Barnegat Bay Watershed Project
Storm Drain Maintenance and Education Program

Beachwood, Berkeley, Ocean Gate and Pine Beach

Pollution Prevention Incentive Program

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INTRODUCTION – ORIGINAL CONCEPT

Water quality in the Barnegat Bay is being degraded by non-point sources of contamination. Storm drain systems if not properly maintained become contaminated with trapped grass clippings, pet and wildlife waste, grease, oils, and other debris. In addition, these drainage systems become nesting areas for rodents and other varmints that further contaminate the system and pollute the receiving waters. Contamination of drainage systems themselves together with other non-point source pollution found in direct stormwater runoff are major contribution factors to poor water quality at drainage system outfalls.

The Boroughs of Pine Beach, Beachwood, Ocean Gate and Berkeley Township collectively proposed to study the effects of various storm drainage system cleaning programs would have on the water quality at the discharge points of the selected drainage systems. The original concept was to attempt to study what impact cleaning of the storm sewer systems had when lines were cleaned at one-year and three-year intervals.

In addition, there was an educational element, which provided the general public with information on the importance of reducing non-point sources of pollution to the Toms River. Each individual was informed on how they could reduce the non-point pollution. The Environmental Commission took a lead role in organizing the educational element of the program.

PROBLEMS ENCOUNTERED

When the concept of the four (4) towns joining together to cooperate in this program was initiated it was unique in that in most cases communities do not exhibit that type of cooperation. Unfortunately, problems with retiring personnel and untimely deaths of people active in the program caused a setback to the program. The original project was to be performed over a series of years however, with these setbacks, the scope of the project required amendment to the cleaning portion of the grant. The educational portion proceeded ahead as scheduled.

REVISED PROGRAM

The losing of valuable time on the cleaning portion of the program necessitated incorporating the cleaning into one contract for one cleaning for all of the municipalities. The object was to clean and test the storm water outfalls that release into the Toms River particularly concentrating on those areas adjacent to bathing areas and other publicly used spaces. Determining the non-point source pollutants at the storm sewer outfalls to see what degree of improvement was achieved once the cleaning was complete. The cleaned lines were then TV'd to determine if any illegal connections existed.

Following the cleaning, the sampling of the outfall was to be undertaken and compared to the previous reports performed when the infrastructure mapping program was conducted.

EDUCATION

The best influence one can have on an adult when attempting to get the word out, it is to have a child educated and then have them inflict their ideas on the adults. The initial program was to teach both young and old what Non Point Source (NPS) stood for. Many of the people did not know what non-point source pollution was.

The initial program started with a poster contest to educate youngsters on items that were non-point source pollution and requesting them to prepare a poster on how it could be cleared up. Most of the generated ideas concentrated on pooper-scooper laws and picking up after ones pets. After the poster contest was completed, the next phase of the education portion involved the Scouts. As part of their projects, they would establish pooper scooper stations whereby a sign was placed advising of the requirement to pick up after your pet and also supplying a bag area to pick up the feces and then a deposit area after it was picked up. Numerous stations were established throughout each municipality concentrating in walking areas.

The final phase of the education was to show the youngsters what the effect the pollution that enters the storm sewer had on the receiving waters, in this case, the Toms River. Each school with the exception of one municipality where the principal would not allow the program had an education via representatives of environmental groups explaining what water pollution was and then taking the youngsters down to the river to take samples. Water test kits were purchased and the children performed the water test to show how clean the water that they swam in and had recreation in was. A local newspaper was contacted on the day that the children were on the docks taking samples and a picture appeared in the paper to help further publicize the need for controlling non-point source pollution.

CLEANING OF THE STORM SEWERS

As the project was running out of time to do the multiple year cleaning, a one-year plan was developed. Maps of the municipality's infrastructure systems needed to be acquired to determine what areas could be cleaned and TV'd. Lines adjacent to beaches in Pine Beach, Ocean Gate and Beachwood were chosen to clean. In Berkeley, the lines cleaned were near boating and fishing areas. The lines were then cleaned and TV'd. The TV portion was to determine if illegal connections were found – none were.

The result of no illegal connections is not unusual since most of the sewers were installed in the early 80's and therefore did not encounter combined systems.

