The five AUAR development scenario parcels slated for redevelopment are not located in the Bluff Protection Overlay District or on the steep slopes. Consequently, unique and/or unusual earthwork requirements for the proposed redevelopment are not anticipated. The potential for erosion and sedimentation of soils exposed during redevelopment in the AUAR study area will be minimized by using the appropriate Best Management Practices (BMPs) during and after construction.

Erosion practices will be identified in the final site grading and construction plans as required by NPDES permitting for construction sites and in accordance with the City of Bloomington and the watershed regulators’ erosion/sediment control standards. Erosion control measures will be in place and maintained throughout the entire construction period. Removal of erosion measures will not occur until all disturbed areas have been stabilized.

17. WATER QUALITY – SURFACE WATER RUNOFF

EAW:

A. COMPARE THE QUANTITY AND QUALITY OF SITE RUNOFF BEFORE AND AFTER THE PROJECT. DESCRIBE PERMANENT CONTROLS TO MANAGE AND/OR TREAT RUNOFF. DESCRIBE ANY STORM WATER POLLUTION PREVENTION PLANS.

B. IDENTIFY THE ROUTE(S) AND RECEIVING WATER BODIES FOR RUNOFF FROM THE SITE; INCLUDE MAJOR DOWNSTREAM WATER BODIES AS WELL AS THE IMMEDIATE RECEIVING WATERS. ESTIMATE THE IMPACT OF THE RUNOFF ON THE QUALITY OF THE RECEIVING WATERS.

AUAR: For an AUAR, the following additional guidance should be followed in addition to that in the “EAW Guidelines.”

- It is expected that an AUAR will have a detailed analysis of storm water issues.

- A map of the proposed storm water management system and of the water bodies that will receive storm water should be provided.

- The description of the storm water management should identify onsite and “regional” detention ponding and also indicate whether the various ponds will be new water bodies or converted existing ponds or wetlands. Where onsite ponds will be used but have not yet been designed, the discussion should indicate the design standards that will be followed.
If present in or adjoining the AUAR area, the following types of water bodies must be given special analyses:

- **Lakes:** Within the Twin Cities metro area a nutrient budget analysis must be prepared for any “priority lake” identified by the Metropolitan Council (see Appendix E of “EAW Guidelines” (1990) or contact the Council staff). Outside of the metro area, lakes needing a nutrient budget analysis must be determined by consultation with MPCA and DNR staffs;

- **Trout streams:** If storm water discharges will enter or affect a trout stream, an evaluation of the impacts on the chemical composition and temperature regime of the stream and the consequent impacts on the trout population (and other species of concern) must be included.

**WATER QUALITY/SURFACE WATER RUNOFF**

**INTRODUCTION/BACKGROUND**

The analyses summarized in this section provide a comparison of surface water quantity and quality for existing and post-AUAR development conditions in the Airport South District drainage areas, in order to allow for assessment of potential cumulative surface water impacts from the proposed AUAR developments. The XP-SWMM model (a modified version of the EPA SWMM model) was utilized for the storm water quantity assessment and the P-8 Urban Catchment Model (W. Walker, Jr. 1998) model was utilized for the storm water quality assessment. Technical memoranda included in Appendix C provide a detailed description of the water quality modeling assumptions and results.

The *Mall of America Expansion – Met Center Site EIS* included extensive analysis of water quantity and quality impacts. The water quality technical memorandum from the EIS (dated May 18, 2000) is included in Appendix C, for reference. The assumptions of the EIS analysis included most of the same development assumptions for Airport South District as this AUAR, with the following exceptions:

- Metro Office Park was assumed to be redeveloped (with a decrease in impervious area) in the EIS analysis, but is no longer slated for redevelopment within the AUAR analysis period.

- Ballfields property (south of 80th Street and east of 28th Avenue) was assumed to have an existing use as ballfields for the EIS analysis, but a substantial portion of the area is now a gravel-surfaced parking area and electrical substation.

