

6. Chapter 6 – Key Reports, Initiatives or Strategies for Planning

Another source of implementation strategies for this WMP is the past studies that have been completed for this watershed in particular or the greater Saginaw Bay Watershed. All of these works should be reviewed and, whenever possible, implement the strategies along with this WMP to address issues in the watershed.

6.1 *Vision of Green*

Green infrastructure systems help protect and restore naturally functioning ecosystems and provide a framework for future development. A well-planned, managed and maintained green infrastructure system can provide many ecological, social and economic benefits:

- Enhance biodiversity by supporting native species and protecting wildlife habitat
- Filter and store fresh water by maintaining natural landscape processes
- Carry storm water and reduce flooding by protecting floodplains
- Clean polluted air and moderate air temperatures by maintaining forest cover
- Reduce public costs associated with water treatment, flood protection and air quality
- Improve health and increase physical activity by providing open space for recreation and non-motorized transportation
- Provide a sense of place by connecting people to the nature, history and culture of their communities
- Increase property values and stimulate private investment by enhancing quality of life amenities such as access to open space, recreational, opportunities, transportation choices and a clean, green environment

The major goal of this initiative by the Conservation Fund and supported by Saginaw Bay WIN is to add over 50,788 acres of land for recreation and conservation in Bay County alone, a lot of it in the watershed. Also this initiative is proposing to add 94 miles of proposed trails in Bay County; it would be conducive to propose adding a water trail along the North Branch of the Kawkawlin to this trail system. These must be promoted as an action item for the Kawkawlin Watershed.

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Recommendations from the report:

- Develop an “implementation quilt” that identifies different land uses, conservation activities and stakeholders within the green infrastructure network; potential funding sources and programs (federal and state programs, land protection tools and techniques, regulatory tools, rates/fees, public financing options); different stages of green infrastructure projects (planning, capital projects, land acquisition, education and outreach, management and maintenance) and which agency, organization or partnership should take action on specific green infrastructure projects.
- Establish a “Green Infrastructure Fund” to be used for greenway and open space acquisition, natural resource restoration and recreational improvements in accordance with completed greenways and/or green infrastructure plans. Funds could also be used to develop multi-jurisdictional green infrastructure plans. It is anticipated that this private sector fund will leverage both state and federal funding sources for acquisition and project implementation. The GreenWays Initiative of Southeastern Michigan provides a similar model and, on an average, leverages \$8 from the public for every \$1 from the private GreenWays Fund.
- Encourage state and local governments, private sector and conservation organizations to use the Vision of Green plan to set priorities and strategically guide their conservation funding and investment in the region.
- Explore, in cooperation with municipalities, the use of developmental impact fees, tax incentives and other strategies for application to green infrastructure implementation.
- Assess and investigate the suitability and feasibility of public financing options for green infrastructure projects, including ballot initiatives.
- Assist the region in determining the feasibility of developing a farmland preservation and purchase of development rights program.
- Pursue with the private sector the development of a low-interest loan program that allows nonprofit conservation organization and local governments to acquire an interest in private land to protect critical natural environments and preserve farmland

and open space through the purchase of development rights, conservation easements and similar mechanisms.

- Work with the state to expand the Conservation Reserve Enhancement Program, which targets the Saginaw Bay Watershed. The program, which pays farmers to establish and maintain buffer strips along watercourses, has been beneficial to farmers, wildlife, wildlife corridors and water quality.

6.2 *Priority Conservation Lands Assessment - Tittabawassee River Watershed (2006)*

This study completed by the Little Forks Conservancy regarding the assessment of conservation lands in many counties in the Kawkawlin Watershed, besides the Tittabawassee River Watershed, looked at conservation planning approaches in Bay County and other portions of the watershed. It created a landscape level prioritization of the lands in the watershed and produced county defined maps to prioritize lands for conservation acquisition. The other features included landscape connectivity and the financial costs along with distance to human stressors. This reference will be valuable in assessing lands within the watershed for conservation and should be used to the extent practicable to identify and acquire and promote connectivity of lands.

6.3 *MDEQ Studies*

These have been covered in previous chapters and are available in the Appendix F.

6.4 *Bay County Build-Out Assessment (September 2000)*

A Build-Out Assessment performed on the Bay County municipalities builds the groundwork for strategies that can be used to stifle urban sprawl, preserve remaining ecological areas and rural character of the region and coordinate planning between municipalities to build a strong regional growth management plan.

