



**Existing Environmental and Stormwater
Management Features, Opportunities,
Constraints and Potential Barriers**

11/29/06 FINAL DRAFT

Environmental and Stormwater Taskforce Report

The purpose statement for the Environmental and Stormwater Task Force is to:

- Ensure that environmental information on the wetlands, floodplains and other environmental assets in the corridor are appropriately considered in the determinations of the transportation and land use recommendations.
- Recommend that the improvement comply with the public road development requirements of the Lake County Watershed Development Ordinance.

The Lake County Stormwater Management Commission supports the work of the Environmental and Stormwater Task Force with its analysis using GIS mapping technology and the following applicable mapping layers.

Data Accuracy Statement

The environmental features described in this report are based on mapping data only with the accuracy being limited to the original study data source. For more detailed studies or design purposes it is necessary to field verify their existence and extents.

Project Corridor Statistics

MAPPING LAYER	IMPORTANCE RANK (1-5)	Acreage*	% of Corridor*
ADID wetlands	3-5	564	4.0%
Threatened & Endangered Species	5	733	5.1%
Illinois Natural Area Inventory Sites	5	568	4.0%
Illinois Nature Preserves	5	149	1.1%
Corps Wetland Mitigation Sites	5	77	0.5%
Biologically Significant Streams	5	10	0.1%
SMC Floodplain Buyout Properties	5	0	0.0%
Lake County Forest Preserves	4	823	5.8%
Floodway (FEMA and SMC)	3	776	5.5%
Streams	3	38	0.3%
303-D Streams	3	9	0.1%
100 Year Floodplain (FEMA and SMC)	2	2478	17.4%
Lake County Wetland Inventory	2	2076	14.6%
USGS Flood of Record	2	1616	11.4%
SMC Flood Hazard Inventory	2	90	0.6%
Hydric Soils	1	3886	27.3%
WDO Buffer Areas	1	1142	8.0%
Very Highly Permeable Soils**	1	159	1.1%

8297 acres clear of known environmental constraints (opportunities)

4852 acres contain known environmental constraints (constraints)

1088 acres of potential environmental barriers****

14,237 acres in the project corridor

*the total will NOT add up to the total acreage of 14,237 due to overlapping themes

**Ksat ratings Very High

Importance Rank Description

1	Lowest rank, represents a minor constraint that can likely be designed around
2 - 4	Increasing rank denotes increasingly complex process to design around
5	Highest Rank, represents a feature that can not likely be designed around and may be a 'Potential Barrier' by itself

GIS Analysis Scenarios

Scenario 1: Stand Alone Mapping Themes Counted Individually

For purposes of analysis, Stand Alone Mapping Theme rankings are counted individually regardless of overlap. For example, an area containing hydric soils, Lake County Forest Preserves, and Illinois Nature Preserves would receive a total ranking of 10.

1. Hydric Soils

Ranking = 1

A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

2. Lake County Forest Preserves

Ranking = 4

Almond Marsh, Brea Loch, Greenbelt, Gurnee Woods, Independence Grove, Lake Carina, Marl Flat, and Nippersink are in the corridor. The Land Use Task Force will identify conservation areas.

3. Illinois Nature Preserve

Ranking = 5

There are two of these in the project corridor. The sites are Oak Openings and Almond Marsh. The sites are under legal protection of the Illinois Nature Preserve Commission. This layer constitutes a 'potential barrier' by itself.

4. Illinois Natural Area Inventory

Ranking = 5

There are 7 sites identified for the presence of two or more Threatened and Endangered (T&E) species or one T&E species combined with a high quality natural area by the Illinois Department of Natural Resources (IDNR). The sites are Almond Marsh, Black-Crown Marsh, Cranberry Lake, Fish Lake and Marl Flats Forest Preserve, Oak Grove Botanical Area, Round Lake Marsh, and Sargent Marsh. This layer constitutes a 'potential barrier' by itself.

