



#### **4.0 GOALS, POLICIES AND MANAGEMENT STRATEGIES**

This portion of the Plan includes the goals and policies for water resources management in VLAWMO through the year 2016. Each goal is briefly described, including the issues addressed and their priority, and the policies and management strategies to be enacted to achieve the goal. These goals and associated policies form the framework for water resources management decisions made by VLAWMO. The process for implementing is provided in more detail in Section 6.0.

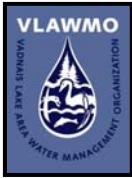
The development of these goals, policies, and strategies considered the issues/problems identified in Section 3.0 and their priority and the adequacy of existing controls and management efforts. Fundamental principles in developing this management approach include:

- That VLAWMO is not the only organization with responsibility for water management in the watershed. This is a shared responsibility between State and local government and the public.
- That available VLAWMO resources should focus on priorities. Several efforts done well are better than numerous efforts done poorly or incompletely.
- That VLAWMO efforts should build on, improve, or enable existing control/management efforts before starting duplicate efforts.
- That management efforts should possibly vary by subwatershed. As demonstrated in Section 2.0 and Section 3.0, watershed characteristics and issues vary by subwatershed.

VLAWMO has divided the watershed into six separate subwatershed areas (Figure 2-1). The Vadnais/Sucker Subwatershed and the Lambert Creek Subwatershed were divided into small catchments to reflect the differences in land use characteristics in different portions of these subwatersheds. The six main subwatersheds will form the basis for taxing and financing capital improvement projects within subwatersheds.

The following goals have been established by VLAWMO:

1. Prevent flooding
2. Protect and improve surface water quality
3. Protect groundwater quality and quantity
4. Protect wetland resources



5. Protect and improve waters for wildlife habitat and recreation
6. Enhance public participation and stewardship
7. Optimize public resources
8. Analyze and use alternative funding sources
9. Make and enable informed decisions
10. Improve communications

Each of these goals and associated objectives, policies, and management strategies are described below.

#### **4.1 GOAL 1: PREVENT FLOODING**

This goal addresses the issue of localized flooding. This is ranked a low priority in all watersheds except for portions of the Lambert Creek Subwatershed and the Gem Lake Subwatershed. There are existing concerns in the Lambert Creek Subwatershed and there are future concerns in the Gem Lake Subwatershed because the subwatershed is landlocked and it is expected there will be increased runoff volumes with additional development.

The basic management philosophy is that in areas where flooding is a low priority, existing public works efforts, and floodplain and shoreline ordinances provide a sufficient level of control if combined with two additional activities:

1. Controlling peak runoff increases from new development.
2. Improvements to certification procedures for low floors of structures in flood-prone areas.

To address the future concerns regarding Gem Lake, policies are included regarding the preference for volume control and low impact development technologies and for management of landlocked basins. For the Lambert Creek flooding issues, policies are included regarding public ditch maintenance, and the need for studying and improving existing conditions. There are also general policies to insure proper placement of structures and control peak runoff rate increases with new development.



#### 4.1.2 POLICY 1.1: ENSURE NEW/RE-DEVELOPMENT CONSTRUCTION, MINIMIZING FLOODING RISK AND LOSS OF FLOODPLAIN CAPACITY

##### Management Strategies and Standards

**Strategy 1.A: Floodplain and Shoreland Ordinances.** Some LWP Authorities (i.e., cities and townships with water planning authority, LWPA) are required to have MnDNR-approved floodplain and shoreland ordinances, depending on water resources issues. Where MnDNR does not require such ordinances, VLAWMO requires there be no encroachment upon floodways that will reduce capacities to expedite flood flows. No permanent structures, with the exception of drainage conveyance structures, may be constructed in the floodways. VLAWMO will only allow structures in the flood fringe with vertical separation of 2 feet above the 100-year regional overflow elevation and have been protected through flood proofing or by other construction techniques.

**Strategy 1.B: Low Floor Certification.** LWPAs are required to have a process for certifying that as-built low floor elevations of structures in or near flood-prone areas are completed as approved.

#### 4.1.3 POLICY 1.2: MANAGE NEW DEVELOPMENT AND DRAINAGE ALTERATIONS

##### Management Strategies and Standards

**Strategy 1.C: Rate Control Standards.** New development on either a regional basis, or site-by-site basis must be designed to hold the post-construction peak runoff rates at pre-development levels for the 1-or-2, 10- and 100-year precipitation events. A hydrograph method based on sound hydrologic theory shall be used to analyze runoff for design or analysis of flows and water levels.

**Strategy 1.D: Landlocked Basin Standards.** Runoff volume management to control post-development volumes at pre-development volumes is preferred for the Gem Lake Subwatershed. An outlet with a fish migration barrier may be completed, provided the following criteria/standards are met:

- The low floors of new structures have been established with a 2-foot vertical safety factor based on the 100-year elevation or the runoff elevation of the landlocked basin.
- Potential downstream impacts have been addressed, and if necessary, appropriate mitigation identified.
- An established outlet elevation that retains as much storage within the subwatershed as possible.



This strategy/standard is intended to be applied to landlocked basins in addition to Gem Lake, if identified.

**Strategy 1.E: Major Drainage Alteration Review.** Drainage alterations on major waterways of 1 square mile drainage area or more, needs to be submitted to VLAWMO for review and comment prior to LWPA approval.

#### 4.1.4 POLICY 1.3: MAINTENANCE OF PUBLIC DITCHES

##### Management Strategies and Standards

**Strategy 1.F: Regular Inspection and Maintenance.** VLAWMO encourages the individual municipalities to inspect ditches annually and clean the structures and pipes of the public ditch systems on a regularly scheduled basis. Municipalities shall include a description of planned inspections and cleaning effects in the LWPs and shall report the results of their annual inspections to the VLAWMO.

**Strategy 1.G: Repairs.** If repairs beyond regular maintenance are required, the communities shall inform the Board of the necessary repairs. Then, contemplating major repairs, the VLAWMO Board of Directors will notify the communities and agencies and will follow the procedures in Minnesota Statute 103E.

#### 4.1.5 POLICY 1.4: STUDY AND IMPROVE AREAS ALONG LAMBERT CREEK

##### Management Strategies and Standards

**Strategy 1.H: Lower Lambert Creek Flood Reduction Study.** VLAWMO will work with the City of Vadnais Heights to identify and study flooding issues on lower Lambert Creek. If feasible and economical remedial actions are identified, VLAWMO will work with the City and residents to identify possible funding mechanisms, partnerships, and grants (such as the MnDNR Flood Drainage Reduction Program) to implement improvements. A minor plan amendment to enable implementation would be completed if feasible solutions and acceptable funding mechanisms are found.

**Strategy 1.J: County Road E and Highway 61 Area Storm Water Study.** VLAWMO will work with Gem Lake, MnDOT and Ramsey County to look at areas along County Road E and Highway 61 that drain north through a 21-inch pipe to the Gem Lake Watershed. This outfall is believed to be the only major storm water outlet in the subwatershed. The purpose of the study is to investigate opportunities to control runoff volumes to landlocked Gem Lake. Funding options will also be addressed by the study. The study is scheduled for plan year 3 (i.e., 2009). If feasible options are found, a minor plan amendment will be completed.



## 4.2 GOAL 2: PROTECT AND IMPROVE SURFACE WATER QUALITY

This goal is intended to address the following surface water quality issues identified in Section 3.0:

- Surface water withdrawn from the watershed supplies a portion of the potable water for the 400,000+ users of the St. Paul Regional Water System.
- There are numerous shallow lakes in which water quality is either threatened or impaired.

The first issue is a high priority for the VLAWMO for all subwatersheds, except the Gem Lake Subwatershed and the West Vadnais Lake Catchment. The issue is a lower priority in these areas because the lack of surface water connection.

The second issue is rated high for most subwatersheds. Several subwatersheds do not have lakes and the issue was rated as low-to-medium priority. However, these catchments are hydrologically connected through storm sewer systems to downstream lakes, contribute pollutants, and thus, the following policies and strategies still apply.

The two issues regarding development and re-development:

- Much of the urban development occurred before the use of BMPs for mitigating water quality impacts of development were common place, and
- Additional development is expected and is also addressed in the following policies and strategies as they relate to surface water quality management.