The assessment addressed the issue of urban sprawl in the Bay County region and correlated various types of information including land use, zoning, water and sewer districts and areas needing protection from development like wetlands, floodplains, lake plain prairies and prime agricultural land. With this information compiled, a plan was developed to mitigate the urban

sprawl into the undeveloped regions of Bay County and concentrate new developments in certain “developable” areas. A copy of the report is in Appendix M.

Recommendations from the report:

- The adoption and implementation of a Growth Management Plan (GMP) by Bay County municipalities for the entire county.
- Model a GMP from the Smart Growth Code developed by the American Planning Association featuring flexible planning with regional perspectives.
- Form a coordinating committee, comprised of members from each municipality in the area, to build the regional GMP:
- Major areas of focus of the coordinating committee shall be to:
 - Establish an urban growth boundary that can support population growth within a 20 year period with a possibility of minimum densities stipulated.
 - Identify land that needs to be preserved and which land would be appropriate for development.
 - Preserve agricultural lands, to maintain rural character, through farm linkages (connecting farm sellers with farm buyers), agricultural zoning, development right programs or conservation easements.
 - Protect environmental areas, including wetlands, forests, watersheds, and critical habitats, while developing.
 - Reinvest in downtown areas by redeveloping brownfields, financially support developments within the current water and sewer districts and encourage development in urban centers.
 - Provide housing at reasonable cost for elderly, disabled and low income citizens.
 - Ensure the availability of alternative modes of transportation in urban centers.
- Establish common county goals that all municipal master plans must address as elements in the areas of:
 - Land use, transportation, community facilities, mineral resources, sensitive areas (streams, buffers, critical habitats, 100-year floodplains, threatened and endangered species habitat, steep slopes), affordable housing and economic development.

- Enact a policy that local master plans be consistent with the regional GMP.
- The best suited areas for development, determined through Smart Growth principles are:
 - The Greater Bay City Area
 - The Williams Township/US-10 Corridor
 - The northern portion of Kawkawlin Township between I-75/US-23 and M-13
 - The City of Pinconning and Pinconning Township

6.5 MS4-Watershed Management Plan for Kawkawlin River by Bay Area Storm Water Authority (BASWA)

The Bay Area Storm Water Authority (BASWA) developed a watershed management plan for the Kawkawlin River as part of the NPDES Phase II storm water requirements for those municipalities with Watershed Based General Permits. These plans are sometimes referred to as MS4 Watershed Management Plans. They are not as extensive as the typical CMI or 319 approved WMPs. These plans deal primarily with issues related to stormwater discharge from Municipal Separated Storm Sewer Systems (MS4). In October of 2006 the BASWA completed its WMP for the Kawkawlin and submitted the plan to the proper regulatory agency at that time. The plan had the following goal:

Achieving the Bay Area Storm Water Authority's (BASWA) goal of improving the quality of storm water in the BCUA must be measured by our effort, increased public awareness and the measurable success of our long and short term goals developed in this Watershed Management Plan. The focus of BASWA's efforts in the urbanized area will be to:

- Deploy the Public Education Plan
- Remove identifiable illicit discharges
- Implement pollution control techniques utilizing Best Management Practice (BMP)
- Incorporate low impact development and BMP in the public and private sectors of the BASWA communities

The basis of our initial efforts will be to make improvements to storm water quality as outlined in our Public Education Plan and Illicit Discharge Elimination Plans (included in appendix) and the accomplishment of measurable goals included in the Watershed Management Plan.

The BASWA WMP for the Kawkawlin also has two components that can be adapted into this current WMP for the Kawkawlin River. Those are:

- The Public Education Plan (PEP)
- The Illicit Discharge Elimination Plan (IDEP)

The Public Education Plan for the BASWA can be used to educate the residential areas on stormwater runoff and how best to protect runoff from gathering pollutant loads and discharging them into the Kawkawlin River or its tributary drains. This plan is updated every 5 years, having just completed its second revision which can be used to provide education alternatives for this WMP.

The Illicit Discharge Elimination Plan can be used as a long term monitoring plan for the tributaries of the Kawkawlin River system. The outlets from the drainage system to the Kawkawlin River are known and in the Bay City Urbanized Area any outlet into the Kawkawlin >36” diameter or width must be monitored in dry and wet weather using specific criteria from the MIG610000 NPDES Watershed Permit. The IDEP as revised for the BASWA would be a good standard to use for basic water quality monitoring of the tributary drains to the Kawkawlin River. (source: BASWA MS4- Kawkawlin River Watershed Management Plan)

6.6 *SBCI Phosphorus Committee Report*

The boundary of the Saginaw Bay region has been fortunate to have several active state and federal agencies that have teamed up with local and regional stakeholders to address the multitude of problems around the Bay. One such initiative was the Saginaw Bay Coastal Initiative regarding the nutrient phosphorus. This group addressed the phosphorus issue from Stormwater, Low Impact Development and Agricultural sources, the following is a summary of the three subcommittee’s reports presented in the final report sent to the MDEQ and state government. It was felt that this portion of the report should be presented in this WMP.