- Kelley property south of East Old Shakopee Road was not assumed to be developed for the EIS analysis, but is now assumed to be developed by year 2006.
The detailed water quality analyses performed for the EIS were not re-run for the new assumptions. The AUAR analyses included revising the impervious area assumptions, re-running the XP-SWMM model to update the discharge quantity impacts analysis and re-running the P-8 analysis for total suspended solids (TSS), as a primary indicator of water quality impacts for the existing conditions versus the AUAR development scenario. The assumptions and results of these analyses are summarized in the discussion that follows.

ANALYSIS ASSUMPTIONS

Storm water analyses were conducted for the following conditions:

1. Existing Airport South land use and storm sewer configurations.

2. AUAR development scenario including existing and proposed development through the year 2007 (one year after the anticipated year 2006 completion of AUAR development). The analyses assume that, at a minimum, discharge rates from the proposed AUAR development sites will remain at existing levels and that water quality ponding (at approximately 70 percent TSS removal efficiency) will be provided at all redevelopment sites, since the City’s comprehensive storm water plan and watershed district plans require water quality treatment for new developments.

Table 5 summarizes the assumed impervious areas and land use/development assumptions for the XP-SWMM (quantity) and P-8 (water quality) modeling for existing and proposed conditions.

Figures 10 and 11 show the relationship of the AUAR development/redevelopment sites (Met Center, RPZ, Adjoining Lands, Health Partners Campus, Muir, and Kelley) to the Airport South sub-drainage areas and the ultimate receiving water – Long Meadow Lake – in the Minnesota River bottomlands (in the Minnesota Valley National Wildlife Refuge). The Met Center, Adjoining Lands and RPZ parcels are part of sub-drainage areas that flow to two storm water treatment ponds – Pond C and Hogback Pond – located in the Minnesota River valley.

The Muir property is part of a subdrainage area (Area G on Figure 10) at the northeast corner of Airport South that drains to the ‘80th Street outfall’ that flows to a backwater area of Long Meadow Lake prior to reaching the main body of Long Meadow Lake. Similarly, the Health Partners Campus (Area F on Figure 10) drains to a storm water system that discharges to the Long Meadow Lake-Ceridian outfall. No regional ponding is provided for these outfalls.
## TABLE 5
SURFACE WATER MODELING ASSUMPTIONS
Changes to Site Hydrology

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Area (acre)</td>
<td>Imperv. Area (ac.)</td>
<td>Percent Impervious</td>
</tr>
<tr>
<td>Met Center</td>
<td>53.3</td>
<td>50.3</td>
<td>94.4%</td>
</tr>
<tr>
<td>Adjoining Lands</td>
<td>34.1</td>
<td>21.0</td>
<td>61.6%</td>
</tr>
<tr>
<td>RPZ</td>
<td>29.7</td>
<td>24.5</td>
<td>82.4%</td>
</tr>
<tr>
<td>Robert Muir Company</td>
<td>12.3</td>
<td>11.6</td>
<td>93.8%</td>
</tr>
<tr>
<td>Health Partners Campus</td>
<td>44.7</td>
<td>31.8</td>
<td>71.1%</td>
</tr>
<tr>
<td>Kelley Property</td>
<td>60.0</td>
<td>15.6</td>
<td>26.0%</td>
</tr>
<tr>
<td><strong>TOTAL AREA</strong></td>
<td><strong>234.1</strong></td>
<td><strong>154.8</strong></td>
<td></td>
</tr>
</tbody>
</table>

**NET CHANGE IN IMPERVIOUS AREA**

\(-2.4\)^{(2)}

**NOTES:**
- \(^{(1)}\) Positive numbers represent an increase in percent impervious as compared to the Baseline Condition.
- Italics numbers above designate assumed future conditions since site plans have not yet been fully developed.
- \(^{(2)}\) Compared to a 26.4-acre reduction in impervious surface assumed in the MOA Expansion EIS for Build conditions.
Figure
The Kelley property is currently in farm/pasture use, with no internal site storm water conveyance provisions. Runoff from the southerly and easterly portions of this property follows natural drainage patterns as it flows towards Long Meadow Lake. The northwesterly portion drains towards the Old Shakopee Road storm sewer (to Pond C). Post-development drainage is assumed to change from these existing patterns. The approximately 43 acres of buildable land on the Kelley property would be routed to City storm sewer and conveyed to Hogback Pond, eliminating flows to Pond C from the property.