Bids were received on December 6, 2001. The contract was awarded on December 12, 2001 with a pre-construction meeting on December 28, 2001. The project commenced on January 8, 2002 and was completed by February 28, 2002. Contractor reports were submitted March 21, 2002.

When establishing the program the cleaning needed to be coordinated with the tides. Approximately 95% of the outfalls are tidal. In addition many outfall lines needed to be done duplicate times since they were cleaned one day and the tides washed the sand back into the pipe before the line could be TV'd. Additional delays occurred with the contractor due to manpower problems and equipment breakdowns.

Catch basins, inlets and lines were found to be full of sand, roots, debris, and in some cases animals (possums and raccoons). All types of debris were found from cans, bottles, styrofoam, along with decaying leaves. These all pollute areas of swimming and recreation. Much of the area is built without curbs; this allows the roadway and lawn runoff to flow on unpaved shoulders before they reach the storm drains. This does allow some filtering.

When the study started, animal feces appeared to be a problem; but local towns have enacted pooper scooper laws, which have helped alleviate the problem. Plus the provision of pooper scooper signs and bag pick up/drop off areas make it convenient for pet owners to eliminate this runoff. Children were also educated about non-point source pollution.

Most of the existing systems have catch basins. These are sporadically maintained, therefore, sediment fills in the catch area or the drop area below the pipe outlet until it reaches the pipe invert. At that point, sediment flows into the pipe instead of in the catch area. Leaves and sand are the biggest fillers of these catch areas and need to be cleaned at least every other year. **Also, the public should be advised to keep areas of basins clean. This will help minimize the impact of what was done.**

SAMPLING

Sampling was initially thought to be the easiest portion of the program. However, most of the municipalities don't have the manpower to perform the work; testing labs showed no interest in performing the sampling but would do the testing. It makes it very difficult to sample the outflow since the requirement of one inch of flow within one hour of commencement of the storm made it difficult to fix the exact time it could occur. Furthermore, the Spring season experienced a drought and therefore without any rainfall you cannot gather any samples.

With these conditions, the Ocean County Board of Health was asked to assist in the program. The Board of Health for the months of June, July, and August sample the beaches twice a week. They test for e coli, streptococci, and endococci. The Board of Health reported that the recent June rains showed that the beach closings along the Toms River where sewer cleaning was performed were reduced. The values of the tests were found to be much lower than what had been anticipated and occurred in past years. In particular, the Beachwood beach and one of the Pine Beach beaches normally have after rainfall a closing. This did not occur this year. As a result, it can be concluded that the cleaning helped. It did reduce the quality of the effluent from the storm sewers into the river.

CONCLUSIONS

In controlling non-point source pollutants education of the public is imperative. Education of youngsters should be the beginning point as they influence their parents and all adults. Furthermore, they are the upcoming generation. Young people learn about water quality and non-point source pollutants and carry it through their lifetime.

Scouting is another method of controlling the non-point source pollution. They can assist in the provisions of either installing feces pick up areas, painting water friendly pictures on inlets or placing reminders that storm drains empty into swimming and recreation areas.

In total, 51 outfalls exist between the four (4) municipalities and nine (9) total systems and four (4) partial systems were cleaned and TV'd. The contract was extended to the limit under the public contract law since there was insufficient time to re-bid. The cleaning project was expanded to the limit allowed by law. Storm lines do contain debris and pollutants. In fact, storm water runoff is responsible for a major portion of non-point source pollution. As mentioned, it carries sediment, oils, metals, nutrients, pesticides, road salt or bacteria into the surface waters, which have an adverse impact on aquatic life, and also represents a potential public health threat.

As a result of this program, it can be concluded the following:

1. Street sweeping is essential to minimize the debris that flows into the catch basins and ultimately to the outfall.
2. Pooper scooper pick up helps reduce bacteria that flows into the surface waters.
3. Inlets and catch basins are not trashcans. The must be kept clean of unwanted materials.
4. Whatever system is built it must be maintained.
5. Responsibility for a clean system is a responsibility of everyone involved. Everyone benefits from responsible storm sewer maintenance.
6. Cleaning of storm sewer systems, inlets and catch basins should be cleaned yearly.

A vital component to successful best management practices for providing storm sewer maintenance and clean water discharge is a responsibility of young and old. The more each person participates the cleaner our discharge waters will become and the more our recreational areas can be enjoyed.