Recommendations and Discussions from the *Saginaw Bay Coastal Initiative Phosphorus Committee Report (June 5, 2009)*:

From the Agricultural Phosphorus Pollution Prevention Work Group are the following recommendations that are listed within cropping and within livestock in priority order:

Definitions:

BMP – Best Management Practice

CAFO – Concentrated Animal Feeding Operation: as defined by EPA

CNMP – Comprehensive Nutrient Management Plan

GAAMP – Generally Accepted Agricultural Management Practice

Hobby Farm – non-commercial operations (ex.: not for profit or those operations not filing Schedule F Federal tax return)

MAEAP – Michigan Agriculture Environmental Assurance Program

MDA – Michigan Department of Agriculture

MFB – Michigan Farm Bureau

MSUE – Michigan State University Extension

NPDES – National Pollutant Discharge Elimination System

NRCS – Natural Resource Conservation Service

Small and medium size farm – commercial operation less than CAFO size

USDA – United States Department of Agriculture

Cropping Systems

- 1. Develop consistent nutrient recommendations specific to the Saginaw Bay area supported and promoted by all groups providing direction for farmers.**

Discussion: Currently, groups providing support for farmers on nutrient recommendations are not presenting a consistent message. Nutrient recommendations need to be updated specific to crops grown in the Saginaw Bay area, providing a consistent message to farmers regarding fertilizer application.

- 2. Provide incentives to promote on-farm conservation demonstrations in cooperation with producers and agribusinesses.**

Discussion: Funding this recommendation encourages agribusinesses to develop a conservation partnership and jointly support a program to conduct on-farm demonstrations.

Conducting on-farm comparisons of management practices is one of the most effective ways to convince producers to adopt management changes. It is important that conservation messages come to producers from a partnership of key business community stakeholders, for example implement dealers, agronomy consultants, lenders, commodity groups, etc.

3. Promote cover crops for control of wind erosion; allow more flexibility to adapt other wind erosion control practices to match specific site conditions.

Discussion: Wind erosion is a significant source of sediment containing phosphorus to the Saginaw Bay. A MDNR 1988 study estimated wind erosion resulted in greater than five million metric tons of the soil erosion, accounting for 63% of the total soil erosion in the Saginaw Bay Basin. Cover crops provide the best protection against wind erosion and should be promoted.

Other options to address wind erosion (such as wind breaks and filter strips) should be evaluated. The funding agencies, such as USDA, NRCS, conservation districts, etc., should have practices with more flexibility for site-specific conditions leading to wider adoption.

4. Purchase and maintain research farms in the Saginaw Bay area to demonstrate various management practices and evaluate their effectiveness under different cropping systems.

Discussion: Since the early 1990's, MSU Extension, Huron Conservation District and Tuscola Conservation District, in cooperation with area farmers, have successfully conducted demonstration research plots to evaluate the benefits of various conservation

practices and cropping management systems. This research has been funded through grants and has had a positive impact encouraging conservation tillage in the Saginaw Bay area. The funding sources for demonstration plots are not permanent. This recommendation is to provide funding for the purchase and maintenance of Saginaw Bay area research farms to establish permanent demonstration sites. Research priorities should have local input and oversight.

5. Develop and promote a range of options to achieve a minimum vegetative setback from all drains, creeks, rivers and lakes.

Discussion: Farming to the edge of drainage ways occurs in the Saginaw Bay area. Providing a vegetative setback between the drainage way and the agricultural production area would reduce the likelihood of erosion and overspray from fertilizer and pesticide applications. Current programs promoting these types of practices have requirements that limit the widespread adoption of vegetative setbacks. The funding agencies, such as USDA, NRCS, conservation districts, etc., should have practices with more flexibility for site-specific conditions leading to wider adoption.

6. Establish the Saginaw Bay area as Michigan’s agricultural subsurface tile drainage research area for water quality.

Discussion: The Saginaw Bay area provides a unique research area to study the effect of agricultural tile and drainage on water quality. It is recommended that resources be provided to MSU to establish an agricultural drainage research and education program similar to the University of Minnesota’s (<http://www.extension.umn.edu/DrainageOutlet/drainage-science.html>) or The Ohio State University’s (<http://www.ag.ohio-state.edu/~agwatmgt/>).

