

CRYSTAL LAKE LAKE DISCOVERY DAY 2014

Prepared By:

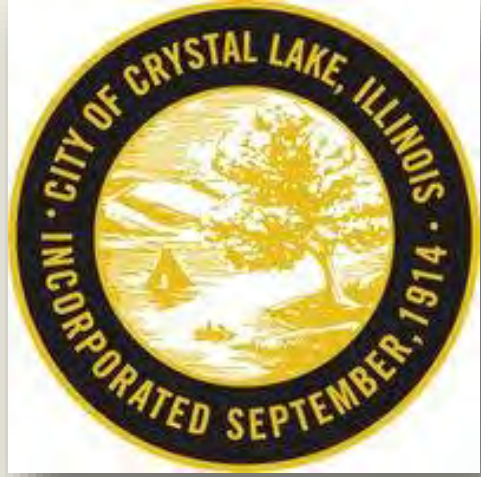
Hey and Associates, Inc.

Presented for:



October 18, 2014

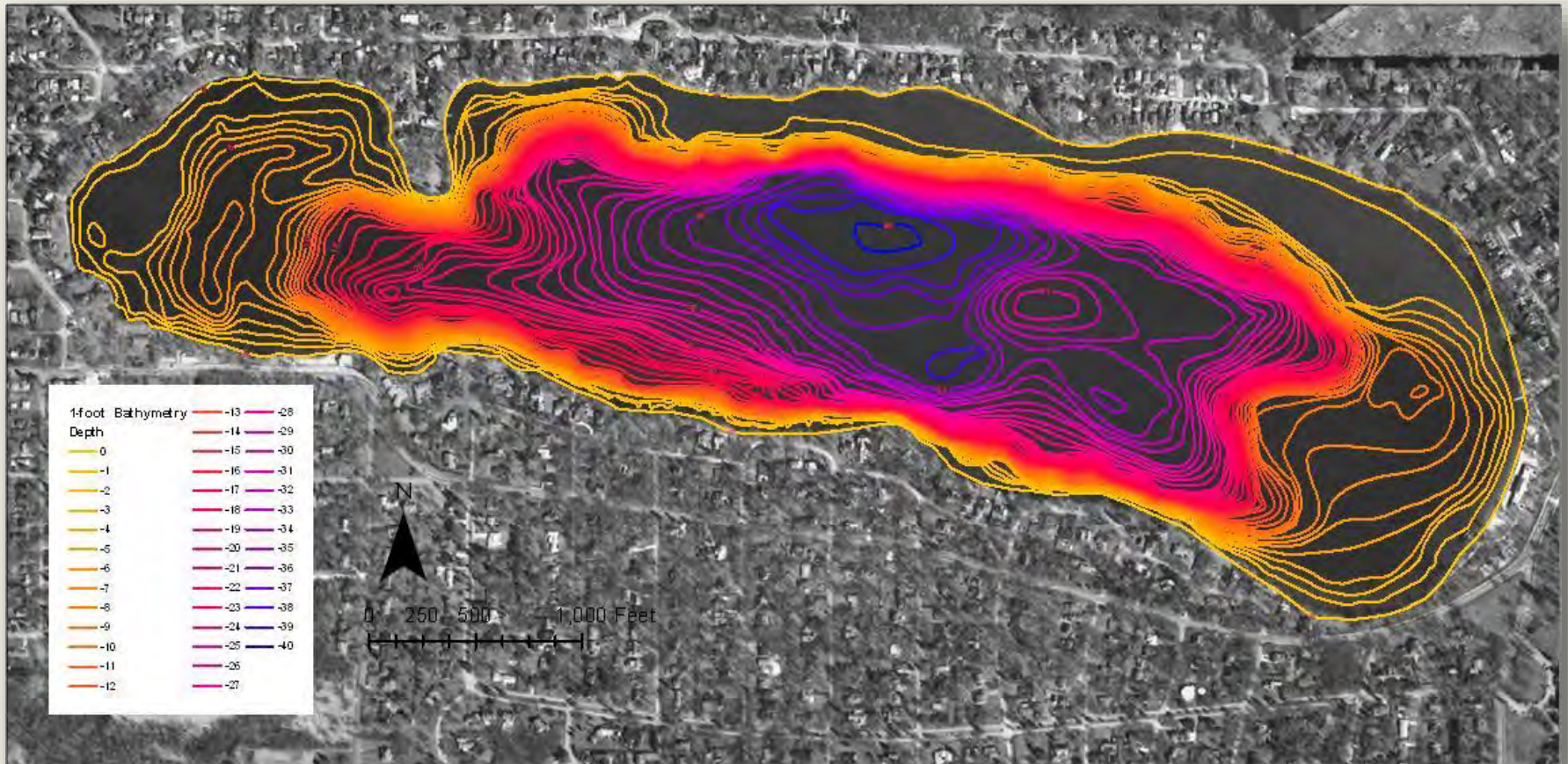
LAKE PARTNERS