### 4.2.1 POLICY 2.1: PREVENT FURTHER DEGRADATION OF SURFACE WATER

#### Management Strategies and Standards

Measurement of this policy will be tracked using data from the VLAWMO CLMP. In addition to the strategies listed below for this policy, other strategies, most notably Strategy 4.B: Implement Wetland Protection Standards, with the buffer standard, have water quality components that are designed to help achieve this policy.

**Strategy 2.A: Storm Water Standards.** Management strategies include requirements for temporary erosion control, post-construction water quality, and municipal storm water management practices consistent with the MPCA's NPDES General Permits for Construction and MS4s. LWPs and official controls need to include programs to comply with MS4 requirements and local controls for ordinances need to be consistent with the NPDES General Construction Permit Requirements.



LWPs and official controls also need to address new MCES requirements for soil ripping and amendment, and at least half-inch volume control and include the wetland buffer standards listed under the goal in Section 4.4.

The Board also expects the BWCSP to continue treating water diverted to the VLAWMO from the Mississippi River. Discontinuation of treatment may cause degradation of VLAWMO lakes. Treatment includes the ferric chloride addition and aeration of Pleasant and East Vadnais lakes.

Storm water management standards are presented separately below for construction erosion control, greater than 1 acre, redevelopment projects less than 1 acre, post construction storm water quality, peak runoff rate control, and runoff volume control.

### **Construction Erosion Control Standards**

Proposal projects creating more than 1 acre of impervious surface, or 1 acre of disturbed area, should already be complying with the NPDES General Construction Permit. However, consistency with the State requirements will standardize local application and inspection, with State assistance for enforcement, if needed. Construction activities must minimize erosion and retain eroded sediment onsite.

- Erosion and sediment control measures shall be consistent with BMPs in the 2006 Minnesota Storm Water Manual, and shall be sufficient to control erosion and to retain sediment on site.
- All temporary erosion and sediment controls shall be installed on all down gradient perimeters before commencing the land disturbing activity, and left in place and maintained as needed until removed per municipality approval after the site had been stabilized. All permanent erosion control measures shall be installed and operational per the design and as required by the municipality.
- Erosion and sediment controls shall meet the standards for the General Permit Authorization to Discharge Storm Water Associated With Construction Activity Under the National Pollutant Discharge Elimination System/State Disposal System Permit Program Permit MN R100001 (NPDES General Construction Permit) issued by the MPCA, August 1, 2003, as amended for projects disturbing more than 1 acre.
- Final stabilization of the site must be completed in accordance with the NPDES General Construction Permit requirements.
- If the activity creates more than 1 acre of disturbed area and the activity is taking place on a site where soils are currently disturbed, areas that will not be graded as part of the development and areas that will not be stabilized according to the timeframes specified in the NPDES General Construction permit Part IV.B.S, shall be seeded with a temporary or permanent cover before commencing the proposed land disturbing activity.



- The VLAWMO or municipality may at their discretion use turbidity measurements as an indicator of potential non-compliance with these standards. If nephelometric turbidity units (NTU) measurements taken at a point of site storm water discharge exceed 50 NTUs, a construction erosion control inspection of the site shall be completed. Enforcement procedures and timeframes to correct non-compliant conditions shall be as specified by the NPDES General Construction Permit. Exceedence of the turbidity indicator alone shall not constitute non-compliance.

### **Redevelopment Project Standard**

Projects that create less than 1 acre of new impervious surface, but remove and replace or modify more than 1 acre of existing impervious surface, must incorporate water quality BMPs targeting 50 percent phosphorus and 80 percent sediment removal based on predevelopment conditions to the extent practical. BMPs should include low impact development (LID).

### **Post Construction Water Quality Standard**

Post construction storm water runoff quality measures shall meet the standard for the General Permit Authorization to Discharge Storm Water Associated with Construction Activity Under the National Pollutant Discharge Elimination System/State Disposal System Permit Program Permit MN R100001 (NPDES General Construction Permit) issued by the MPCA, August 1, 2003, as amended.

- The water quality control volumes necessary to meet the NPDES General Construction Permit that are satisfied using infiltration or filtration technologies (filtration only on Type C and D soils) can count toward the Volume Control requirements of these Standards.
- Ponds with overflows or outlets located below the seasonally high water table are allowed only where it can be demonstrated that there is a reasonable need for such an outlet to control seepage damage to existing structures.
- Redevelopment projects are required to incorporate water quality BMPs to the extent practical.

### **Peak Runoff Rate Control Standard**

Development on either a regional basis or site-by-site basis must be designed to hold the post-construction peak runoff rates at pre-development levels for the 1-or-2, 10- and 100-year precipitation events. A hydrograph method based on sound hydrologic theory shall be used to analyze runoff for design or analysis of flows and water levels.



### **Runoff Volume Control Criteria Standard**

- Development that creates one acre or more of new impervious surface must incorporate volume control practices into the design sufficient to infiltrate at least a half inch of runoff from new impervious area on A and B soil. For C and D soil, low-impact development and other volume control BMPs are required to minimize impacts.

Credits for site design are the preferred methods for meeting the volume control requirements and shall be considered prior to the design of infiltration facilities. VLAWMO also encourages preservation of open space, site design practices such as directing roof drains to pervious surfaces, and other credits described in the Minnesota Storm Water Manual (MPCA, 2005) and reuse of storm water, for irrigation, as preferred methods for meeting the volume control requirements.

The following practices should allow a half-inch credit per unit area of the practice. To receive credit, applicants must request the credits, and provide calculations and documentation showing that the following criteria are met.

**Rooftop Disconnection Credit.** This credit will be given per unit area of rooftop that is disconnected and directed to a pervious area where it can either infiltrate or transpire. To receive the credit:

- Projects involving the subdivision of land must include the maintenance and preservation of the disconnection as part of a recorded restrictive covenant;
- The disconnection must be designed to adequately address the issue of basement seepage;
- The contributing length of rooftop to a discharge location shall be 75 feet or less;
- The rooftop contributing area to any discharge location cannot exceed 1,000 square feet;
- Disconnection will only be credited for residential lot sizes greater than 6,000 square feet;
- The receiving pervious area slope must not exceed 5 percent and must not channelize flow;
- Where provided, downspouts must be at least 10 feet away from the nearest impervious surface to discourage reconnection;
- No soil evaluation is required for disconnections that drain to hydrologic soil groups A and B;
- Disconnections draining to hydrologic soil groups C and D shall have a soil evaluation to demonstrate that additional flows will not create nuisance conditions; and
- For those rooftops draining to a stream buffer, the applicant may only use either the rooftop disconnection credit or the buffer credit, not both.



**Non-Rooftop Disconnection Credit.** This credit will be given for practices that disconnect impervious surfaces by directing runoff as sheet flow to a pervious area where it can either infiltrate or transpire. Credit is given per unit area of impervious surface disconnected. To receive the credit:

- The site must be graded to promote the flow of runoff to the pervious area;
- The maximum impervious flow path length shall be 75 feet;
- The length of the disconnected pervious area must be equal to or greater than the contributing length;
- The vegetated pervious area must be on a slope less than or equal to 5 percent and must not channelize flow;
- No soil evaluation is required for disconnections that drain to hydrologic soil groups A and B;
- Disconnections draining to hydrologic soil groups C and D shall have a soil evaluation to demonstrate that additional flows will not create nuisance conditions; and
- For those rooftops draining to a stream buffer, the applicant may only use either the rooftop disconnection credit or the buffer credit, not both.

**Buffer Credit.** This credit is given when a buffer is effectively used to disconnect and control runoff volumes, by directing runoff from impervious areas to sheet flow across pervious areas within the buffer, where it is either infiltrated or transpired. Credit is given per unit area of impervious surface disconnected. To receive the credit:

- The site must be graded to promote the flow of runoff to pervious areas in the buffer;
- Minimum buffer widths must be consistent with buffer requirements of Rule E;
- The maximum impervious flow path length shall be 75 feet for impervious surface;
- The length of disconnected pervious area must be equal to or greater than the contributing length of impervious surface;
- The vegetated pervious area must be on a slope less than or equal to 5.0 percent and must not channelize flow;
- Runoff shall enter the buffer as sheet flow. A level spreading device shall be utilized where local site conditions prevent sheet flow from being maintained;
- The credit is not applicable if rooftop or non-rooftop credits are already allowed for the same disconnection; and
- Buffers must be protected by conservation easement or dedicated outlots, and maintained in a natural condition in accordance with Rule E.