Special note: Insure there are no unlawful septic drain connections to agricultural tile drainage prior to any research.

- 7. Promote GPS and/or zone soil sampling and testing along with fertilizer application to develop accurate baseline for nutrient levels and apply fertilizers based on this information.**

Discussion: This recommendation will reduce input costs for fertilizer by accurately identifying and applying nutrients only where needed. It will reduce P levels by only applying to crops what is necessary to achieve realistic yield goals.

While there can be cost savings to accurately applying fertilizers through means of GPS technology, currently many farmers are concerned about costs associated with GPS soil testing and fertilizer application. Demonstrations and grant funding are needed to offset costs to overcome this barrier for adoption of GPS technology.

- 8. Demonstrate erosion control best management practices (BMPs) to stabilize temporary v-ditches cut for field drainage.**

Discussion: A majority of the Saginaw Bay area soils are poorly drained. Farmers cut v-ditches to drain water from low areas in their fields to the nearest ditch or drain to reduce crop damage. V-ditches are not stabilized and can contribute sediment containing phosphorus directly to nearby waterways. Since v-ditches are temporary measures for storm water relief, the problems encountered are very similar to construction storm water. This recommendation is to demonstrate how construction storm water control practices may reduce the risk of sediment discharges from these temporary v-ditches.

- 9. Promote innovative, environmentally sound drainage ditch design, construction and maintenance in the Saginaw Bay area. This should be coordinated with the North East District of Michigan County Drain Commissioners (includes: Arenac, Bay, Genesee, Gladwin, Huron, Lapeer, Midland, Saginaw, Sanilac, Shiawassee, St. Clair, and Tuscola counties).**

Discussion: Many of the waterways in the Saginaw Bay area are designated county drains established to manage water flow. Design, construction and management of these drains in an environmentally sound way could substantially reduce sediment containing phosphorus into the Saginaw Bay. Current drain law and code do not provide many opportunities to work on water quality projects; however coordination of environmental programs and grants with drain projects can provide a process to accomplish both water quantity and quality management.

Coordination with the North East District of Michigan County Drain Commissioners will provide greater opportunity to develop a strong working partnership between drain commissioners and environmental programs.

Livestock Systems

Small/Medium Size Farms

- 1. Provide funding for Conservation District livestock specialist positions in the Saginaw Bay area to focus on technical assistance to small and medium size livestock operations.**

Discussion: Conservation Districts provide much of the on-farm technical assistance to producers regarding management practices in the Saginaw Bay area. One-on-one assistance with farmers is necessary for implementing best management practices. Conservation District technicians are knowledgeable about the USDA cost share programs and assist farmers with the administrative and technical issues. Additional local technical assistance would result in environmental improvement through greater participation in programs such as the Michigan Agriculture Environmental Assurance Program (MAEAP).

- 2. Develop “common sense” standards and solutions that provide low cost, flexible alternatives to address operational problems.**

Discussion: Often federal and state cost-share programs require more comprehensive and expensive solutions than are necessary to resolve simple problems. While cost-share programs exist to address some of the management issues on the farm, these programs often require a long-term commitment and substantial capital outlay. To receive funding, additional issues beyond the immediate practice must be addressed in conjunction with the desired practice.

Many of these programs have substantial administrative and process oversight (i.e. application, engineering review, etc.) creating a reluctance, including financial obstacles, for many farmers to participate. Comprehensive farm management planning is an excellent concept; however, in order to achieve an immediate environmental improvement, the process must be streamlined to allow for implementation of practical, low-cost practices. Building flexibility into these cost share programs and offering more options would lead to a greater acceptance and implementation by producers.

3. Promote the simple message “No runoff – No discharge” through an outreach program targeted to non-permitted (NPDES) small and medium size livestock operations.

Discussion: Small and medium size livestock farms have diverse operations and management practices. Some of the challenges identified are as follows: age of farmer (pending retirement and not willing to adopt best management practices); storage (expensive for small/medium operations); and short-term timeframe to recapture costs associated with improvements. A simple message, “No runoff – No discharge,” should be universally and consistently promoted by all agencies and organizations. The intent is to establish a minimum implementation level for every livestock farm operation in the Saginaw Bay area.

4. Identify non-traditional approaches to conduct educational outreach to small and medium size livestock operations.

Discussion: Because of the diversity in management approaches on small and medium size operations, it is difficult to develop a standard educational outreach program with wide appeal.

