective:

1. The City is concerned that solutions may cause other problems, for example, water backing up in the system to a point that it would cause other problems. However, the fact that the new inlet pipe splits from a larger and established pipe means that any backup, if it were to occur, would be into a pipe that could handle the backup and thus a backup would not cause any damage.
2. A covering on the pipe, depending on its nature, may have to be cleaned more frequently than the forebay itself. There is a possibility of the City having to respond to repeated requests to clean debris from the covering.
3. If the covering was clogged, then for a period of time the pond would not be doing its job as a SWM system.

From there, we had a free-wheeling discussion about safety and possible engineering solutions. We took turns drawing on a white board.

Technical design ideas that were discussed include: (1) submerged inlet pipe, (2) a grate, flush with the opening of the pipe, (3) a modified grate, (4) a cage, and (5) a split pipe into the forebay.

A **submerged pipe** would be under water level, but may not be totally submerged in a drought. Nevertheless, even a semi-submerged inlet would probably discourage children from entering.

A **flush (flat) grate** was discussed, but this served mostly as a jumping off point for other solutions. For example, any grate may have to have a fine enough mesh to prevent someone from sticking their head in (since they may not be able to pull it out).

A **modified grate** was brought up by Mark Pierzchala at the suggestion of Christine Borger of Plymouth Woods who had been in contact with the author of an article on SWM facility safety (Safety at Urban Stormwater Ponds, Jonathan E. Jones, James Guo, Ben Urbonas, and Rachel Pittinger). For example, it would be possible to have a sloping grate so that any debris would rise during a storm allowing water to flow freely into the forebay.

A **cage** would be a structure around the inlet pipe, but not necessarily attached to it. Such a cage could extend from underneath the already planned pier into the floor of the forebay. The advantage of a cage is that it would have high enough volume and surface area, that debris would not back up the inlet pipe, and could be cleaned out on the same schedule as the forebay would be scheduled to be cleaned.

A **split pipe** would feature, for example, two 24-inch pipes coming into the forebay instead of one larger 36-inch pipe. The small size of the entrance would dissuade youth from entering the pipes.

Safety: Any cage or grate solution would have to have a hinged and locked door in order to allow cleaning. There is no 100% guarantee that such a lock would be tamperproof. However, for an elementary school child, such a lock might be virtually 100% tamperproof.

Another angle on the safety issue is whether an open pipe would be unsafe given that there would be no internal mechanical devices that could trap a child. There are pipes all over the area where either kids do not enter, or if they do enter, they are not harmed.

As currently designed, in order for a child to enter the inlet pipe, he or she would first have to step into the forebay. This may dissuade children from entering, or it may not.

You really have to cover all angles to the safety issue. For example, you may put a cover on the inlet pipe and keep children from entering the system at the forebay, but what

about a child who enters the system from the end of the existing underground pipe (just west of Princeton Place). This child could conceivably walk up the underground pipe, and down the inlet pipe, only to be caught there by the cover (the child would presumably be able to walk back up the inlet pipe and back down to the original entrance).

The meeting was very useful from the standpoint of airing out this issue. The meeting accomplished its goals. We agreed that this would be one of the key discussion points with the community as design moved forward. Craig said that he would be challenging the designers to come up with an acceptable solution to the issue.