**Grass Channel Credit.** This credit is given where a grass channel is used instead of subsurface pipe to convey runoff. Credit is given per unit area of the channel bottom. To receive the credit:



- The channel must serve a low to moderate density development, with a density no greater than 4 units per acre;
- No soil evaluation is required for disconnections that drain to hydrologic soil groups A and B and where soil has been ripped and tilled to a depth of 6 inches prior to final seeding or sodding;
- Hydrologic soil groups C and D shall have a soil evaluation to demonstrate infiltration capacity;
- Channel bottom widths shall be between 2 and 8 feet;
- Channel side slopes shall be greater than 3:1, and channel slope shall be less than or equal to 3 percent;
- The length of the grass channel shall be equal to or greater than the roadway length; and
- The dimensions of the swale shall ensure that runoff velocity is nonerosive for the two- and ten-year design storms.

**Soil Amendment Credit.** This credit is given per unit area of soil amended prior to final seeding and/or sodding. To receive the credit:

- Amendment shall consist of ripping and tilling to a depth of at least 6 inches, and the addition of 20 percent compost (i.e., compost depth of 1.2 inches with 6 inch tillage depth); and
- The minimum area amended, where soil amendment is used to improve pervious soils in conjunction with the roof-top, non-roof top, and buffer disconnection, credits is 5,000 square feet.

**Forest/Prairie Restoration Credit.** This credit is given per unit area of forest or prairie restored. To receive credit:

- The minimum restoration area must be 20,000 square feet;
- There must be a 5-year maintenance agreement;
- Native plants must be used;
- Seeding and/or planting densities must be sufficient to achieve 75 percent forest canopy or prairie cover in 10 years;
- Prairies shall be planted with a native seed mix approved by MnDOT, BWSR, NRCS, or the Ramsey or Anoka SWCD, with the exception of a one-time planting with an annual nurse or cover crop. Plantings of native forbs and grasses may be substituted for seeding; and
- The area restored must be protected and maintained under a perpetual conservation easement or dedicated outlot.

The following practices are allowed a credit, but the amount of credit must be calculated on a case by case basis. To receive credit, applicants must request the credits, and provide calculations and documentation showing that the following criteria are met.



**Natural Area Conservation Credit.** A volume control credit will be given when natural areas are conserved at development or redevelopment sites, thereby retaining or improving their pre-development or hydrologic and water quality characteristics. To the extent practicable, these natural areas should be delineated to maximize contiguous land and avoid fragmentation. Credit will be given for a runoff volume based on what the conserved area could have been developed as under the current Comprehensive Land Use Plan for the Local Government Unit (LGU) without conservation. Areas that are already protected by existing Federal, State, or local law do not qualify. To receive the credit:

- The area cannot be disturbed during project construction (i.e., cleared or graded, except for temporary disturbances for utility construction, or to improve or restore vegetation);
- The area must be maintained in a natural vegetative state in an outlot and protected with a conservation easement;
- Mowed grass will not be considered a natural vegetative state; and
- A long-term vegetation management plan is required.

**Green Rooftop Credit.** A credit will be given when Green Rooftops are used to manage runoff. The amount of credit will be calculated based on manufacturer's specifications and guidance. To receive credit:

- The rooftop must be installed according to manufacturer's specifications;
- A long-term maintenance agreement clearly specifying parties responsible for maintenance is required; and
- A long-term vegetation management plan is required.

**Permeable Paver/Pavement Credit.** A credit will be given when permeable pavers or pavement are used to manage runoff. The amount of credit will be calculated based on manufacturer's specification and guidance. To receive credit:

- The pavers and/or pavement must be installed according to manufacturer's specifications;
- A long-term maintenance agreement clearly specifying parties responsible for maintenance is required;
- The area must have low traffic volumes (less than 1,000 trips per day for parking lots);
- The seasonally high water table must be at least 3 feet from the surface;
- The slope must be less than 2 percent;
- There must be low oil and/or grease usage on the site;
- The minimum base layer void space is 40 percent; and
- The minimum base layer depth is 9 inches.



- The water quality control volumes necessary to meet the NPDES General Construction Permit that are satisfied using infiltration or filtration technologies (filtration only on Type C and D soils) can count toward the Volume Control requirements of these Standards
- When using infiltration for volume control, infiltration volumes and facility sizes shall be calculated:
  - Using the appropriate hydrological soil group classification and saturated infiltration rate from the table below, or
  - Using documented site specific infiltration or hydraulic conductivity measurements completed by a licensed soil scientist or engineer, or
  - Using the method provided in the Minnesota Storm Water Manual Volume 2 (MPCA 2005) pages 18 through 21 of Chapter 12-INF, and
  - The design shall consider the infiltration rates of the least permeable horizon within the first 5 feet below the bottom of the infiltration practice, and
  - The system shall be capable of infiltrating the required volume in 72 hours.

**TABLE 4-1**

**HYDROLOGIC SOIL TYPE, INFILTRATION RATE, AND SOIL TEXTURE**

Hydrologic Soil Type	Infiltration Rate	Soil Texture
A	.30 inches/hour	Sand, loamy sand, or sand loam
B	0.15 inches/hour	Silt loam or loam
C	0.07 inches/hour	Clay loam, silty clay loam, silty clay, or clay

Source: Urban Hydrology or Small Watersheds (SCS, 1986), as amended.

Constructed infiltration facilities, such as infiltration basins and trenches:

- Can only be used if there is pretreatment of storm water runoff designed to protect the infiltration system from clogging with sediment and to protect groundwater quality;
- Cannot be used within 400 feet of a municipal or other community supply well or within,
  - 100 feet of a private well unless specifically allowed by an approved wellhead protection plan,
- Cannot be used for runoff from fueling and vehicle maintenance areas and industrial areas with exposed significant materials,
- Cannot be used on areas with less than 3 feet vertical separation from the bottom of the infiltration system and the seasonal high water table,
- Cannot be used in Type D soils.
- Infiltration areas must be fenced or otherwise protected from disturbance before the land disturbing activity starts.



- Volume control amounts may be waived by the LGU for sites with predominately Type C and D soils, or where a shallow water table prevents construction of infiltration systems, provided the following are met in order of decreasing preference:
  - Credits and site design practices to minimize the creation of connected impervious surfaces are used to the extent practical.
  - Underdrains are used to promote filtration instead of infiltration.
- Vegetation used in conjunction with infiltration systems must be tolerant of urban pollutants, and the range of soil moisture conditions anticipated.

#### 4.2.1.1 Storm Water Management Maintenance Standards

All storm water management structures and facilities shall be maintained in perpetuity to assure that the structures and facilities function as originally designed. The responsibility for maintenance shall be assumed either by the city, township, or county with jurisdiction over the structures and facilities, or by the applicant entering into a compliance agreement with the LGU. As part of the LWP, all communities shall complete a maintenance plan for inspections and periodic maintenance of stormwater outfalls, sumps, ponds, ditches and other infrastructures. VLAWMO will conduct periodic spot checks to ensure compliance.

#### 4.2.2 POLICY 2.2: IMPROVE THE QUALITY OF SURFACE WATERS

The water quality improvement strategy incorporates the following strengths in addition to the development and redevelopment of storm water management strategies described above for Management Strategy 2.A.

##### Management Strategies and Standards

**Strategy 2.B: Numerical Standards for Lakes.** Some of the lakes in the watershed would likely be considered impaired, due to excessive nutrients, if VLAWMO CLMP were used by MPCA for determination of impairment. East Vadnais Lake is very close, but still slightly above the BWCSF goal of 25 µg/L total phosphorous. The VLAWMO is adopting the following water quality standards for the lakes.

- East Vadnais, less than 25 µg/L total phosphorus, as a growing season average.
- Pleasant, Charley and Sucker lakes, meeting full support for primary contact recreation, which using MPCA thresholds for impairment are less than 40µg/L total phosphorus, less than 15 µg/L chlorophyll-a, and greater than or equal to 1.2 meters SDT.
- With other shallow lakes (Goose, Gem, Vadnais West, Tamarack, Gilfillan, Deep, Black, Birch and Amelia) the initial standard is no degradation from existing 2005/2006 conditions,



as described under policy 4.2.1 above, with the intent of revising these as Sustainable Lake Management Planning (SLMP) (Strategy C below) and modeling (described in Strategy 2.C below) are completed.