CRYSTAL LAKE PARK DISTRICT



Owens 95% of the Lake Bottom



CRYSTAL LAKE PARK DISTRICT



Operates Two Beaches: Main and West



West Beach

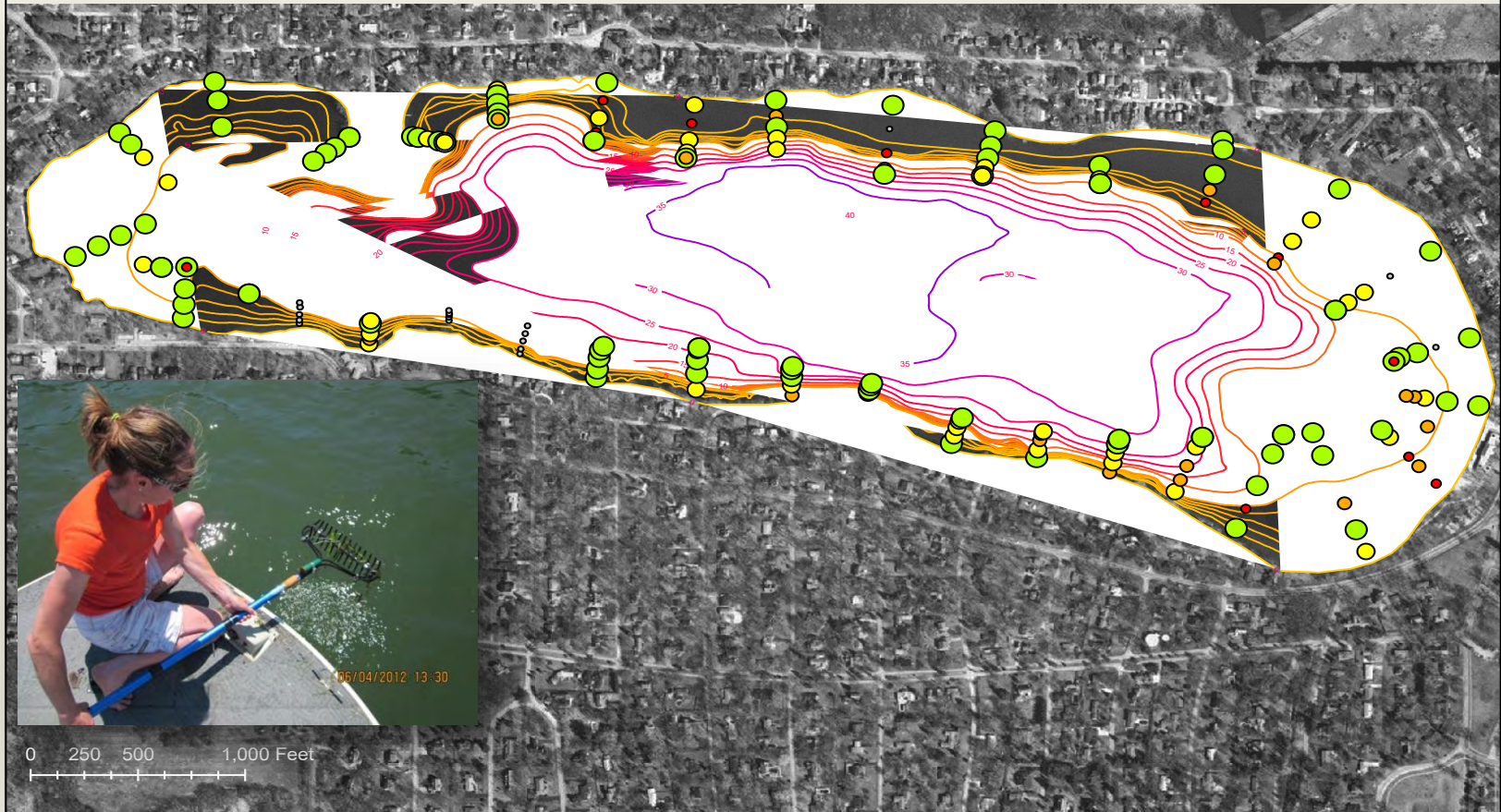


Main Beach

CRYSTAL LAKE PARK DISTRICT

