Tittabawassee Township & Freeland School District Structural Stormwater Control Operation and Maintenance Activities

Tittabawassee Township has used its zoning map as basic decision criteria for the prioritization for catch basins in those zones. In addition, the catch basins in the areas owned by the Freeland Schools have also been prioritized. The DPW will look at the areas every two years to determine if there exists a need to change the priority of an area or zoning section of a region in the community due to an increase in litter or other refuse that may get into the street catch basins. For example; a large box store develops and there is an increase in litter from shopping bags or discarded drink containers; a residential area has significant increase in leaf litter due to trees that have reached maturity. It should be noted that this is only for catch basins owned by the township, in the township owned streets and catch basins in the areas owned by the Freeland Schools. It does not apply to MDOT roads or private developments.

Procedure steps: Use a municipal or zoning/land use map and develop districts based on residential, business/commercial, industrial and open spaces. Overlay the storm drainage system over this map and then proceed to prioritize the areas. Look at age of drainage systems, known drainage problems, areas in floodway or floodplain, areas with gravel roads or parking spaces, and known areas of potential contaminants in proximity to the municipal system. Interview DPW staff for their opinions on problem areas, and review drainage complaints to assist in the prioritization.

This inventory will be updated annually following the construction of a catch basin or a change in the priority level.

Priority A (High):

These include high pedestrian traffic areas, including areas that have a lot of activity during the day, or on weekends and evenings. These areas tend to accumulate larger volumes of trash due to heavy foot traffic, large parking areas, or business activities. The inlet grates to the catch basins in these areas have a lot of trash in them after significant storm events. Other areas to consider are those that potentially can contribute large sediment loads in stormwater runoff and can deposit large quantities of sediment in the catch basin sumps.

The specific areas are as follows:

1. Parking lots/driveways
2. Areas of very close proximity to school buildings

Priority B (Medium):

These include areas with less pedestrian traffic, but these areas still experience frequent activity during the day, weekends, or evenings. The area generates moderate levels of trash that collects at the catch basin inlets or in the open drains and detention areas on public properties.

The specific areas are as follows:

1. Athletic viewing areas
2. Athletic fields
3. Areas of close proximity to roads/parking lots

4. Areas that fall within the “medium priority” zone (See figure 1)

Priority C (Low):
These areas experience very low foot traffic. These areas are typically well kept up and do not generate much volume of trash and debris.

The specific areas are as follows:

1. Vegetated areas away from buildings and other facilities
2. Open Space & recreational

Table 1.Catch basin Priority Designation Summary

Priority	Number of catch basins (estimate)
Priority A (High)	24
Priority B (Medium)	40
Priority C (Low)	24
Total Catch Basins =	**88**

*The Freeland Elementary School has 9 catch basins designated as high priority included in the total of 79. The Freeland Elementary School is not in the urbanized area.
** Nine new catch basins added at Tittabawassee Park and the DPW building – Priority C

Table 2.Catch basin Priority Designation Details

Number	Latitude	Longitude	Location	Priority
1	43.52324	-84.1183783	Freeland Learning Center	medium
2	43.52285	-84.1176733	Freeland Learning Center	high
3	43.522705	-84.1173933	Freeland Learning Center	high
4	43.522705	-84.1172067	Freeland Learning Center	medium
5	43.5226983	-84.1169267	Freeland Learning Center	medium
6	43.5227117	-84.1160933	Freeland Learning Center	medium
7	43.52273	-84.11567	Freeland Learning Center	low
8	43.5213717	-84.1158183	Freeland Learning Center	medium
9	43.5212667	-84.1153633	Freeland Learning Center	medium
10	43.520705	-84.1150617	Freeland Learning Center	medium
11	43.5202067	-84.1167867	Freeland Learning Center	low
12	43.521099	-84.118246	Freeland Learning Center	medium
13	43.5213	-84.1174117	Freeland Learning Center	medium
14	43.522045	-84.117765	Freeland Learning Center	high
15	43.522115	-84.1179483	Freeland Learning Center	high
16	43.52225	-84.117185	Freeland Learning Center	medium
17	43.522716	-84.118498	Freeland Learning Center	high
18	43.5209433	-84.1185967	Freeland Learning Center	medium
1	43.52411	-84.11898	Twp. Office & Public Safety	medium