Traditional approaches have had limited effectiveness. To attain broader acceptance and implementation of best management practices, it will be necessary to identify, implement, and evaluate non-traditional approaches.

Hobby Farms

5. Develop a summary report of local ordinances related to livestock within the Saginaw Bay area to provide information and education on existing local ordinances and the Right to Farm Act.

Discussion: Local ordinances exist to regulate the number of livestock a landowner can have per the area owned. Many residents are not familiar with these ordinances. Ordinances and their enforcement vary between governmental units. The Right to Farm Act preempts any local ordinance, regulation or resolution that purports to extend or revise in any manner the provisions of this act or generally accepted agricultural and management practices developed under this act. A grant should be utilized to support an education/outreach program on nutrient management, targeting hobby/small livestock facilities in the Saginaw Bay area.

6. Develop an outreach and education program targeting hobby farms regarding appropriate manure management practices and utilization.

Discussion: In field surveys of area watersheds, hobby farms, particularly farms with only a few animals, have discharges as a result of poor manure management practices. Hobby farms have very different operational needs than production livestock operations. Recognizing hobby farms as a specific target group and promoting sound manure management practices to them should effectively address a majority of these discharges. MDA and MSU Extension are implementing outreach and education programs to these

types of farms, and coordination with their efforts will provide a good initiation point for a more intensive regional effort. An example of such a program is the Huron County's "Horse Sense – 2009 Equine Workshop" that was offered in Bad Axe in the fall of 2009.

Concentrated Animal Feeding Operations (CAFOs)

- 7. Farms accepting manifested manure should have a nutrient management plan with appropriate setbacks; identification of environmentally sensitive areas; and application timing.**

Discussion: CAFOs generally manifest a majority of their manure to land owners for application to nearby fields. A NPDES CAFO permit requires a Comprehensive Nutrient Management Plan (CNMP) to outline how and where they will apply manure. Proper land application of manifested manure, including appropriate setbacks; identification of environmentally sensitive areas; and application timing, etc., is not required to be documented. To provide reasonable assurance to the surrounding community, farms accepting manifested manure should develop and implement nutrient management plans that minimize discharge and runoff.

- 8. Develop an education and certification program for manure applicators, specifically targeting the individuals directly applying manure to the fields.**

Discussion: Many custom applicators receive training and continuing education; however, employees directly applying manure to fields do not receive sufficient training to ensure that manure application aligns with the recommendations in a CNMP or NMP. Training employees is essential to provide environmentally sound manure application. A training program should be developed for the manure applicators and their employees providing a basic awareness of discharge and runoff issues.

- 9. Promote farms that have implemented sound environmental practices which positively contribute to the surrounding community.**

Discussion: Many farm operations properly manage their manure and have invested in their facilities to achieve sound environmental standards. These positive efforts should be recognized and promoted within the agricultural and local community. It is important to acknowledge that, like other businesses, farms provide jobs and contribute to the local economy.

Manure Utilization

10. Promote the value and alternative uses of manure.

Discussion: Manure is becoming much more valuable. Due to the increase in cost of commercial fertilizer, the value of manure has become similar to a commodity. Ensuring that this message is promoted and alternative use options are made readily accessible will provide for better management of manure. Utilization of manure value calculators are available at:

<http://animalagteam.msu.edu/LandApplication/ManureValueCalculators/tabid/250/Default.aspx>.

11. Update regulations regarding waste management to incorporate “green” technologies.

Discussion: Waste management regulations were originally developed primarily to address industrial waste streams. Regulations should be re-evaluated to determine how to actively support green technologies, such as anaerobic digesters and composting facilities using comingled waste. A workgroup should be formed to draft recommended changes to waste management laws that will encourage green technologies.

12. Support the Huron Economic Development Council’s efforts at developing regional anaerobic digesters for manure and other wastes.

Discussion: Several years ago, the Huron County Economic Development Corporation (EDC) began to evaluate how they could assist our agricultural industry in economic

development projects. One key area that they began to explore was the development of alternative energy related to farms and agriculture. The EDC focused on anaerobic digesters for several reasons.

First the basic technology is well understood. Second, there is a significant amount of feedstock, (i.e. manure) for the digesters. Third, digesters could address several issues related to manure and nutrient management on our local farms. The EDC conducted a base line study of several farms in the area, the Lusk Study, to determine implementation issues. The report indicated that digesters could have an impact on farms but the payback was not quick and the farms were not interested in owning and managing what is basically an alternative energy company. The EDC has continued to pursue this track but focused on a large scale, "community" digester that could include several farms and other feed stocks. This has been a long term effort for the EDC.