For Pleasant Lake and Charley Lake, currently on the 303d list for mercury, VLAWMO will work with MPCA to educate residents on the implications and assist where possible as the MPCA completes the statewide mercury TMDL.

**Strategy 2.C: Development of SLMPs.** The development of SLMPs for lakes in VLAWMO will be promoted. SLMPs will be collaborative efforts with local residents and municipalities. The completion of one to two plans will be targeted each year. VLAWMO contributions to the plans will include: modeling and financial cost share assistance. VLAWMO cost share assistance will be a 50 percent match up to \$7,500 of the cost of SLMP with member communities, lake associations and other groups coming up with the balance required. Plan contents are expected to include:

- Aquatic plant coverage and management
- Exotic species issues and management
- Shoreline condition and management
- Nutrient dynamics and management
- Storm water runoff and phosphorus contributions and management
- Roles and responsibilities for management
- Implementation schedule and plan
- Shortage of potential recreational opportunities (pier, public access, etc...)

The VLAWMO feels that joint development of SLMPs is an excellent means of motivating, involving, and educating the local residents, coordinating management, leveraging resources, and filling some of the data gaps. This is also the place where the issue concerning exotic species can be collaboratively addressed. The MnDNR will be contacted regarding special issues and/or for information gathering and to incorporate comprehensive wildlife conservation strategies (CWCS) or a DNR approved method.



The order of SLMPs are as follows:

**TABLE 4-2  
SLMP IMPLEMENTATION PLAN**

Lake	Year
Birch	2007
Tamarack	2008
Wilkinson	2009
Goose	2009
Gem	2010
Gilfillan	2010
Pleasant	2011
East Vadnais	2011
Sucker	2012
Amelia	2012
West Vadnais	2013
Black	2013
Charley	2014
Deep	2014

Based on the following score:

Lake Name	Lake Grade	Score	Management VLA WMO Priority	Score	305B or 303D List	Score	Local Partner/Funding	Score	Total Score
Birch	B-	2	Moderate	3	NO	0	P/HF/CF	5	10
Tamarack	D-	4.5	High	4	NO	0	P	1	9.5
Wilkinson	D+	3.5	High	4	NO	0	P/HF	2	9.5
Goose	F	5	Light	2	NO	0	P	1	8
Gem	C	3	High	4	NO	0	P	1	8
Gilfillan	C	3	Light	2	NO	0	P/HF	2	7
Pleasant			High	4	YES	1	P/HF	2	7
East Vadnais			High	4	NO	0	P/HF	2	6
Sucker			High	4	NO	0	P/HF	2	6
Amelia	B-	1.5	High	4	NO	0	NP	0	5.5
West Vadnais			High	4	YES	1	NP	0	5
Black			High	4	NO	0	NP	0	4
Charley			High	4	NO	0	NP	0	4
Deep			High	4	NO	0	NP	0	4

For local scoring: P = Partner Group Available (1 point)  
 NP = No Partnering Group (0 points)  
 HF = Historical Funding for Water Quality Project (1 point)  
 CF = Current Funding Available from local groups (3 points)



**Strategy 2.D: Promotion of Water Quality Improvement And Wetland Restoration/Enhancement Projects.** The VLAWMO will provide financial incentives for improvement projects by maintaining a fund to provide cost share for water quality improvement and wetland restoration/enhancement projects. Project sponsors can be residents, cities and townships, counties, MnDOT, and conservation districts within the watershed. A project can include anything that improves water quality from shoreland stabilization, to the projects identified as part of the 2005 study *Improving the Waters of Lower Lambert Creek – A Feasibility Study*, to projects identified as part of a SLMP. Cost sharing details will be developed during the first year of implementation, however, it is expected that the improvements will need to have a demonstrated aquatic habitat benefit, a water quality (sediment and phosphorus) benefit, or runoff volume benefit, and there will need to be a means of assuring future protection and maintenance. Maintenance efforts and efforts necessary to meet the requirements of the NPDES General Construction permit would not be eligible.

**Strategy 2.E: Management of Lambert Creek.** Management of Lambert Creek shall include annual monitoring and assessment, operation and maintenance of improvements, coordination of potential TMDL studies and subwatershed BMPs, and implementation of restoration efforts. Lambert Creek currently has 5 monitoring stations (Figure 2-6). VLAWMO will continue to provide operation and maintenance of the Lambert Creek improvements (i.e., Grass Lake, Rice Lake, and Lambert Creek weirs). The Clean Water Partnership grant work plan has identified several projects or programs aimed at enhancing assessment, stream bank stabilization, or other water quality improvements.

**Strategy 2.F: Source Water Protection and Emergency Response Planning.** The BWCSPP is working on a Source Water Protection Plan and has an Emergency Response Plan for their facilities, but there is no Emergency Response plan for the watershed. Most of VLAWMO effort toward potable water supply protection is reflected in the strategies above. However, since the Board is comprised of representatives of member communities it is in a position to assist with Source Water Protection and Emergency Response Planning. VLAWMO will also compile information on existing Emergency Management Plans and contacts, and distribute to commissioners so they can become familiar with general procedures. The idea is for VLAWMO and the commissioners to be aware of procedures and contacts and to be able to answer questions from the public or to direct them to the appropriate contacts.

**Strategy 2.G: Control Soil Loss on Small Construction Sites in Shoreland Areas.** The NPDES General Permit for construction includes requirements for construction erosion control for projects



that disturb more than 1 acre. Erosion from small sites in higher risk areas close to waterbodies can also cause problems. This strategy includes the development of programs to include simple construction erosion control requirements for small sites in shoreland areas to be distributed and enforced as part of building permits. LWPAs are expected to develop and detail such a program in their LWPs.

**Strategy 2.H: Support and Coordinate TMDL Studies.** VLAWMO will complete data analysis by a certified lab and provide lake and stream water quality data collected to MPCA for storage in Storet. When a water resource is deemed impaired and placed on the 303d list or 305b list, VLAWMO will provide local partnership services and coordinate a partnership between member communities, VLAWMO, BWCSP, and State agencies to discuss, fund, and implement TMDL studies. For Pleasant Lake and Charley Lake, currently on the 303d list for mercury, VLAWMO will work with MPCA to educate residents on the implications and assess, where possible, as the MPCA completes the statewide mercury TMDL.

### 4.3 GOAL 3: PROTECT AND IMPROVE GROUNDWATER QUALITY AND QUANTITY

This goal is intended to address the following issues:

- Local communities obtain their potable water supply from groundwater
- Groundwater is threatened or impaired

The first issue reflects availability of supply and is a medium priority for the VLAWMO in all subwatersheds. The second issue reflects groundwater quality and is a high priority across the watershed.

In general, VLAWMO feels that there are sufficient regulatory efforts in these areas with appropriations permitting by MnDNR, the superfund cleanup efforts by MPCA and MDH, wellhead protection efforts, and the sealing of abandoned wells at the time of property transfer. The exception is with respect to conservation and recharge and to protecting groundwater from contamination due to infiltration of storm water.

#### 4.3.1 POLICY 3.1: PROMOTE MANAGEMENT PRACTICES THAT PROTECT RECHARGE

##### Management Strategies and Standards

The strategy for protecting recharge is included in Strategy 2.A: Storm Water Standards, above. The storm water strategy includes standards to protect infiltration and recharge during development such as soil ripping and amendment to mitigate compaction, infiltration on Soil Types A and B, the use of



credits to promote site design, and conservation of groundwater by reusing storm water for irrigation.

#### **4.3.2 POLICY 3.2: PROMOTE MANAGEMENT PRACTICES THAT PROTECT GROUNDWATER QUALITY**

##### Management Strategies and Standards

The strategy for protecting groundwater quality is reflected in Strategy 2.A: Storm Water Standards, above, and in an additional strategy below to assist with wellhead protection planning and implementation. The storm water strategy includes the NPDES General Permit requirements as the primary standards. This permit requires pre-treatment of storm water prior to infiltration, consideration of water table depth, and restricts infiltration for some hot spot types of land uses such as vehicle fueling areas. The new MCES requirements included in the strategy also requires consideration of wellhead protection when determining where storm water infiltration is appropriate. These requirements for controlling the quality of storm water infiltrated will help protect the quality of groundwater for both public and private wells. An education component is also planned as part of Goal 6, below, with respect to dumping of hazardous materials, the sealing of abandoned wells, and the protection of private wells.