5. Threatened and Endangered Species

Ranking = 5

Identified by IDNR: State or Federal, Plant and Animal Species listed by IDNR or U.S. Fish and Wildlife Service. This layer constitutes a 'potential barrier' by itself. There is concern with this data being current; therefore, field verification checks are requested in future study phases. Also, there is an acknowledgement that the IDNR T&E species data is incomplete and that there are locally identified occurrences of T&E species that will need to be included in future study phases. (e.g., the Environmental Impact Study).

6. FEMA Floodway

Ranking = 3

Regulatory Floodway: The channel, including on-stream lakes, and that portion of the Regulatory Floodplain adjacent to a stream or channel as designated by the Illinois Department of Natural Resources, Office of Water Resources, which is needed to store and convey the existing and anticipated future 100-year frequency flood discharge with no more than a 0.1 foot increase in stage due to the loss of flood conveyance or storage, and no more than a 10% increase in velocities.

7. SMC Floodway from Fish Lake Drain and Squaw Creek Floodplain Studies

Ranking = 3

SMC themes supersede the FEMA floodway in those areas as best available information. The WDO defines a floodway as the channel, including on-stream lakes, and that portion of the Regulatory Floodplain adjacent to a stream or channel designated by the Illinois Department of Natural Resources, Office of Water Resources, which is needed to store and convey the existing and anticipated 100-year frequency flood discharge with no more than a 0.1 foot increase in stage due to the loss of flood conveyance or storage, and no more than a 10% increase in velocities.

8A. U.S. Army Corps of Engineers - Wetland Mitigation Banks

Ranking = 5

The U.S. Army Corps of Engineers defines a site as a wetland mitigation bank intended to compensate for the adverse impacts of permitted activity on wetland functions and values. Wetland mitigation generally involves the restoration of former wetland areas, the creation of new wetlands, or the enhancement of existing wetland areas. This layer constitutes a 'potential barrier' by itself.

8B. Regulatory Wetland Mitigation Areas (SMC, USACOE)

Ranking = 3-5

Ranking will vary based on the mitigation ratio assigned for impacts and existing quality. There may be numerous individual wetland mitigation areas that have regulatory protection, which will have to be researched and mapped as part of future study phases. Some of these wetland mitigation areas may only be found through title searches and/or on-site delineations.

9. SMC Floodplain Buyout Properties

Ranking = 5

No identified structures or properties in corridor at this time. All properties are purchased and legally deed or plat restricted in perpetuity as floodplain open space. This layer constitutes a "potential barrier" by itself.

10. Very Highly Permeable Soils

Ranking = 1

Permeability refers to the ability of a soil to transmit water. Very Highly permeable soils have a Ksat rating equal to or greater than 100 and less than or equal to 705 micrometers per second. The estimates, expressed in micrometers per second, indicate the rate of water movement. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Further analysis of potential recharge areas may need to be conducted in future study phases.

11A. Watershed Development Ordinance (WDO) defined Buffer Areas

Ranking = 1

An area of predominantly vegetated land to be left open, adjacent to drainageways, wetlands, lakes, ponds or other surface waters for the purpose of eliminating or minimizing adverse impacts to such areas.

11B. WDO Buffer Areas for Streams

Streams will have a minimum buffer of 50 feet on each side of the channel. This buffer width may be reduced to 30 feet on each side of the channel when the tributary area of the stream exceeds one square mile. Tributary area determinations were not performed for this report and will be analyzed in future study phases.

12. WDO Buffer Areas for Wetlands and Water Bodies

For all water bodies or wetlands with a total surface area greater than one third (1/3) acre but less than one (1) acre, a minimum buffer width of thirty (30) feet shall be established.

For all water bodies or wetlands with a total surface area greater than or equal to one (1) acre but less than two and one half (2 ½) acres, a minimum buffer width of forty (40) feet shall be established.