The majority of surface water from the Airport South District is conveyed via storm sewer to Pond C and/or Hogback Pond. The amount of water flowing to Pond C and Hogback Pond varies, depending on flow volumes, due to the presence of a flow splitter in the storm sewer line. During low flows (slightly less than the two-year storm), storm water from the upper reaches of the watershed is routed through Pond C. During high flows, excess water flows from the northern portion of the watershed are routed through Hogback Pond, with the base flows continuing through to Pond C.

Pond C also receives storm water from watershed sub-areas located west of TH 77 (i.e. west of the Airport South District). Figure 11 shows the full drainage area for Pond C, as well as the Airport South drainage areas.

**XP-SWMM Quantity Modeling Results**

Table 5 shows the impervious area assumptions used in the XP-SWMM modeling. The AUAR development scenario results in an approximately 2.4-acre net decrease in impervious surfaces in the Airport South area, compared to existing conditions.

In addition to the changes in impervious surface, the proposed development would include minor changes to storm water routing from the Kelley property, as described in the previous section. These changes result in a decrease in flow volume to Pond C and an increase in flow to Hogback Pond. The increased flow to Hogback is due to the combined effect of re-routing existing flows from Pond C to Hogback and conveying the south and east portions of the parcel (which currently do not drain to the City storm sewer) to Hogback Pond via a storm sewer system within the new Kelley property development.

The total runoff volumes to Airport South discharge points increase slightly, but not substantially (i.e., less than 5 percent), for AUAR post-development conditions, compared to existing conditions, as shown in Table 6. This slight increase is due to the additional drainage area conveyed from the south and east Kelley property to the storm sewer system. The effect of this increase is mitigated by the decrease in total impervious surface for post-development conditions and by City/watershed rate control requirements. The combined effect of these factors results in a minor increase in total discharge volume.
TABLE 6
COMPARISON OF RUNOFF VOLUMES

<table>
<thead>
<tr>
<th>Node Name</th>
<th>Location</th>
<th>TYPE II / 2.5-INCH EVENT</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline</td>
<td>AUAR Development</td>
<td>Change from Baseline</td>
<td></td>
</tr>
<tr>
<td><strong>Main Model</strong></td>
<td></td>
<td>12.6</td>
<td>12.6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>85U37</td>
<td>Outfall to Long Meadow Lake at 80th Street</td>
<td>12.6</td>
<td>12.6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Pond C</td>
<td>Outfall to Pond C</td>
<td>45.9</td>
<td>44.2</td>
<td>-1.7</td>
<td></td>
</tr>
<tr>
<td>23M42</td>
<td>Outfall to Hogback</td>
<td>34.3</td>
<td>39.8</td>
<td>+5.5</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Model</strong></td>
<td></td>
<td>9.4</td>
<td>9.9</td>
<td>+0.5</td>
<td></td>
</tr>
<tr>
<td>86N7</td>
<td>Outfall to Long Meadow Lake off Old Shakopee Road</td>
<td>9.4</td>
<td>9.9</td>
<td>+0.5</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>102.2</td>
<td>106.5</td>
<td>+4.3</td>
<td></td>
</tr>
</tbody>
</table>

Notes: (1) All runoff volumes are given in acre-feet.

Since the City’s Comprehensive Surface Water Management Plan requires all new development/redevelopment to maintain surface water discharge rates at or below existing levels, the AUAR projected development would not increase the rate of discharges, compared to existing conditions. Therefore, the existing storm sewer system would not require capacity modifications to support AUAR development. The XP-SWMM model was also used to verify that the capacity of the existing storm sewer system is adequate to convey post-AUAR development discharges.