**Strategy 3.A. Wellhead Protection Assistance.** Various member communities, with wells in the VLAWMO, are working on Wellhead Protection Plans. However, since the VLAWMO Board is comprised of representatives of member communities, it is in a position to assist with planning and resolution of issues between communities where capture zones cross municipal boundaries.

**Strategy 3.B. General Permit for Small Appropriations.** VLAWMO has developed a General Permit to allow for appropriations of water below the MnDNR threshold of 10,000 gallons per day, or 1 million gallons per user, per year, from any public water basin within the jurisdiction of VLAWMO and located within the boundaries of the Municipality. VLAWMO will continue using this General Permit. A description of the permit and its general form are included as Appendix E.

#### **4.4 GOAL 4: PROTECT AND ENHANCE WETLAND RESOURCES**

Wetland conditions shall be protected from chemical, physical, biological, or radiological changes to prevent significant adverse impacts to the following designated wetland uses: maintaining biological diversity, preserving wildlife habitat, and providing recreational opportunities, erosion control, groundwater recharge, low flow augmentation, storm water retention, stream sedimentation, and aesthetic enjoyment as specified in MN Rule 7050.0210 Subp. 13a.. Avoidance of direct or indirect wetland disturbance will be required for all development and land disturbing activities, in accordance



with the state and federal requirements and approved local wetland management plans. Wetland mitigation sequence incorporating the following principles in descending order of priority:

- Avoid the impact
- Minimize the impact, and
- Mitigate the unavoidable impact to the designated uses of a wetland by compensation. Compensatory mitigation shall be accomplished in the following descending order of priority of replacement:
  - Restoration of a previously diminished wetland, and
  - Creation of a wetland for all development and land disturbing activities, in accordance with State and Federal requirements and approved local wetland management plan.

This goal is intended to address the issue:

- Sensitive resources, natural areas, and wetlands are present.

This is a high priority issue in all subwatersheds, except those where there are few or no wetlands present. Policies and implementation strategies that address Goal 2: Protect and Improve Surface Water Quality, also helps achieve this wetland protection goal, while some of the education strategies under Goal 6 are designed to complement the wetland strategies. Additional policies are described below.

#### **4.4.1 POLICY 4.1: CONTINUE WETLAND CONSERVATION ACT PERMITTING**

##### Management Strategies and Standards

**Strategy 4.A: WCA Permitting.** In accordance with the Minnesota WCA Rule 8420, VLAWMO is the LGU for administration of wetland issues in the watershed with the exception being MnDOT related activities, where MnDOT is the LGU. VLAWMO will continue to operate under WCA Rules (MN Ch. 8420) as amended.

#### **4.4.2 POLICY 4.2: IMPLEMENT THE VLAWMO WETLANDS MANAGEMENT PLAN**

##### Management Strategies and Standards

**Strategy 4.B Implement Wetland Protection Standards.** The VLAWMO Wetland Management Plan included buffer and hydroperiod (i.e., inundation and bounce) standards for wetlands based on an inventory and classification of wetlands within the watershed. These standards are presented below. The classification scheme is presented in Figure 2-4.



As discussed below, these standards do not apply to public waters even though they were included in the inventory. Public waters include Charley, Deep, Pleasant, Vadnais East, Vadnais West, Sucker, Gem, Goose, Gilfillan, Wilkinson, Black, Birch, and Tamarack lakes.

This strategy requires implementation of these standards through LWPs and official controls for Public/Protected Waters Wetlands and Wetlands (wetlands), when land is subdivided. Detailed assessments of wetlands must be completed when a project is proposed using MNRAM 3.0 or the most current version. More detailed evaluations of classified wetlands in Figure 2-4 may be completed for proposed projects by the applicants. However, such assessments need to follow a Wetland Functional Assessment method acceptable to the VLAWMO and wetland sensitivity analysis, as described in the Wetland Management Plan (VLAWMO, 2001).

The following standards apply to lands containing or adjacent to a wetland when the land is subdivided:

**General Standards**

- A. Structures intended to provide access to or across a wetland shall be prohibited unless approval is obtained in conformance with applicable Federal, State, and local regulations.
- B. Strategy 2.A: Storm Water Standards shall be followed to control erosion and sedimentation during construction and to minimize post-construction storm water quality impacts.
- C. The following hydroperiod standards are required and should be followed when designing the manner in which storm water is routed through natural wetlands from high priority protected wetlands to Utilize basins/storm water ponds. Utilized basins/storm water ponds being defined as a water management structure for which there is documentation that the basin was created for upland water quality purposes.

**TABLE 4-3  
HYDROPERIOD GUIDELINES FOR WATER LEVEL FLUCTUATIONS IN  
WETLANDS**

Category	Wetland Management Classification*			
	High Priority Protection	Moderate Management	Light Management	Utilize Basins
Storm Bounce	Existing	Existing plus 0.5 feet	Existing plus 1.0 feet	Existing plus 2.0 feet
Discharge Rate	Existing	Existing	Existing or Less	Existing or less
Inundation Period for 1 or 2-year Precipitation Event	Existing	Existing plus 1 day	Existing plus 2 days	Existing plus 7 days



Category	Wetland Management Classification*			
	High Priority Protection	Moderate Management	Light Management	Utilize Basins
Inundation Period for 10-year Precipitation Event	Existing	Existing plus 7 days	Existing plus 14 days	Existing plus 21 days
Run-out control elevation	No change	No change	0 to 1.0 feet above existing run out	0 to 4.0 feet above existing run out
Run-out control elevation (landlocked)	Above delineated wetland, and in conformance with Strategy 1.D; Landlocked Basin Standards	Above delineated wetland, and in conformance with Strategy 1.D; Landlocked Basin Standards	Above delineated wetland, and in conformance with Strategy 1.D; Landlocked Basin Standards	Above delineated wetland, and in conformance with Strategy 1.D; Landlocked Basin Standards

\*As shown on Figure 2-4 (Adapted from the State of Minnesota's Storm Water Advisory Group's "Storm Water and Wetlands: Planning and Evaluation Guidelines for Addressing Potential Impact of Urban Storm Water and Snow-Melt Runoff on Wetland, June 1997)

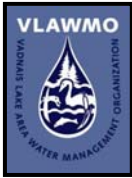
D. Where a wetland buffer is required, the Applicant shall:

1. Submit to the LWPA and receive approval of a conservation easement or outlet for the protection of the approved wetland buffer and wetlands. The easement or outlet must describe the boundaries of the wetland and wetland buffer, monuments and monument locations, and prohibit structures, paving, mowing, introduction of non-native vegetation, cutting, filling, dumping, yard waste disposal, fertilizer application, or removal of the wetland buffer monuments within the wetland buffer or the wetland.
2. Demonstrate execution of the conservation easement or record in an outlet by:
  - a. Submitting evidence to the VLAWMO or the LWPA that the plat showing the outlet, or approved easement document, has been recorded in the County Recorder's/Registrar 'Titles' office.
  - b. Submitting a duplicate original of the easement document or plat executed and acknowledged acceptable for filing with the County Recorder/Registrar of 'Titles' office, and
  - c. Installing the wetland monumentation required by this standard.

E. All open areas within the wetland buffer shall be seeded and/or planted in accordance with the vegetation standards below.

**Buffer Standards**

A. For a Lot of Record or a Development Application approved by the VLAWMO Board of Commissioners or LWPA before the date when LWP's are required (i.e. two years after approval of this plan), the Applicant shall maintain a wetland buffer around the perimeter of



all wetlands that are constructed as part on an approved wetland mitigation plan. The wetland buffer provisions of this standard shall not apply to a Lot of Record approved prior to the date when LWPs are required (i.e. two years after approval of this plan) or for Development applications approved by the VLAWMO Board of Commissioners or LWPA prior to this date until such land is subdivided. Land subdivided after the date shall establish buffers adjacent to Public/Protected waters and the wetlands according to these standards. Buffer standards shall also not apply to the subdivision of current lots of record that are 1 acre or less.