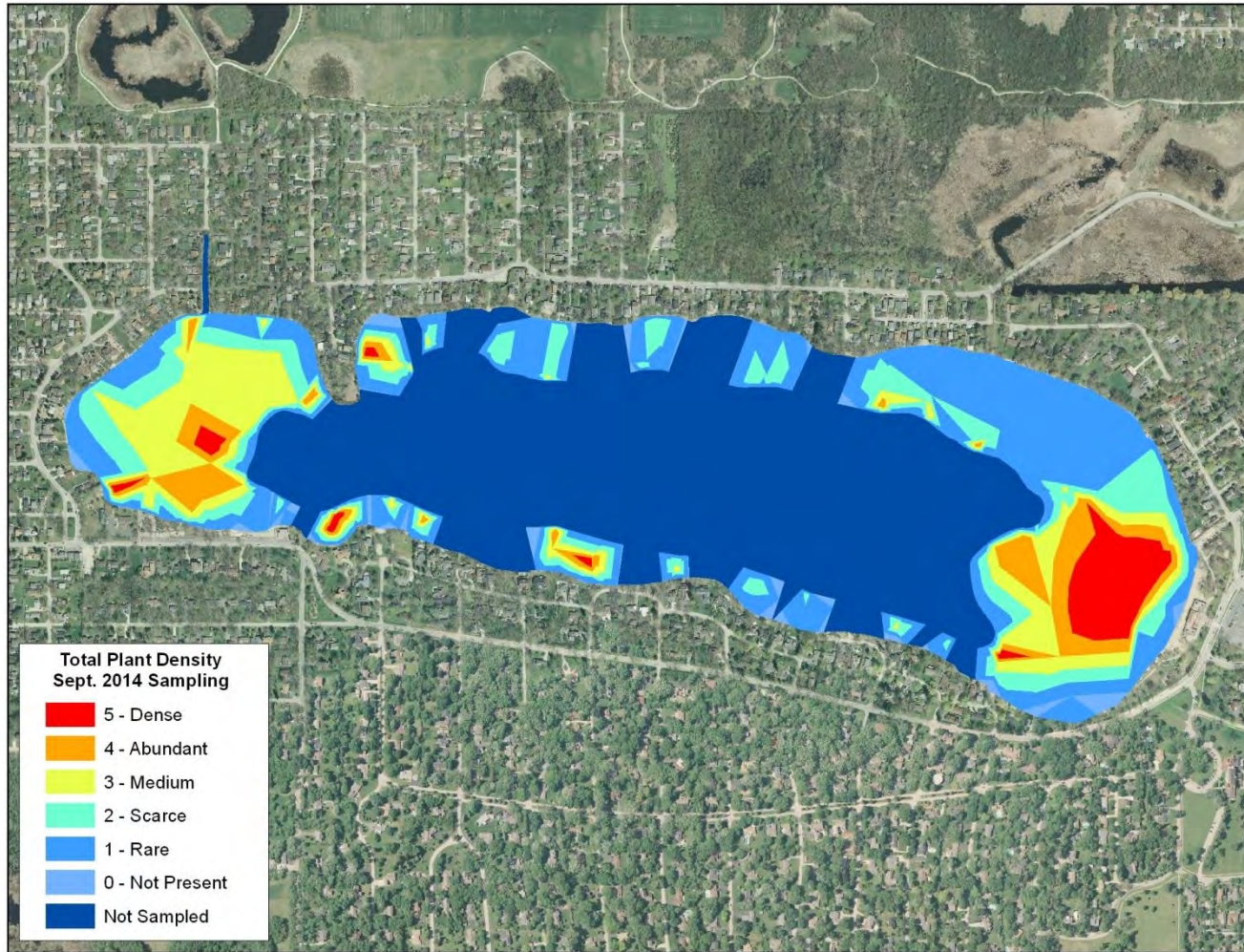


Manages Aquatic Vegetation

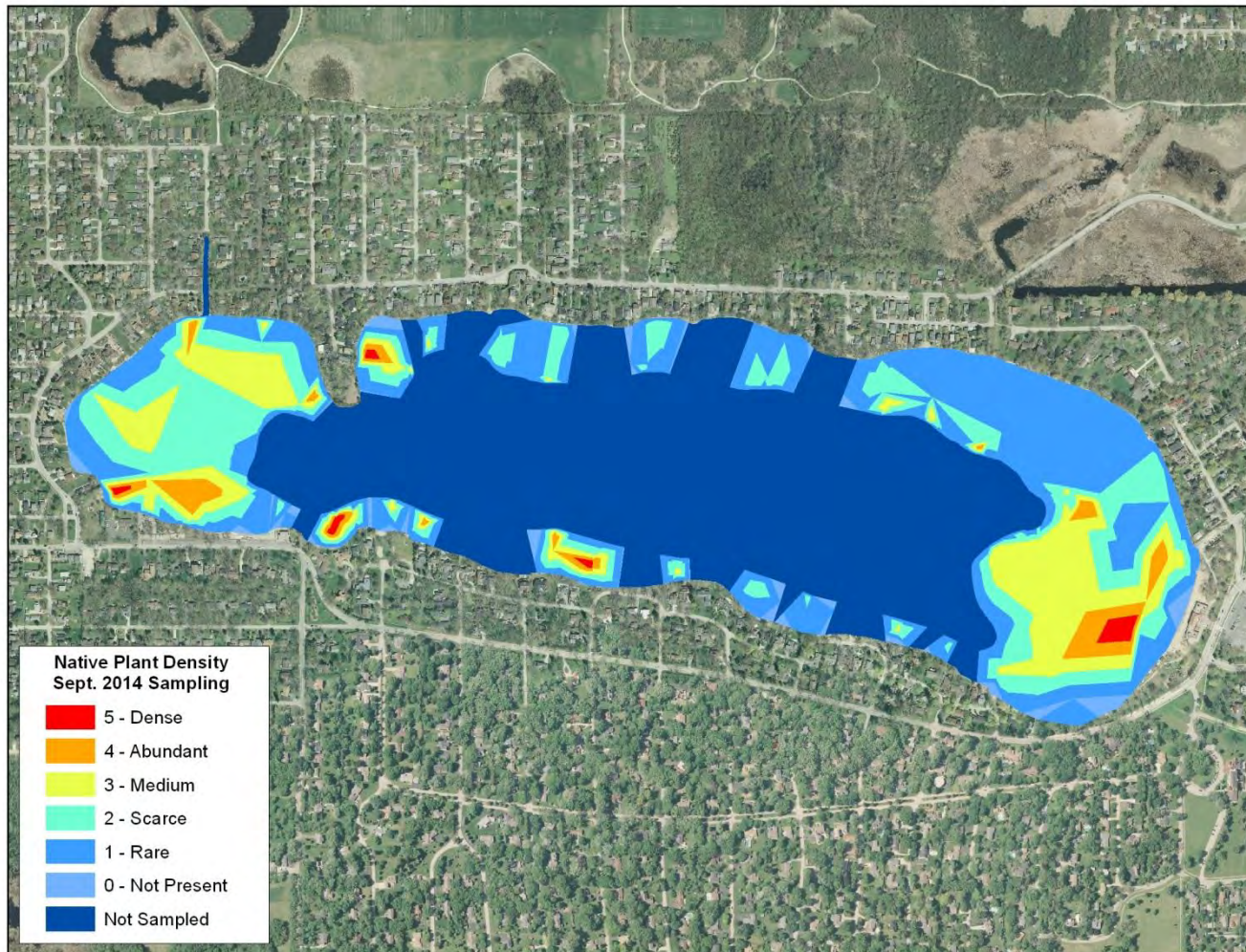


Aquatic Plant Surveys

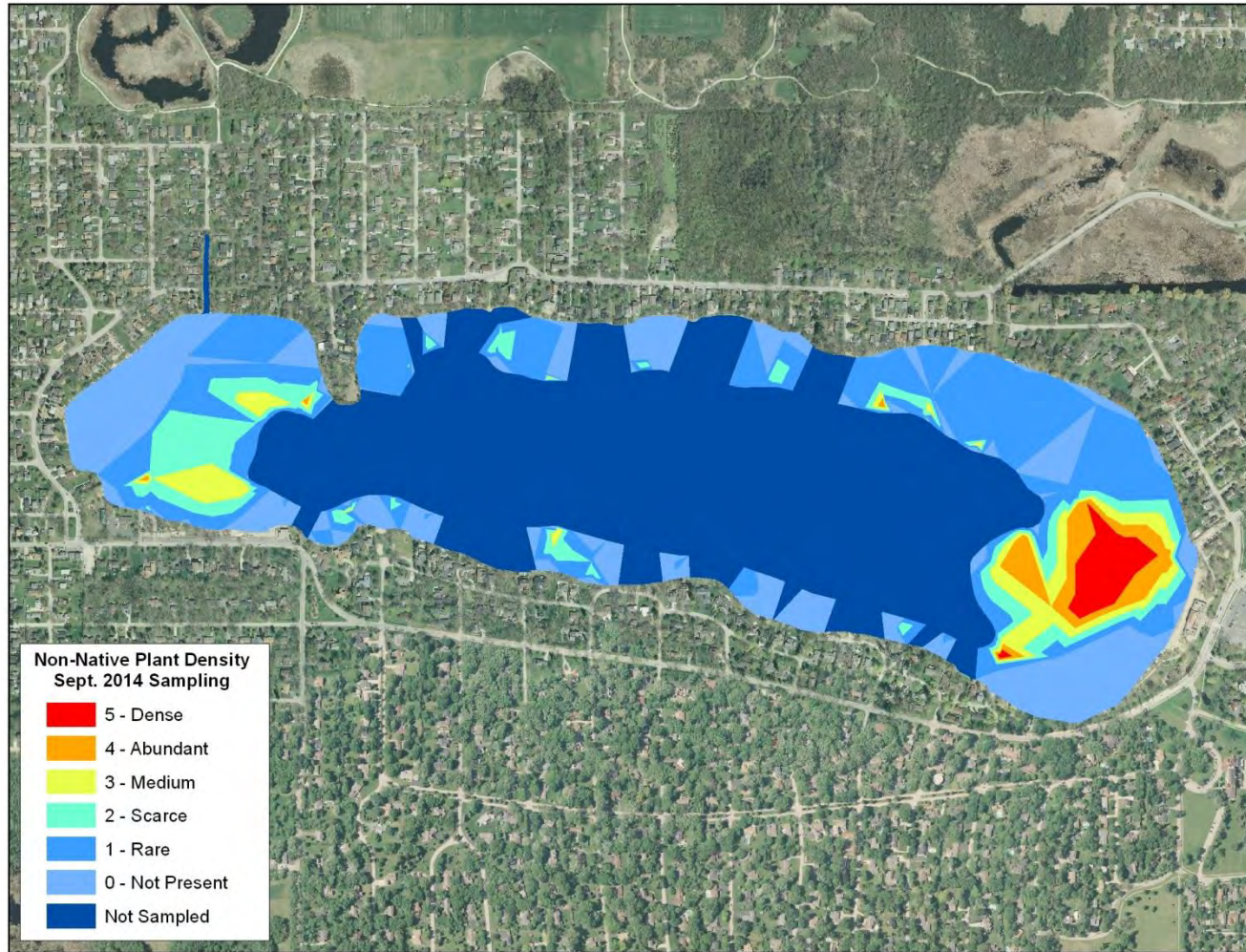
AQUATIC PLANT DENSITY 2014