Currently the EDC is reviewing the qualifications of and interviewing several companies that could be interested in developing a state of the art, community digester in Huron County. The successful company will then begin the process of developing an anaerobic digester, (community scale), meeting with local farms, determining DEQ permitting requirements and utilization of final products. It is anticipated that this process will take 6-8 months ending with the site selection of the digester, all of the required permits, contracts with farms for feedstock, up take contracts for electricity and natural gas and off take solutions for the digested manure.

13. Develop a commercial composting facility for bodies of dead animals and manure in the Saginaw Bay area.

Discussion: Currently there are extremely limited ways to dispose of bodies of dead animals.

In the Saginaw Bay area, no landfills accept bodies of dead animals, no rendering options are available, and burial during winter months is not practical. Current legislation does

not allow for the co-mingling of bodies of dead animals or manure. Composting is a beneficial way of utilizing various waste streams. Dead animals, both livestock and road kill, pose a hazard when improperly disposed. A commercial composting facility would allow livestock owners to properly dispose of dead animals and manure.

14. Support a link for a Saginaw Bay area manure brokering website. Potentially expand the existing MSU Extension website: <http://web2.canr.msu.edu/manure/>

Discussion: Provide farmers access to information about where they can buy and/or sell manure. MSU Extension has established a manure brokering website that could be tailored for expanded use in the Saginaw Bay area.

15. Evaluate the Genesee Power model for horse and other manures and explore expanding local collection points.

Discussion: Genesee Power is currently taking horse manure from area farms to convert to energy. Investigating this model may provide another option to address manure utilization in the Saginaw Bay area.

Livestock Exclusion

16. Promote a consistent, simple message “Keep livestock out of waterways.”

Discussion: Keeping livestock out of the water is the best way to ensure there is minimal sediment, nutrient, or fecal discharges from these animals into the nearby streams, creeks, drains, rivers, and lakes. A brochure *Acceptable Practices for Managing Livestock Along Lakes, Streams, and Wetlands*, compiled by MDEQ; MDA; MSU Extension; and the United States Department of Agriculture (USDA), NRCS is a resource for information. MSUE Bulletin No. E-3066.

Phosphorus Feed Management

17. Promote the use of a mass balance approach for including phosphorus in livestock diets.

Discussion: Phosphorus is one of the most expensive supplemented mineral in livestock feeds. Most grains used in animal diets (corn, wheat, soybeans) store as much as 80-90% of the total P in the form which is unavailable for uptake by swine (monogastric digestive systems).

Use of phytase, a commercially available enzyme, in monogastric diets increases the availability of phytate-bound P, reducing the need for supplemental inorganic P, and resulting in a reduced total P load in manure. We encourage the use of phytase in swine diets and support continued research that allows for the improvement of P utilization among livestock. Additionally, with drastic increases in input costs for livestock producers, many require utilizing co-products, such as distiller's grain, in livestock feeds. Some of these co-products contain concentrated amounts of P. Livestock producers need to eliminate additional sources of P in the diet to minimize the amount of P being excreted in manure. We support educational and research efforts that help producers and nutritionists include the minimum amount of P necessary into livestock diets.

Storm Water Phosphorus Workgroup

This workgroup identified three key areas where actions may result in significant reductions in phosphorus loads to the Kawkawlin Watershed and ultimately the Saginaw Bay, they are: Septic Systems; Low Impact Development; and Improvements in Stormwater Regulations. There recommendations and discussions follow and are considered as action items for the Kawkawlin Watershed.

Septic Systems

If properly designed and maintained septic systems provide an excellent way to treat wastewater. However, where septic systems are inadequately designed or maintained discharges from these systems can contribute phosphorus and bacteria to nearby streams and lakes. In order to ensure appropriate oversight and functioning of these systems, the following actions are proposed:

1. Education – Many people view septic systems as wastewater disposal instead of wastewater treatment. It is important to educate homeowners on how septic systems work and how to properly maintain them.

- Establish outreach program utilizing readily available resources targeted to homeowners

2. Data Management – Septic systems have been used for wastewater treatment in the United States since the 1880s. The permitting system in Michigan for septic systems was standardized in the 1970s. There are many septic systems that were installed prior to this permitting process and therefore are not effectively tracked. Additionally, as the permitting process and sanitary codes developed, information collected for the design and construction of these systems changed leading to variation in available information.