**TABLE 4-4  
BUFFER WIDTHS**

Criteria	Wetland Management			
	High Priority	Moderate Management	Light Management	Utilize Basin
Average Width, feet	50	40	20	15
Minimum width, feet	35	25	16.5	10

\*As shown on Figure 2-4

- B. Wetland buffers shall apply regardless of whether or not the wetland is on the same parcel as a proposed development application. For subject parcels, in which the wetland is on an adjacent parcel, the wetland buffer requirements for the parcel shall be reduced by the distance between the property line of the parcel and the wetland on the adjacent parcel.
- C. Buffer vegetation shall be established and maintained in accordance with the requirements found in this standard. During the first two growing seasons, buffer vegetation that does not survive, must be replanted. After the first two growing seasons, if the condition of the buffer area changes through natural processes not caused by the property owner, the owner shall not be required to reestablish the buffer. Buffers shall be identified within each lot by permanent monumentation approved by the VLAWMO.
- D. Alterations, including but not limited to building, paving, mowing, cutting, filling, dumping, yard waste disposal or fertilizer application, are prohibited within wetland buffers. However, non-native invasive vegetation, such as common buckthorn, purple loosestrife, and reed canary grass, may be removed as long as the wetland buffer is maintained to the standards required by VLAWMO. Alterations do not include plantings that enhance the native vegetation or selective clearing or pruning of trees or vegetation that are dead, diseased, or pose similar hazards.



- E. Roadways and trails that must be aligned either adjacent to or across wetlands and shall be exempt to strict application of wetland buffer requirements if the Applicant submits documentation to the LWPA sufficient to lead to a determination by the LWPA that no reasonable alternative to construction in the wetland buffer exists. All other roadways and trails shall meet the buffer standards in Table 4-3.
- F. Use of a meandering wetland buffer to maintain a natural appearance is encouraged. Water quality treatment ponds and storm water infiltration areas shall be allowed within wetland buffers provided that they meet the performance standards for wetland vegetation below.

***Alternative Wetland Buffers With Extraordinary Management***

- A. Instances exist where, because of the unique physical characteristics of a specific parcel of land, an alternative wetland buffer may be necessary to allow for the reasonable use of the land. The alternative wetland buffer standard set forth below may be applied based on an assessment of the following:
  - 1. Undue hardship would arise from not allowing the alternative or denial of the alternative would otherwise not be in the public interest
  - 2. Size of the parcel
  - 3. Configuration of existing roads and utilities
  - 4. Percentage of the parcel covered by wetlands, and
  - 5. Configuration of wetlands on the parcel.
- B. The LWPA shall determine whether use of alternative standards is appropriate in conjunction with VLAWMO as part of its review of a Wetland Replacement Plan. An applicant must receive VLAWMO Board approval prior to submitting a preliminary plan or plat application that applies the alternative buffer standard.
- C. In instances where the Board and the LWPA approve alternative buffer standards, an applicant will be required to apply extraordinary construction and storm water management practices (extraordinary management practices) to control erosion, sedimentation, and nutrient loading during and for two years after construction, using dual-slit fence techniques. Dual silt fencing will be considered properly installed if the up-slope fence is located on the undisturbed edge of the wetland buffer and the down-slope fence is installed 5 to 6 feet into the unscarified wetland buffer. Silt fence must be placed outside the wetland. An Applicant must demonstrate that alternatives to the recommended measures to control erosion, sedimentation, and nutrient loading will limit dissolved phosphorus concentrations to one milligram per liter (mg/L) or less. Extraordinary management practices that may be permitted in conjunction with and up-slope from, the above wetland buffer requirement



include, but are not limited to, measures that add redundant protections to normally required BMPs.

- D. Where alternative wetland buffer standards are approved, wetland buffers shall meet the standards established in Table 4-4.

**TABLE 4-5  
ALTERNATIVE WETLAND BUFFER WIDTH STANDARDS**

Criteria	Wetland Management Classification*			
	High Priority	Moderate Management	Light Management	Utilize
Average Width, feet	40	30	15	10
Minimum Width, feet	30	20	10	5

As shown on Figure 2-4

- E. The Applicant shall submit all of the necessary information to document that the proposed extraordinary management practices will at least duplicate the performance of the required buffers. The Applicant shall also have the burden of proving that the purpose and objectives of these standards will be met through the use of these extraordinary management practices.

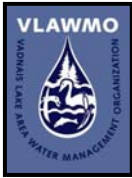
***Monumentation Standards***

When using a conservation easement, a monument is required where each lot line crosses a wetland buffer edge. Wetland buffer monuments shall have a maximum spacing of 200 feet, where the lots are wider than 200 feet. If the wetland and buffer is held as open space in a residential development, one standing monument with additional metal hubs may be used to designate the buffer at 200-foot increments. If no buffer is required, monuments shall be placed at the wetland boundary. The monument shall consist of a post and a wetland buffer sign. The post shall be of a material approved by the LWPA such as a fiberglass reinforced composite or wood with a maximum size of 4 inches by 4 inches. The sign shall be mounted on flush with the top of the post and state, “Wetland Buffer: No Mowing Allowed” or “Wetland Buffer: Vegetation Clearing Limit.” The post shall be installed to a height of 4 feet above grade, set at least 36 inches in the ground, if wooden, and 18 inches, if a composite post with an expanding metal anchoring system. Monuments may be waived in unusual circumstances where the LWPA determines that these signs would not serve a practical purpose.



### ***Buffer Vegetation Standards***

- A. When natural vegetation exists in the wetland buffer areas (with the exception of species in the Minnesota Noxious Plant List), the retention of such vegetation in an undisturbed state is preferred. A wetland buffer has acceptable natural vegetation if it:
1. Has a continuous, dense layer of perennial grasses or forbs that have been uncultivated or unbroken for at least 5 consecutive years, or
  2. Has an overstory of trees and/or shrubs with at least 60 percent canopy closure that have been uncultivated or unbroken for at least 5 consecutive years, or
  3. Contains a mixture of the plant communities described in (1) and (2) above that have been uncultivated or unbroken for at least 5 consecutive years.
- B. Notwithstanding the performance standards set forth above (A), VLAWMO and the LWPA may determine existing wetland buffer vegetation to be acceptable if:
1. It is composed of undesirable plant species (including, but not limited to common buckthorn, purple loosestrife, leafy spurge and/or noxious weeds as defined by M.S., Sections 18-75-18.88 and Minnesota Rules 1505.0730 o 1505.0760)
  2. It has topography that tends to channelize the flow of surface runoff
  3. For some other reason it is unlikely to retain nutrients and sediment.
- C. Where wetland buffers, or a portion thereof, are not vegetated or have been cultivated or otherwise disturbed within 5 years of the permit application, such areas shall be planted. Wetland buffer plantings must be identified on the Wetland Replacement Plan, and/or grading plan. The wetland buffer landscaping shall be according to each of the following standards:
1. Wetland buffers shall be planted with a seed mix containing 100 percent perennial plant species, except for a one-time planting of an annual nurse or cover crop such as oats or rye.
  2. The seed mix used shall be broadcast at a minimum rate of 30 pounds per acre unless an alternative plan is approved by the LWPA staff. The annual nurse or cover crop used shall be applied at a minimum rate of 20 pounds per acre. The seed mix shall consist of at least 12 pounds of pure live seed (PLS) per acre of native prairie grasses and 3 pounds per acre of native forbs. Native prairie grass and native forb mixes shall contain no fewer than five native prairie grasses and 15 native forb species. Seed mixes and rates shall be according to MnDOT and Minnesota Board of Soil and Water Resources (BWSR) guidance and specifications.
  3. Native shrubs may be substituted for native forbs, however, substitutions must be pre-approved by the LWPA staff. Such shrubs may be bare root seedlings



and shall be planted at a minimum rate of 60 plants-per-acre. Shrubs shall be distributed so as to provide a natural appearance and not be planted in rows.

