

Better Drain Apportionment in Michigan

Considering Use, Need and Management

The Van Buren Conservation District (VBCD) worked with the Van Buren County Drain Commissioner and The Nature Conservancy (TNC) to develop a method for calculating drain apportionments that provides an incentive for better land management. This method utilizes land cover data, hydric soil data and information about management practices in a Geographic Information System (GIS) to estimate the portion of benefit each parcel receives from the drain.

For the 2014 pilot project, landowner apportionment included both a base allocation and a benefit allocation:

- **Base Allocation** – A percentage of the project cost was allocated to each parcel evenly using a fixed dollar amount or percentage of the total project cost. For example, each parcel in the Gates Drainage District received a \$3.12 base allocation in 2014, which generated 60% of the total apportioned project cost.
- **Benefit Allocation** – The remaining portion of the project cost was allocated to each parcel based on the variable benefit factors described below. The following formula was used to combine the benefit factors:
 - $(\text{ACRES}) \times (\text{Use Factor}) \times (\text{Need Factor}) \times (\text{Management Factor})$

Benefit Factors:

1. Land Cover (*Use Factor*)

The most recent National Cropland Data Layer (NCDL) was categorized into four general classes based on the benefit each land cover type receives from a drainage district. A per acre weighting factor was developed based on the sediment loading averages of 10 sample parcels from the drainage district according to TNC's online Sediment Calculator for the Paw Paw River Watershed. The 4 classes and per acre weighting factors are:

- *Natural* (Forest, Shrubland, Wetland, Grassland, etc.) = .35
- *Developed* (Residential, Commercial, Industrial, Transportation, etc.) = 1
- *Low Intensity Ag* (Pasture, Hayland, Tree Crops, etc.) = .5
- *High Intensity Ag* (Row Crops, Vegetables, Berries, etc.) = 1

2. Hydric Soil (*Need Factor*)

Each parcel was divided based on the presence of hydric soils, which are associated with the location of current and historic wetlands. Hydric soil areas used for agriculture or development have an increased need for drainage. A weighting factor was developed

based on the average difference between the assessed value (SEV) of vacant unimproved hydric soil (>90%) parcels and vacant improved hydric soil (>90%) parcels in the drainage district according to property tax information from Van Buren County. The value per acre of vacant improved hydric soil parcels was 30% greater on average for the Gates Drainage District in 2014. The resulting per acre weighting factors were:

- *Natural* Hydric Soils = .7
- *Low Intensity Ag, Hi Intensity Ag and Developed* Hydric Soils = 1
- *Natural, Low Intensity Ag, Hi Intensity Ag and Developed* Upland Soils = .7

3. Runoff Reduction (Management Factor)

Best Management Practices (BMPs) can be implemented by landowners to reduce runoff and prevent sedimentation in the drain. Some BMPs have the potential to reduce long-term drain maintenance costs and improve drain health. For the 2014 pilot project, an assessment reducing management factor was utilized for agricultural acres with BMPs certified by the VBCD. The management factor was based on the percent of sediment loading prevented by the BMP according to TNC's online Sediment Calculator for the Paw Paw River Watershed. For example, a management factor of .6 would be used for agricultural acres with a certified BMP reducing 40% of the sediment loading, while a management factor of .8 would be used if the BMP reduced 20% of the sediment loading. A management factor of 1 was used for all acres without certified BMPs.

Note: the management factor was not allowed to go lower than .5 for *High Intensity Ag* acres and .7 for *Low Intensity Ag* acres to ensure the final benefit score of those acres does not fall below those of a lesser land use class. There were no eligible BMPs for *Developed* or *Natural* acres in the pilot project, but they could be incorporated if a certification program and runoff reduction calculator were developed.

2014 Pilot Project Accomplishments

- 43 BMP Certification Agreements were filed with the Drain Commissioner and utilized to calculate drain apportionments
- 21% was the average assessment reduction for parcels with certified BMPs
- 192.4 tons/year of sediment loading is being prevented by the certified BMPs
- 70.5 inches/year of increased groundwater recharge due to the certified BMPs
- 600 acres of No-Till, 495 acres of Cover Crops and 12.7 acres of filter strips were enrolled in the BMP Certification Program

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