It is critical that information collection and retrieval be standardized, comprehensive, and easily accessible. The recommendations below will help to establish this process:

- Resolution recommending a specific data management system to standardize on statewide basis
- Demonstrate value of selected data management system to other counties in the Saginaw Bay Watershed through the Kawkawlin River Watershed project

3. Develop model local ordinance – A model local ordinance should be developed to achieve standard level of septic system inspections and maintenance and create resolution to encourage counties in the

Saginaw Bay Watershed to adopt it. Sanitary codes in other surrounding counties will be reviewed to evaluate existing provisions. A matrix of this information will be developed to assist in developing the model code. The following issues will be evaluated for possible inclusion in the ordinance:

- Point-of-Sale Inspections - Inspections mandated by LHDs or the local governing body at the time of home sale have been established in a number of counties

statewide. (In general, a point of sale approach is opposed by realtors, but would have general support of LHDs if promulgated with flexibility.)

- Change In Use Inspections - As a condition of issuance of a building permit for modifications to an existing home, some LHD jurisdictions require a review of the existing on-site wastewater system by the LHD (The overall average frequency of inspection resulting from this approach is unknown.)
- Mandatory Inspection/Reporting at the Time of Maintenance Event - Statute requiring the inspection /reporting at the time of pumping of the septic tank or other maintenance event would result in inspection of a significant number of systems (This general approach has been implemented as part of the state of Wisconsin administrative code along with a requirement that all systems be inspected for evidence of surface ponding every 3 years and that newly permitted systems include a management plan.)
- Alternative System Guidance – identify a central site(s) for common guidance on alternative systems
- System age – Systems over a certain age (25 years) should be required to have a regular inspection
- Dwellings without approved permit – Existing dwellings without an approved septic system permit should be required to have an inspection
- Onsite sewage treatment language – Need to change onsite disposal to onsite treatment in ordinance to reflect the need for ongoing maintenance
- Annual Septic System Community Report – An annual report should be required to report on the effectiveness of onsite sewage treatment throughout the community

4. Financing – One of the critical challenges to effectively addressing septic system problems is providing access to funding for homeowners and municipalities. While funding sources are available for much of this work currently, the actions below are recommended to make this funding more easily accessible:

- Low interest loans – Outline local program that would provide zero to low interest loans to homeowners. Need to establish clear technical and financial criteria
- Evaluate State and/or local funding (loan/grant) for addressing septic system issues

- Resolution to support local programs and/or modifications to State funding programs to address septic system issues

5. Partnerships – While the County Health Departments provide the principal oversight of septic systems, other local agencies and organizations play a critical role in assisting the Health Departments in identifying and correcting failing systems.

It is recommended that partnerships be established between local Health Departments and other local agencies and organizations, and that a model inter-agency process to identify and address septic system failures be developed. Partners would include:

- Drain Commission
- Road Commission
- Local Townships and Municipalities (including planning commissions, building departments, and local elected officials)
- Realtors
- Homeowners Associations
- Home builders Associations

Low Impact Development (LID)

Low Impact Development (LID) is an innovative storm water management approach with a basic principle that is modeled after nature: manage rainfall at the source using uniformly distributed decentralized micro-scale controls. LID's goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Techniques are based on the premise that storm water management should not be seen as storm water disposal. Instead of conveying and managing/treating storm water in large, costly end-of-pipe facilities located at the bottom of drainage areas, LID addresses storm water through small, cost-effective landscape features located at the lot level. These landscape features, known as Best Management Practices (BMPs), are the building blocks of LID. Almost all components of the urban environment have the potential to serve as a BMP. This includes not only open space, but also rooftops, streetscapes, parking lots, sidewalks, and medians. LID is a versatile

approach that can be applied equally well to new development, urban retrofits, and redevelopment/revitalization projects.

The following recommendations outline actions in the Saginaw Bay Coastal Area to promote the implementation of LID:

- 1. Promote LID Best Management Practices (BMPs) Manual and the Filling the Gaps manual developed for Michigan.**
 - Provide a conduit of communication to professional designers, planners, municipalities, counties and other agencies in a position to implement this manual in the region

- 2. Combined Sewer Overflow (CSO)/Low Impact Design (LID) Drainage district grant project.**
 - Completion of grant project and release of results
 - Support the public education portion of this project

- 3. Provide a model LID ordinance with a resolution to adopt the ordinance.**
 - Remove obstacles for Low Impact Design in the region
 - Review existing ordinances in the country and state to develop a model ordinance
 - Meet with regional, county and municipal planners to determine implementation strategy for Saginaw Bay Region
 - Provide educational opportunities for planning commissions to introduce the LID concept in order to facilitate change