4. Ground cover or shrub plantings installed within the wetland buffer are independent of landscaping required elsewhere by other applicable rules.
5. Native prairie grasses and forbs shall be seeded or planted by a qualified contractor. Native grass and wildflower seed materials shall be acquired and installed in accordance with the Restoring and Managing Native Wetland and Upland Vegetation (MnDOT, BWSR, 2006) or the most current wetland BWSR guidance manual.
6. No fertilizer shall be used in establishing new wetland buffer vegetation, except on highly disturbed sites when deemed necessary to establish native vegetation, as indicated by an accredited soil testing laboratory.
7. All seeded areas shall be mulched immediately with MnDOT Type Mulch straw at a rate of 2 tons per acre and the mulch shall be anchored with disk or tackifier.
8. Wetland buffer (both natural and created), shall be protected by erosion control during construction in accordance with NPDES general permit requirements for construction and erosion control shall remain in place until the plantings are established.

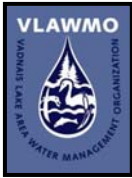
D. During the first two full growing seasons, the Applicant must replant wetland buffer vegetation that fails to survive. If the condition of the wetland buffer changes through natural processes not caused by the landowner after two full growing seasons, the owner shall not be required to reestablish the wetland buffer to meet the standards contained in this section.

#### ***Encroachments in Required Buffer Areas***

- A. Wetland buffers must be kept free of all structures (including fences and play equipment). Wetland buffers must not be mowed except as pre-approved in writing by LWPA staff for maintenance purposes.
- B. Variances:
  1. All variance requests must be submitted in writing to the VLAWMO Staff and Board.
  2. Variances that would circumvent the intent and purposes of the standard shall not be granted.

#### ***Performance Bond Requirements***

If a Development Application requires landscaping of a wetland buffer, no work shall begin and no permits shall be issued until the Applicant files with LWPA staff a performance bond, cash escrow,



or letter of credit with a corporation approved by LWPA staff as surety thereon, or other guarantee acceptable to LWPA staff and in an amount determined as set forth below:

- A. Amount – The amount shall be for no less than 1.5 times the amount estimated by the LWPA staff, as the cost of completing the wetland buffer landscaping. The performance bond must cover two complete growing seasons following completion of the development and must be conditioned upon complete and satisfactory implementation of the approved wetland buffer landscape plan and fall inspection of the wetland buffer by the LWPA.
- B. Submittal – The Applicant shall provide one copy of a signed contract with an environmental consultant to monitor and certify final completion of the wetland buffer requirements after the end of the second full growing season.
- C. Form of Application – The performance and cash escrow, letter of credit, or other guarantee acceptable to LWPA staff shall be posted within 20 days of approval of the development application and prior to the commencement of the development or the preparations thereof.

#### **4.4.3 POLICY 4.2: ENHANCE OR RESTORE WETLANDS**

##### Management Strategies and Standards

The strategy for this policy consists of having funds available for wetland restoration and enhancement when opportunities arise as detailed in Strategy 2.D: Promotion of Water Quality Improvement and Wetland Restoration/Enhancement Projects.

#### **4.5 GOAL 5: PROTECT AND IMPROVE WATERS FOR WILDLIFE HABITAT AND RECREATION**

This goal is to protect and improve waters for wildlife habitat and recreation and is intended to address the issue:

- Sensitive resources, natural areas, and where wetlands are present.

This is a high priority issue in all subwatersheds except those where there are few or no wetlands present.

##### **4.5.1 POLICY 5.1: PROTECT AND IMPROVE AQUATIC HABITAT**

##### Management Strategies and Standards

The strategy for this policy relies mostly on policies and management strategies for protecting and improving water quality and for protecting and enhancing wetlands. Under the above strategies



habitat and wetland efforts can be completed as projects or can be added as wildlife plantings and/or native plants to enhance other capital improvement projects. Strategy 2.D: Promotion of Water Quality Improvement and Wetland Restoration/Enhancement Projects specifically includes habitat improvements as eligible for cost sharing and some of the efforts identified for improving lower Lambert Creek involve techniques such as bioengineering, which have added habitat benefits. Strategy 2.C: Development of SLMPs also includes an emphasis on aquatic plant management and education regarding aquatic plants is called out as important in Goal 6.

#### **4.5.2 POLICY 5.2: PROTECT AND IMPROVE WATERS FOR RECREATION**

##### Management Strategies and Standards

The strategy for this policy relies on protecting and improving water quality using the management strategies for Goal 2. Protect and Improve Surface Water Quality.

### **4.6 GOAL 6: ENHANCE PUBLIC PARTICIPATION AND STEWARDSHIP**

This goal addresses the issue that public awareness about water resources in the watershed and appropriate stewardship are limited. Policies for achieving this goal focus on assisting and enabling the municipalities and townships covered by MS4 requirement to effectively meet the minimum controls for public information and education, providing information about VLAWMO, and additional targeted education efforts to change behavior and foster stewardship.

#### **4.6.1 POLICY 6.1: ASSIST AND ENABLE MS4S**

##### Management Strategies and Standards

**Strategy 6.A: Assist and Enable MS4 Public Information and Education Efforts.** Strategy 2:A Storm Water Standards requires the incorporation of the six minimum controls for SWPPPs under the MS4 program as part of LWPs. Strategy 6.A includes assistance from the VLAWMO for these efforts. The municipalities have better mechanisms for distributing information and education materials to residents than the VLAWMO. These include inserts with water bills, city news letters, and public access channels. The VLAWMO will take advantage of these delivery vehicles by routing information to municipalities for distribution. The VLAWMO will also be available to MS4 permittees to leverage the purchase and development of joint education/information materials.

#### **4.6.2 POLICY 6.2: ENCOURAGE PUBLIC PARTICIPATION**

##### Management Strategies and Standards

The VLAWMO will encourage public participation through the following bullets listed so that citizens have a stake in improvement projects and through an additional policy to maintain and develop a Citizens Advisory Committee (CAC) and vehicles for public input:



- Efforts to involve volunteers in monitoring as described below under Goal 9.
- Involving citizens in Sustainable Lake Planning efforts under Strategy 2.C: Development of SLMPs.
- Through expectations for cost sharing of improvement projects (Strategy 2.D: Promotion of Water Quality Improvement And Wetland Restoration/Enhancement Projects)

**Strategy 6.B: Develop and Maintain a CAC or Vehicles for Public Input.** The VLAWMO will seek advice from the CAC for specific questions and issues. The CAC will meet at least once per year to provide advice on budgets and work plans. Additional meetings will be called as specific questions and issues arise. CAC membership is open to members of the public interested in water management issues and should represent a cross section of interests and geographic areas. The VLAWMO will also promote other vehicles for soliciting public input and advice. These may include public information meetings and hearings and direct contact and communication with community groups such as lake associations.

#### **4.6.3 POLICY 6.3: INFORM THE PUBLIC**

##### Management Strategies and Standards

**Strategy 6.C: Keep the Public Apprised of VLAWMO Activities.** This strategy involves keeping the public informed regarding programs and activities of the VLAWMO. It includes mandatory notices in local newspapers, and public hearings, the completion and distribution of an annual report, and articles and information distributed to local news papers and lake associations. It also includes an annual meeting to introduce VLAWMO Commissioners, summarize major activities of the past year and the upcoming years, and to hold a forum on water resources topics of interest.

#### **4.6.4 POLICY 6.4: PROMOTE EDUCATION AND MARKETING TO FOSTER STEWARDSHIP**

##### Management Strategies and Standards

**Strategy 6.D: Develop and Implement an Education and Marketing Program to Foster Sustainable Behaviors.** The MS4 public information and education efforts as well as additional information based strategies above, focus on the distribution of information. However, social science studies have shown that information based campaigns are not very successful at changing behaviors. This strategy includes the development and implementation of more focused efforts designed to foster sustainable behaviors by residents, businesses, parks departments, and public works departments. Some of the topical areas to be emphasized under this strategy include:



- Proper storage and disposal of household hazardous waste and yard waste
- The importance of sealing abandoned wells
- Benefits of wetlands
- Residential and business storm water BMPs
- The importance of aquatic plants in shallow lakes
- Shoreline management
- The importance of disconnected storm water management

Tools and outlets to be used or considered include presentations, participation in community events, school programs, fact sheets, prompts, signage, and focused workshops.