**P-8 Water Quality Modeling Results**

The impervious area and planned development assumptions described previously (including the detention/treatment ponds indicated on development plans submitted for the Health Partners Campus) were utilized in the P-8 modeling. The modeling also assumes that onsite rate control and water quality treatment at all redevelopment sites will meet Nationwide Urban Runoff Program (NURP) requirements at a minimum, in conformance with City and Lower Minnesota River Watershed District requirements. Also, because the storm water inflows from west of TH 77 (see Figure 11) affect Pond C removal efficiencies, the area west of TH 77 was included in the water quality modeling for the post-AUAR conditions.

Table 7 summarizes the results of the P-8 modeling, comparing existing and post-AUAR development conditions. As described in the introduction to this section, TSS removal was used in this analysis as an indicator of pond effectiveness and overall outfall pollutant loadings.

There is no significant difference (i.e. approximately 2 percent) in total TSS loadings between existing and post-AUAR conditions, since there are relatively small overall
changes in land use type and/or impervious surface between the two conditions. The post-AUAR development scenario that includes onsite detention/treatment increases pollutant removal, resulting in a six percent overall decrease in post-AUAR TSS outflow loading compared to existing conditions.

The P-8 model was run for post-AUAR conditions without onsite ponding at the redevelopment sites (i.e., relying only on regional treatment ponds—Pond C and Hogback Pond), in order to better understand the contribution made by onsite treatment ponds in pollutant removal. This analysis was also used to assess the impact of a request by the Metropolitan Airports Commission (MAC) that storm water ponding not be provided above the river bluff, due to concerns about attracting birds to the ponds and increasing the potential for bird/aircraft conflicts, see MAC comment #1 in Appendix E. The results of this run are also included in Table 7. Post-AUAR development without onsite ponds would result in removal of approximately the same amount of TSS as occurs under existing conditions (approximately 21,920 pounds/year), despite higher hydraulic and TSS loadings in the system for the 2007 conditions without onsite treatment. However, the post-AUAR conditions without onsite ponding would result in a six percent increase in TSS outflow loading (due to higher total TSS loadings for post-AUAR conditions). Therefore, use of onsite ponding (or alternative onsite treatment methods) and/or an increase in regional ponding capacity is needed to bring post-AUAR outflow loadings to levels that are equal to or lower than existing outflow loadings.

**TABLE 7**

**PREDICTED TOTAL SUSPENDED SOLIDS (TSS) LOADINGS**

<table>
<thead>
<tr>
<th></th>
<th>Total TSS Loading (lbs/yr)</th>
<th>Total TSS Removal by Ponding Systems (lbs/yr)</th>
<th>Outflow Loading (lbs/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Condition (2000)</td>
<td>35,495</td>
<td>21,920</td>
<td>13,575</td>
</tr>
<tr>
<td>Post-AUAR Development Conditions with onsite ponding (2007)</td>
<td>36,320</td>
<td>23,609</td>
<td>12,711</td>
</tr>
<tr>
<td>Post-AUAR Development Conditions without onsite ponding (2007)</td>
<td>36,320</td>
<td>21,926</td>
<td>14,394</td>
</tr>
</tbody>
</table>

**Regional Water Quality Ponding Issues**

Although proposed Airport South AUAR development will be required to include storm water management design features to meet City and Watershed District requirements for rate control and water quality treatment, Pond C and Hogback Pond will remain important Airport South regional treatment facilities, especially for existing properties without onsite treatment. The majority of surface water from the Airport South District currently flows to Pond C and/or Hogback Pond for treatment prior to discharge to Long Meadow Lake. An analysis of existing conditions (see the May 18, 2000 Technical Memorandum in Appendix C) indicates that Pond C is very
important in removing pollutants from storm water flowing to Long Meadow Lake. Hogback Pond has a higher removal efficiency than Pond C; however, Pond C serves a larger drainage area. The Pond C drainage area include properties within Airport South, but also an extensive area west of TH 77/Cedar Avenue, i.e., outside Airport South.

The AUAR analysis indicates that Pond C does not currently meet expected removal efficiencies for any of the parameters modeled. This inability to meet expected removal efficiencies is related to two Pond C characteristics: (1) the overall drainage area of Pond C is larger than the treatment capacity of the impoundment and, (2) Pond C was constructed prior to NURP or MPCA design guidelines or standards.

