

APPENDIX E

Stream Data

WATER QUALITY DATA

Water quality data are limited for project area streams, as many of the small streams have an upstream watershed area of less than one square mile. Streams are described by their biological and physical characteristics, such as flow or stream bottom where data was available. Four tables summarize the available information: Table 1 summarizes the available physical characteristics of these streams by outlet; Table 2 presents the available biological data; Table 3 describes the stream use evaluations of the Illinois Environmental Protection Agency, and the ERM depicts the outlet location of the crossings.

Stream Physical Characteristics

Table 1 summarizes the physical characteristics of the streams in the project area. Sleepy Hollow Creek is the largest stream crossed by IL Route 31. The remaining tributaries represent small streams with sand, gravel, and silt stream bottoms and riparian areas consisting of trees and grasses.

Special Designation Streams

Special designations include navigable waters, streams that have “outstandingly remarkable” natural or cultural values, streams that are listed on the Nationwide Rivers Inventory, Illinois Natural Areas, Biological Stream Rating System (BSRS) High Quality Streams, or impaired streams. Thunderbird Lake, which is downstream of the project area, is a designated Illinois Natural Area Inventory (INAI) site. There are no special designation streams crossed by the proposed project. Streams in the project area drain to the Fox River, which is identified as a 303(d) impaired stream. The impaired section of the Fox River is 1.3 miles to the east of the project area.

Lakes

Thunderbird Lake is the only lake in or near the study area, and it is approximately 1,300 feet west of the project. Thunderbird Lake is part of the Sleepy Hollow Watershed. Sleepy Hollow Creek and Squaw Creek are both tributaries to Thunderbird Lake, which ultimately discharges to the Fox River via Sleepy Hollow Creek. Thunderbird Lake is designated as an INAI area (INAI number 1558) due to its high quality natural community and suitable habitat for state-listed species or state-listed species relocations (IDNR 2013).

Roadway runoff from IL Route 31 for both existing and proposed conditions, ultimately is discharged to Thunderbird Lake via Squaw Creek, Sleepy Hollow Creek, and associated tributaries. The incorporation of best management practices (BMPs) to treat runoff will help maintain or improve the overall water quality of Thunderbird Lake through removal of suspended solids and other chemicals in runoff prior to reaching the lake.

Squaw Creek

Squaw Creek is a perennial stream that flows into Thunderbird Lake and is crossed by the proposed project near Brighton Lane. A portion of Squaw Creek flows parallel to IL Route 31 and has been channelized. There is moderate stream bank erosion in the area east of IL Route 31; however the stream substrate is very stable (*Silver Creek/Sleepy Hollow Watershed Action Plan 2011*). The Illinois Environmental Protection Agency has not rated this stream for uses. No chemical water quality data or biological data are available for Squaw Creek.

Sleepy Hollow Creek

Sleepy Hollow Creek is a perennial stream that flows to Thunderbird Lake, which then outlets to the east and flows to the Fox River. Biological survey information for Sleepy Hollow Creek was described in the *Silver Creek and Sleepy Hollow Watershed Action Plan* (2011). This survey identified bluegills, green sunfish, and fathead minnows as the dominant species. Two pollution intolerant fish species were identified: the spotfin shiner and the golden shiner. The presence of pollution intolerant fish is an indicator of good water quality; however, potential impacts are assessed against general use water quality standards. The Illinois Environmental Protection Agency has not assessed use designations of Sleepy Hollow Creek. No water quality data are available for Sleepy Hollow Creek.

Table 1
Physical Characteristics of Streams within the Study Area

Outlet Number ¹	Name	Upstream Watershed Area (square mile) ²	Flow Characteristics	Substrate	Stream Width (feet)	Stream Depth (feet)	Riparian Vegetation
4	Squaw Creek	0.06	ephemeral ⁶	NA	1-3 ⁷	NA	NA
6	Squaw Creek	0.36	lentic ⁴ , perennial ³	silt, gravel ⁴	4-10 ⁵	0.98 ⁴	trees, grasses, shrubs ⁵
7	Squaw Creek	0.11	perennial ⁵	NA	1-5 ⁷	NA	trees, grasses ⁵
9	Sleepy Hollow Creek	9.6	lotic, perennial ³	cobble, sand ⁵	20 ⁵	NA	trees, grasses, vegetation ⁵
12	Unnamed Tributary to Thunderbird Lake	0.07	ephemeral ⁶	NA	NA	NA	NA
15 & 16	Unnamed Tributary to Fox River	0.09	ephemeral ⁶	silt ⁴	NA	3.3 ⁴	NA
23	Unnamed Stream Tributary to Fox River	3.14	perennial ⁶	NA	7-12 ⁷	NA	NA

¹ Outlet number corresponds with the crossing location identified on the Environmental Resources Map

² Upstream watershed area determined using USGS Stream Stats. Available at: http://streamstatsusgs.cr.usgs.gov/il_ss/default.aspx

³ Physical characteristics described in the Silver Creek and Sleepy Hollow Creek Watershed Action Plan (2011).

⁴ Physical characteristics described in the INHS Report (2007). [INHS. 2007. INHS Wetland Survey Report. FAU 336 (IL 31) Addendum B. Job # P91-135-99]

⁵ Visual field assessment on May 29, 2014 by H&H, Inc.

⁶ Based on upstream watershed area

⁷ Based on map interpolation

NA-Not Assessed

Table 2
Biological Characteristics of Streams within the Study Area

Name	Number of Fish Species Present	Dominant Fish Species	Number of Tolerant, Intolerant Species	% of Tolerant, Intolerant Species	Threatened & Endangered Species	Number of Mussel- Live Species	Macro-invertebrate MBI	Macro-invertebrate EPT
Sleepy Hollow Creek ¹	11 ¹	Bluegill, Green sunfish, Fathead minnow	Tolerant -3 Intolerant – 2 No Classification - 6	Tolerant - 27% Intolerant - 17 No Classification – 55%	0 ¹	0 ¹	6.8	<i>EPT present</i>

¹ Biological characteristics described in the Silver Creek and Sleepy Hollow Creek Watershed Action Plan (2011).

**Table 3
Stream Use Designation**

Waterway	Near Project Location	Stream Segment	303d List	Use Attainment	Cause	Source
Squaw Creek	At Project location	----	Not on List	Not Assessed	Not Assessed	Not Assessed
Sleepy Hollow Creek	At Project location	----	Not on List	Not Assessed	Not Assessed	Not Assessed
Fox River	1.3 miles east and outside of project area (Route 176 Brutons Bridge 5 miles east-northeast of Crystal Lake, US Route 120 Bridge at McHenry County)	DT-22	Yes	Not supporting aquatic life, fish consumption, and primary contact	Alteration in stream-side or littoral vegetative covers, chloride, copper, other flow regime alterations, sedimentation/siltation, aquatic algae, polychlorinated biphenyls, fecal coliform	Impacts from hydrostructure flow regulation/ modification; habitat modification-other than hydromodification, highway/ Road/ Bridge runoff (non-construction related), urban runoff/ storm sewer, dam or impoundment, source unknown

Source: Illinois Environmental Protection Agency. 2014. Illinois Integrated Water Quality Report and Section 303(d) List, 2014.

Other Streams

No biological or chemical water quality data were available for the other streams crossed by the Project due to their small size.