For all water bodies or wetlands with a total surface area greater than or equal to two and one half (2½) acres, a minimum buffer width of fifty (50) feet shall be established.

Scenario 2: Mapping Themes Prioritized and Merged to Avoid Double Counting

For purposes of analysis, the following mapping themes were prioritized and merged to avoid overlap and double counting of similar attributes. Where overlap occurs, themes with higher ranks (i.e. Biologically Significant Streams) supersede themes of lower rank (i.e. Lake County Wetland Inventory). For example, an area containing Biologically Significant Streams, ADID Wetlands, and 303-D Streams would receive a total rank of 5.

1. Biologically Significant Streams

Ranking = 5

This includes Class A and Class B streams (Squaw Creek) and those with Lotic plants (Mill Creek). For mapping area estimation purposes, all stream widths are assumed as 20 feet.

2. ADID Wetlands

Ranking = 3-5

ADID wetlands are a subset of the WDO defined, "High Quality Aquatic Resources (HQAR's). An HQAR is either a Waters of the United States or an Isolated Waters of Lake County that are determined to be critical due to their uniqueness, scarcity, function, and/or value as defined in Appendix L of the WDO. Ranking values vary due to the ADID determination as follows: 3 = water quality/storm retention only; 5 = biological value only; 5 = both water quality/storm and biological.

3. 303-D Streams

Ranking = 3

Portions of Squaw Creek and the Des Plaines River are degraded as designated by the Illinois Environmental Protection Agency. For mapping area estimation purposes, all stream widths are assumed as 20 feet.

4. Streams

Ranking = 3

A stream is defined in the WDO as a course of running water flowing into a channel including creeks and rivers. For mapping area estimation purposes, all stream widths are assumed as 20 feet.

5. Lake County Wetland Inventory

Ranking = 2

The LCWI includes a range of mapped wetland and non-wetland categories, including artificial and farmed wetlands and urban converted wetlands.

Scenario 3: Mapping Themes Merged and Combined to Avoid Double Counting

For purposes of analysis, the following mapping themes were merged together and combined to form one continuous layer. They are all related themes with the same rank. For example, an area containing the FEMA 100 year Floodplain, the SMC 100 Year Floodplain, and the SMC Flood Hazard Inventory would receive a rank of 2.

1. SMC Flood Hazard Inventory

Ranking = 2

SMC's Flood Hazard Inventory shows known flood problem areas.

2. SMC 100 Year Floodplain (Squaw Creek/Fish Lake)

Ranking = 2

This theme supersedes the FEMA 100 Year in those areas as best available information. The 100-year floodplain is designated on SMC floodplain maps as areas impacted by the base flood.

3. FEMA 100 Year Floodplain

Ranking = 2

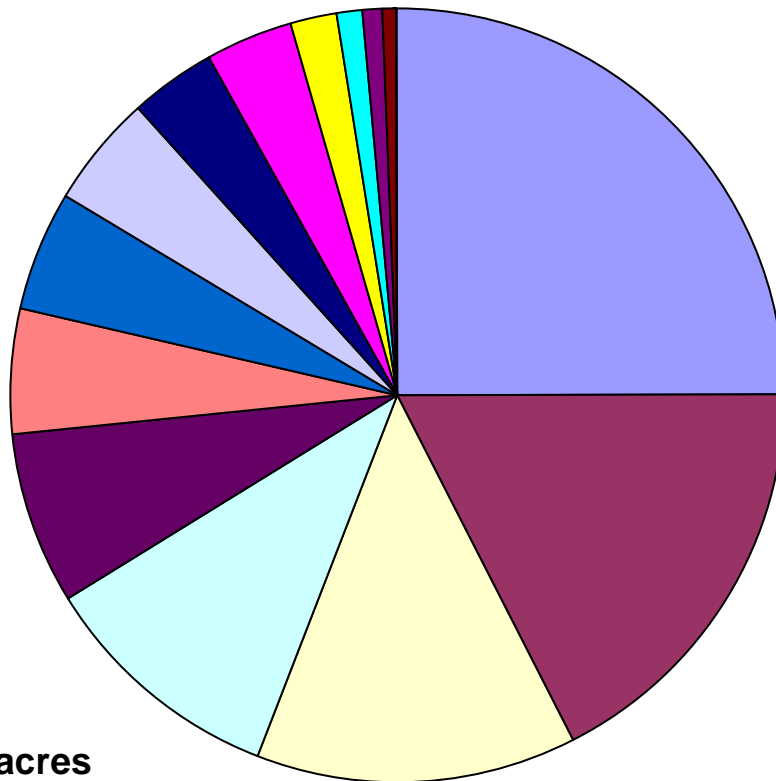
Regulatory Floodplain: Regulatory Floodplains may be either riverine or non-riverine depressional areas. Floodplain boundaries shall be delineated by projecting the base flood elevation onto the best available topography.