Since the analyses performed for the AUAR indicated that there are some existing treatment deficiencies in the Airport South watershed, the City has conducted a storm water treatment feasibility study for the Airport South District (in addition to the AUAR studies) that incorporates both onsite and regional treatment facilities for development anticipated through year 2020. This study is nearing completion, and will be forwarded to City Council for adoption as an amendment to the City’s *Surface Water Management Plan*. The recommendations of the study include:

- Pursue design and permitting for expansion of Pond C (the City already has allocated Capital Improvement Program (CIP) funding for expansion of Pond C in its 2002-2003 CIP).

- Pursue ponding locations for the drainage area west of TH 77, and/or the expansion of Wrights Lake, if redevelopment occurs in this area in the future.

- If no regional ponding facilities are available for a subwatershed (i.e. 80th Street and Ceridian outfall areas), then onsite treatment ponds (or equivalent alternative onsite treatment facilities) should be incorporated into all new development/ redevelopement projects within the subwatershed.

- Incorporate rate control and primary treatment measures as a minimum treatment at all redevelopment areas within subwatersheds served by regional ponds.

- Encourage low impact development (LID) management practices to be incorporated for treatment in redevelopment areas where appropriate.

- To reduce the potential for pollutant overloading from accidental spills from commercial and industrial properties within Airport South District, City staff will continue to work with commercial/industrial property owners within Airport South District and the remainder of the City in developing site-specific spill prevention plans when required by NPDES and MPCA permitting, and in educating property owners about pollutant sources and impacts and about spill prevention, containment, and response procedures.
City staff have been, and will continue to be, working with USFWS staff in reviewing the findings of the Feasibility Study and developing storm water system management strategies for Airport South that are effective in minimizing impacts to the waters of the Minnesota Valley National Wildlife Refuge and are compatible with the nature and character of the area. Also, since Pond C is located within Mn/DOT right-of-way, City staff will also coordinate studies and strategies for Pond C with Mn/DOT water resources staff. Coordination with both agencies will continue as the City completes its Feasibility Study and begins implementation of its recommendations as part of the City Comprehensive Surface Water Management Plan.

18. WATER QUALITY – WASTEWATERS

EAW:

A. DESCRIBE SOURCES, COMPOSITION AND QUANTITIES OF ALL SANITARY, MUNICIPAL AND INDUSTRIAL WASTEWATER PRODUCED OR TREATED AT THE SITE.

B. DESCRIBE WASTE TREATMENT METHODS OR POLLUTION PREVENTION EFFORTS AND GIVE ESTIMATES OF COMPOSITION AFTER TREATMENT. IDENTIFY RECEIVING WATERS, INCLUDING MAJOR DOWNSTREAM WATER BODIES, AND ESTIMATE THE DISCHARGE IMPACT ON THE QUALITY OF RECEIVING WATERS. IF THE PROJECT INVOLVES ONSITE SEWAGE SYSTEMS, DISCUSS THE SUITABILITY OF SITE CONDITIONS FOR SUCH SYSTEMS.

C. IF WASTES WILL BE DISCHARGED INTO A PUBLICLY OWNED TREATMENT FACILITY, IDENTIFY THE FACILITY, DESCRIBE ANY PRETREATMENT PROVISIONS AND DISCUSS THE FACILITY’S ABILITY TO HANDLE THE VOLUME AND COMPOSITION OF WASTES, IDENTIFYING ANY IMPROVEMENTS NECESSARY.

D. IF THE PROJECT REQUIRES DISPOSAL OF LIQUID ANIMAL MANURE, DESCRIBE DISPOSAL TECHNIQUE AND LOCATION AND DISCUSS CAPACITY TO HANDLE THE VOLUME AND COMPOSITION OF MANURE. IDENTIFY ANY IMPROVEMENTS NECESSARY. DESCRIBE ANY REQUIRED SETBACKS FOR LAND DISPOSAL SYSTEMS.

AUAR: Observe the following points of guidance in an AUAR:

- Only domestic wastewater should be considered in an AUAR – industrial wastewater would be coming from industrial uses that are excluded from review through an AUAR process.