- 4. Develop LID Outreach Strategy**
 - Develop strategic partnerships with professional regional, state and national organizations to promote LID (Landscape contractors, Michigan Nursery Landscape Association, Turfgrass Association, Professional Associations, MSU Cooperative Extension)
 - Focus Groups for Landscape Architects, Design Engineers, Construction Contractors, Landscape Contractors and lawn/landscape maintenance professionals

- Education for review agencies, planners, planning commissions, and engineers to help them understand LID concepts and how to review site plans that are implementing LID in their communities: how not to be a roadblock to change but to be a change agent to implement this type of development
- Facilitate education sessions for focus groups
- Interaction with local watershed groups, storm water authorities and municipalities to promote LID
- Promote tours to show examples of local LID projects and their impact on water quality
- Promote use of signage on LID projects in the Saginaw Bay Regions
- Provide education for review process of commercial development, plats, condominium projects and industrial sites

5. Incentives for LID – Promotional piece

- Develop a list of grants that are available for use as incentives
- Research and make available information on grants for use in LID projects

Storm Water Regulations

Storm Water regulations in Michigan provide a framework for how municipalities, commercial entities, and construction sites can reduce storm water pollution. While these regulations provide a starting point for pollution reductions, the following recommendations outline actions that will enhance and improve implementation of these regulations:

1. Funding

- Street Sweeping – provide guidance and resources for improved street sweeping equipment
- Catch Basin Cleaning – provide additional resources to clean catch basins on a more frequent basis
- Sustainable Funding – Evaluate various sustainable funding options to implement storm water regulatory requirements

2. Education

- Litter Removal – provide local education program on appropriate disposal of grass and leaf litter
- Public Outreach – Increase public education on storm water issues related to phosphorus control targeting television and radio
- Catch Basin Signage – Implement programs designed to mark catch basins with environmental message (e.g. Don't Dump Here ... Flows to Saginaw Bay)

3. Authority

- Spills - Expand local authority and resources to address spills
- Storm water Ordinance – Evaluate the legal authority to pass storm water ordinances at the County level
- Drain Code - Modify Chapter 21 & 22 of the Drain Code to allow assessment for Water Quality improvements
- Non-MS4 Communities – Evaluate the authority to allow non-MS4 communities to regulate and fund a storm water program under the MS4 regulations
- Phosphorus Ordinances – Encourage the development and passage of zero-P phosphorus ordinances in the Saginaw Bay Watershed Counties and municipalities

4. Effectiveness

- MS4 Regulations - Evaluate the effectiveness and challenges of implementing the MS4 regulations in the Saginaw Bay Area as it relates to phosphorus
- Common Sense Approach - Establish a storm water regulatory review committee including regulated communities to develop a “common sense” approach to implementing MS4 requirements

6.7 *Saginaw Bay Remedial Action Plan*

As outlined in the Saginaw Bay Remedial Action Plan (RAP), the Saginaw Bay has been identified as an Area of Concern for the Great Lakes and is in line for the Great Lakes Restoration Initiative funding. The Saginaw River/Bay RAP of 1988 cited 12 impairments of the 14 categories. Since that time, two impairments have been delisted. They are:

- Tainting of fish and wildlife flavor (taste and odor concerns) and
- Restrictions on drinking water consumption or taste and odor problems.

This still leaves 10 impairments in the Saginaw River/Bay AOC. The Kawkawlin River is a contributor of pollutants to the Saginaw Bay. By addressing the NPS issues of the watershed, this plan will also help with the water quality of the Greater Saginaw Bay. The areas where efforts will need to be focused in the future and in this plan are the NPS issues of the Kawkawlin Watershed that contribute to the remaining 10 impairments listed for the Saginaw Bay and the complete list of 14 beneficial uses is listed below (the bulleted items that are in bold, red text are the remaining impaired beneficial uses that must be addressed):

- **Restrictions on fish or wildlife consumption**
- Tainting of fish and wildlife flavor
- **Degradation of fish and wildlife populations**
- Fish tumors and other deformities
- **Degradation of fish and wildlife habitat**
- **Bird or animal deformities or reproductive problems**
- **Degradation of benthos (bottom dwelling organisms)**
- **Restrictions on dredging activities**
- **Eutrophication or undesirable algae (nuisance algal blooms, oxygen depletion, and nutrient loadings)**
- Restrictions on drinking water consumption, or taste and odor problems
- **Beach closings (exposure to waterborne human pathogens)**
- **Degradation of aesthetics**
- Added costs to agriculture and/or industry
- **Degradation of phytoplankton and zooplankton populations (minute aquatic plants)**