4. USGS Flood of Record

Ranking = 2

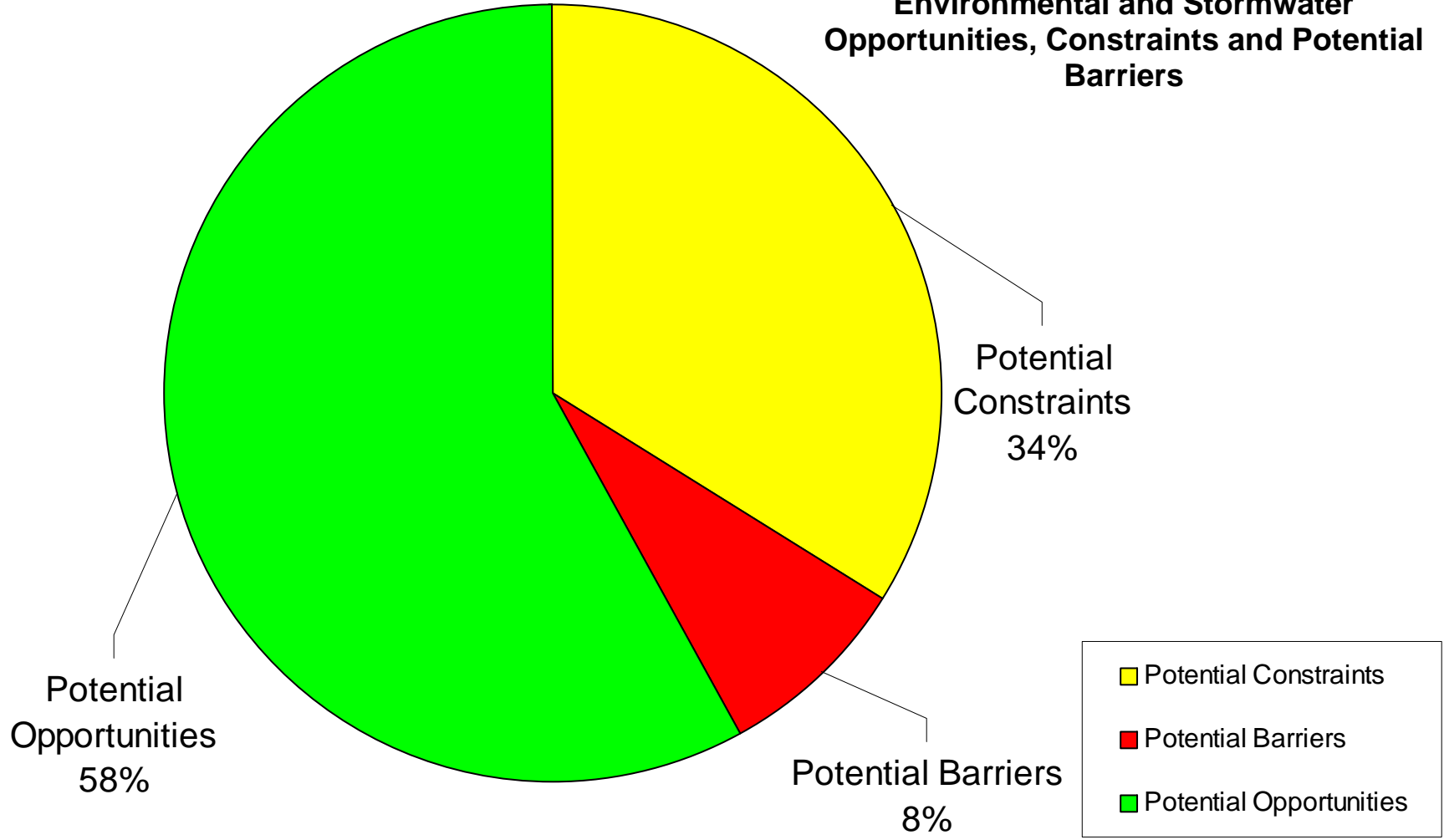
The Flood of Record is the highest recorded flood elevation for a given area. The source for the information displayed is the United States Geological Survey (USGS) Hydrologic Atlas, also known as the Flood of Record Map Series. The original maps are published in USGS Quadrangle format at a scale of 1:24,000.