2	43.5238083	-84.11942	Twp. Office & Public Safety	medium
3	43.5236583	-84.1194267	Twp. Office & Public Safety	medium
4	43.5238467	-84.1190867	Twp. Office & Public Safety	medium
5	43.5238	-84.1188083	Twp. Office & Public Safety	medium
6	43.5238617	-84.1187817	Twp. Office & Public Safety	medium
7	43.5237783	-84.1186317	Twp. Office & Public Safety	medium
8	43.52398	-84.119575	Twp. Office & Public Safety	medium
9	43.5238267	-84.1196067	Twp. Office & Public Safety	medium
10	43.5242367	-84.1195333	Twp. Office & Public Safety	medium
1	43.525804	-84.126956	Festival Park	medium
2	43.5257283	-84.126805	Festival Park	medium
3	43.5261333	-84.1272517	Festival Park	low
4	43.526295	-84.1278633	Festival Park	low
5	43.5264083	-84.12784	Festival Park	low
6	43.5264367	-84.128	Festival Park	low
1	43.51831	-84.1131417	Freeland Elementary School	high
2	43.518508	-84.11371	Freeland Elementary School	high
3	43.51791	-84.11386	Freeland Elementary School	high
4	43.517545	-84.1131467	Freeland Elementary School	high
5	43.51778	-84.1130883	Freeland Elementary School	high
6	43.5180017	-84.1131217	Freeland Elementary School	high
7	43.518374	-84.112767	Freeland Elementary School	high
8	43.518017	-84.112776	Freeland Elementary School	high
9	43.517658	-84.112784	Freeland Elementary School	high
1	43.5301683	-84.1100483	Freeland Middle/High School	medium
2	43.530955	-84.110005	Freeland Middle/High School	medium
3	43.5319667	-84.1084033	Freeland Middle/High School	low
4	43.5319383	-84.1081417	Freeland Middle/High School	low
5	43.5298417	-84.1071383	Freeland Middle/High School	medium
6	43.52912	-84.1064183	Freeland Middle/High School	low
7	43.5291683	-84.105425	Freeland Middle/High School	low
8	43.5286283	-84.1053783	Freeland Middle/High School	medium
9	43.5281217	-84.1054567	Freeland Middle/High School	low
10	43.5281233	-84.106455	Freeland Middle/High School	low
11	43.5286317	-84.106445	Freeland Middle/High School	medium
12	43.5278967	-84.1073817	Freeland Middle/High School	medium
13	43.5282033	-84.1073567	Freeland Middle/High School	medium
14	43.52827	-84.1074617	Freeland Middle/High School	medium
15	43.52836	-84.107581	Freeland Middle/High School	medium
16	43.528753	-84.107555	Freeland Middle/High School	medium

17	43.5289933	-84.10729	Freeland Middle/High School	medium
18	43.529245	-84.1075717	Freeland Middle/High School	medium
19	43.529285	-84.1077383	Freeland Middle/High School	medium
20	43.52944	-84.10761	Freeland Middle/High School	high
21	43.5297217	-84.1076533	Freeland Middle/High School	high
22	43.5292467	-84.108095	Freeland Middle/High School	high
23	43.5289567	-84.10818	Freeland Middle/High School	high
24	43.5289983	-84.1089733	Freeland Middle/High School	low
25	43.5293517	-84.1096233	Freeland Middle/High School	high
26	43.52934	-84.1096283	Freeland Middle/High School	high
27	43.5292183	-84.1098783	Freeland Middle/High School	medium
28	43.52914	-84.1100933	Freeland Middle/High School	medium
29	43.5280017	-84.10842	Freeland Middle/High School	high
30	43.52759	-84.1082017	Freeland Middle/High School	medium
31	43.52727	-84.1082033	Freeland Middle/High School	high
32	43.5272767	-84.10791	Freeland Middle/High School	high
33	43.5272567	-84.1075483	Freeland Middle/High School	high
34	43.5275633	-84.1067633	Freeland Middle/High School	medium
35	43.5275617	-84.1062533	Freeland Middle/High School	low
36	43.5320883	-84.110055	Freeland Middle/High School	low

*The Freeland Elementary School area is not currently in the urbanized area.

The catch basins will be reprioritized after the initial inspection according to the criteria in Table 3. When inspecting individual catch basins during routine inspection cycles the following prioritization method will be used to assist in reprioritizing catch basins for inspections and maintenance:

Table 3: Individual Catch Basin Reprioritization Designation Table

Catch Basin Condition*	Priority
No problems - new system	Low
Sump has no sediment	Low
Sump has 6" of sediment	Low
Sump has 12" of sediment	Medium
Sump is half full of sediment (within 18 inches of pipe invert)	High
Sump has sediment at pipe invert	High
Sump has a bad odor	High
Catch basin interior is cracked; sand is coming into the cracks; no displacement is noted at the cracks	High
There is settling around the rim; the interior has gaping cracks and displacement; sinkholes are nearby; the sump is full	High
If built out of brick; bricks are failing; bricks are missing; the rim is settling into the street or parking lot; the sump is full	High

Catch Basin Inspections and Cleaning

Cleaning all of the catch basins at once is more economical than trying to inspect/clean some and not others on different years. The permittee will check all catch basins with a low priority once every 5 years and will clean out the catch basin(s) if sediment or debris is within 18 inches of the pipe invert (half full of sediment) *. The permittee will check all catch basins with a medium priority once every 2 years and will clean out the catch basin(s) if sediment or debris is within 18 inches of the pipe invert (half full of sediment) *. For the high priority catch basins, the permittee will inspect each structure every year and will clean out the catch basin if sediment or debris is within 18 inches of the pipe invert (half full of sediment) *. When a catch basin is cleaned the depth of the sump will be documented. All documentation/reports of these activities will be presented in their permit progress reports.

Please see the Drainage System Maintenance Standard Operating Procedure for additional recommended protocols for the maintenance and cleaning of catch basin/inlet structures.

*For purposes of this procedure, a conservative assumption will be made that the sump is 36 inches deep and the catch basin will be cleaned if sediment is within 18 inches of the pipe invert of the discharge pipe (half full of sediment).

Measurable Goals

- # of revisions or updates annually after new construction or reconstruction.
- # of individual Catch Basins prioritized after inspection annually.

Figure 1. Medium Priority Zone