## 4.7 GOAL 7: OPTIMIZE PUBLIC RESOURCES

### 4.7.1 POLICY 7.1: MINIMIZE PUBLIC EXPENDITURES

#### Management Strategies and Standards

Strategies throughout Section 4.0 of this Plan are designed to manage development, redevelopment, and drainage alterations to minimize water quality and quantity, and aquatic habitat impacts to public waters, public waters wetlands, wetlands, drinking water supplies, and drainage infrastructure, thereby minimizing public expenditures caused by improper planning and uncontrolled growth.

### 4.7.2 POLICY 7.2: AVOID DUPLICATIONS OF MANAGEMENT EFFORTS

#### Management Strategies and Standards

**Strategy 7.A: Build on Existing Regulatory Program Efforts.** Emphasis has been placed on identifying existing programs and efforts throughout this Plan in an effort to avoid duplicating efforts and to focus resources where they are most needed. This has led to the use of the existing NPDES general permit requirements for construction and MS4s, the WCA requirements and Well Protection requirements as the basic standards for meeting goals and implementing policies. Selected additional requirements address important gaps perceived by the VLAWMO.

**Strategy 7.B: Implement Standards through LWPs.** The VLAWMO intends to implement the storm water, erosion control, and wetland standards (Strategies 2.A, 2.G and 4.B) through the LWP process. The LWPA are expected to incorporate these standards into their LWP. The LWPA are required to complete LWPs within 2 years of the VLAWMO Plan approval. LWP content and the VLAWMO review process is identified in Sections 5.0 and 6.0. Following approval of LWPs, LWPA will have an additional 120 days to revise official control (i.e., ordinances) and another 60 days to begin implementation. When LWPs are approved, the VLAWMO will complete an



Memorandum of Understanding (MOU) with each LWPA detailing LWPA and VLAWMO roles and responsibilities for reporting, tracking, coordinating, and implementation of plan requirements. The VLAWMO will have oversight responsibility to ensure implementation of LWPs. If the LWPAs are found to be non-implementing, the VLAWMO will work with the LWPA to correct, and may, if problems persist, decide to develop rules and develop permitting programs to take on the Land Use Authorities granted by M.S. 103B to enforce standards in this Plan. However, the VLAWMO preferred position is to avoid unnecessary duplication of permitting programs.

#### **4.7.3 POLICY 7.3: UTILIZE VOLUNTEERS**

##### Management Strategies and Standards

To control costs, VLAWMO will use volunteers to help implement the monitoring and public information/education strategies under Goals 6 and 9. VLAWMO will provide the leadership, oversight and education needed to effectively maximize volunteer resources.

#### **4.7.4 POLICY 7.4: PROMOTE COST SHARING**

##### Management Strategies and Standards

Many of the lakes and water resources in the VLAWMO do not have public access. However, the public benefits if waters discharged to and from these waterbodies are managed for water quantity and quality, and thus, there is justification for the expenditure of public funds even when there is not public access. However, the VLAWMO expects benefited parties to share in the cost and effort of projects to optimize public expenditures, more appropriately apply costs to the most benefited parties, and create local investment in outcomes.

#### **4.7.5 POLICY 7.5: COORDINATE DATA COLLECTION AND MANAGEMENT EFFORTS**

##### Management Strategies and Standards

There are numerous data collection efforts by various organizations and agencies operating in the watershed. These organizations also have an array of management activities, education efforts, and capital improvements going on at any one time. Coordination will be completed on an on-going basis to avoid duplication of efforts, and to identify complementary efforts. The instrument for this coordination will be the annual Technical Advisory Committee (TAC) meeting described in Strategy 10.A.



## 4.8 GOAL 8: ANALYZE AND USE ALTERNATIVE FUNDING SOURCES

### 4.8.1 STRATEGY 8.1: CONTINUE TO ANALYZE AND USE ALTERNATIVE FUNDING SOURCES

VLA WMO has successfully used grants and will continue to pursue grants, as well as continue to analyze and use alternative funding sources. VLA WMO has also researched special taxing district status under M.S. 275.066 by levy, storm water utilities, and the use of special assessments. Efforts to enable these alternative funding sources will continue as part of this strategy.

## 4.9 GOAL 9: MAKE AND ENABLE INFORMED DECISIONS

The objective of this goal is to collect and analyze data necessary for informed decisions.

### 4.9.1 POLICY 9.1: DEVELOP ENVIRONMENTAL DATA COLLECTION PROGRAMS

#### Management Strategies and Standards

**Strategy 9.A: Modify and Continue the VLA WMO CLMP.** This strategy continues the operation of the VLA WMO CLMP with selected modifications. These modifications initially include:

- Using a certified laboratory for sample analysis so that the data can be used by the MPCA for determination of impairment.
- Adding a Quality Assurance/Quality Control (QA/QC) component to the monitoring.

The QA/QC component will consist of the collection of duplicate samples for the assessment of field precision. One duplicate sample will be collected per-lake, per-year, which, given the monthly sampling schedule amounts to about 10 percent of samples. The guideline/target for assessing field precision will be the relative difference of less than 30 percent for total phosphorus.

Additional changes to the VLA WMO CLMP and other VLA WMO monitoring efforts will be completed once data assessment efforts detailed under Strategy 9.C are completed, since data assessment may identify additional improvements. The inspection of the flow measurement flumes located at various locations in the VLA WMO will also be completed in first year of plan implementation to identify needed repairs.

**Strategy 9.B: Promote Efforts to Collect Additional Environmental Data.** This strategy targets the collection of additional environmental data identified in Section 3.0 as gaps. Specific efforts include:



- Soliciting additional volunteers for the Ramsey County and MnDNR Volunteer Lake Level Monitoring Program for Goose, Gem, Tamarack, Amelia, Gilfillan, and Wilkinson lakes.
- Promoting aquatic plant surveys as part of SLMPs (Strategy 2.C).
- Finishing the Wetland Inventory.
- Taking over the Lambert Creek monitoring efforts from the BWCSP.

#### 4.9.2 POLICY 9.2: WATER QUALITY MODELING

**Strategy 9.C: Complete Detailed Assessments of Data.** Much water quality data has been collected in the VLAWMO. The Plan (Section 2.0) includes a preliminary assessment of lake water quality data. However, the last time a comprehensive evaluation of the data was completed was in 2000. Periodic evaluations of data collected are necessary to convert data into information that decision makers can use. This strategy includes periodic detailed evaluations of collected data, on about a 5-year cycle. This is particularly important for Lambert Creek. Detailed assessment of the Lambert Creek data is needed to better understand phosphorus dynamics and assess the effectiveness of the recent improvements. Results of the assessment will also form the basis for water quality modeling in Strategy 9.D. Detailed assessments will include evaluation of trophic state parameters for the lakes and comparison with standards, trend analysis for lake data, and flow weighted-mean-concentration and mass-balance-analysis for the Lambert Creek sites.

#### **Strategy 9.D: Water Quality Modeling**

VLAWMO will employ a two-phased approach to modeling the watershed: Developing Bathtub Model for the watershed and updating the model as more information becomes available.

The first phase will consist of re-creating a Bathtub Model of the watershed using the spreadsheet model developed in the mid-1980s by Dr. William Walker for the BWCSP. The methodology will be based on the documented approach outline in Urban Nonpoint Sources Impact on a Surface Water Supply (Walker, 1985). This phase would be completed in 2007.

The second phase of the modeling will be to update the modeling as more information, such as aquatic survey, becomes available as the SLMP area is completed. The second phase will be completed on a rolling basis as SLMPs are completed.

#### 4.10 GOAL 10: IMPROVE COMMUNICATIONS

The intent of this goal is to improve communications between member communities of the JPA and other agencies.



#### 4.10.1 POLICY 10.1: INVOLVE THE PUBLIC IN DECISIONS

##### Management Strategies and Standards

**Strategy 10.A: Annual Planning Meetings.** The VLAWMO will hold annual meetings with a Policy Committee and a TAC. The Policy Committee will be comprised of public officials from the JPA member communities, while the TAC will be comprised of staff from member communities and other State and local agencies. The purpose of the meetings will be to coordinate efforts and review annual work plans and budgets.

#### 4.11 SUMMARY

This section identifies ten goals and associated policies and management strategies. Section 5.0 describes the administration necessary to achieve these goals and implement the policies and strategies. Section 6.0 describes the implementation program.