Route 120 Corridor Existing Environmental Features



Hydric Soils	27%
100 Year Floodplain (FEMA and SMC)	20%
Lake County Wetland Inventory	15%
USGS Flood of Record	11%
WDO Buffer Areas	8%
Forest Preserves	6%
Floodway (FEMA and SMC)	5%
Threatened & Endangered Species	5%
Illinois Natural Area Inventory	4%
ADID Wetlands	4%
Corps Wetland Mitigation Sites	2%
Very Highly Permeable Soils	1%
Nature Preserves	1%
SMC Flood Hazard Inventory	<1%
SMC Floodplain Buyout Properties	0%

**Route 120 Corridor
Environmental and Stormwater
Opportunities, Constraints and Potential
Barriers**



Potential Barriers – These layers have been assigned an importance ranking of 5 by themselves, or have a conglomerated value of 15 or greater. They represent the most significant environmental or natural resource features, which potentially cannot feasibly be moved, replicated or mitigated elsewhere.

- ◆ Illinois Nature Preserve
- ◆ Illinois Natural Area Inventory
- ◆ T&E Species
- ◆ Corp Wetland Mitigation Banks
- ◆ SMC Floodplain Buyout Properties
- ◆ Mapping units that have a conglomerated ranking value of 15 or greater.
 1. Oak Openings (Includes Almond Marsh Rookery)
 2. Squaw Creek Wetland Complex
 3. Nippersink Forest Preserve
 4. Fish Lake Wetland Complex
 5. Sargent's Marsh

Constraints – Consists of features that have varying degrees of environmental or geographically spatial significance. Typically, impacts to these areas require some type of regulated mitigation to compensate for the environmental benefit that feature provides. Most have standardized impact/mitigation processes.

- ◆ Hydric Soils
- ◆ Forest Preserves
- ◆ FEMA and SMC Floodway
- ◆ Biologically Significant Streams
- ◆ ADID Wetlands
- ◆ 303-D Streams
- ◆ Streams
- ◆ Lake County Wetland Inventory
- ◆ FEMA 100 Year Floodplain and SMC 100 Year Floodplain and SMC Flood Hazard Area Inventory
- ◆ Highly Permeable Soils
- ◆ WDO Buffer Areas

Opportunities – Areas with no identified potential barriers or constraints. These areas also may represent possible mitigation locations for project impacts.

- ◆ Those areas not containing Potential Barriers or Constraints

Map Atlas –A map atlas will be made available that provides the base data layers used in this report.