NATIVE PLANT DENSITY 2014



NON-NATIVE PLANT DENSITY 2014



CRYSTAL LAKE PARK DISTRICT



Manages Aquatic Vegetation



Beach Treatments Prior to Opening

CRYSTAL LAKE PARK DISTRICT



Manages Aquatic Vegetation



Non-Native Vegetation Management

CRYSTAL LAKE PARK DISTRICT



Manages Aquatic Vegetation



CRYSTAL LAKE PARK DISTRICT



Monitors Lake Water Quality Monthly



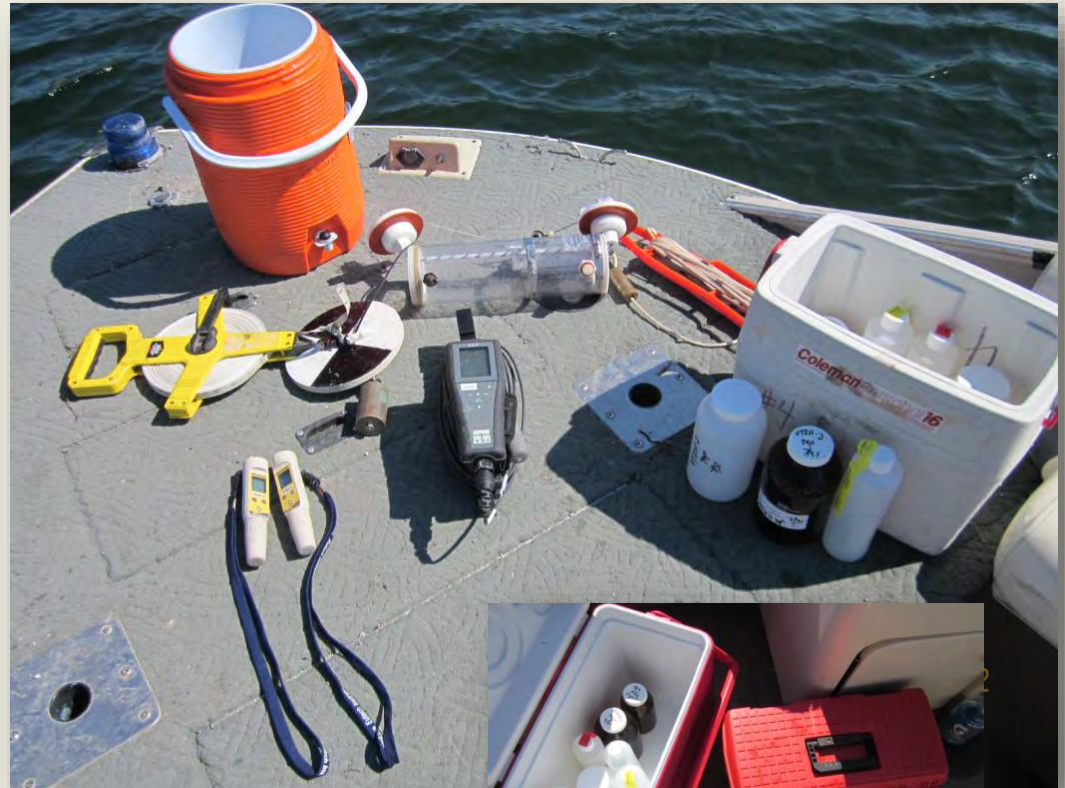
Sampling Locations

CRYSTAL LAKE PARK DISTRICT



Monitors Lake Water Quality Monthly

- Temperature
- Dissolved Oxygen
- Phosphorus
 - 0.02 ppm
- Clarity (Secchi Disk)
 - > 10 feet
- Algae (Chlorophyll a)
 - < 1 mg/m³



CRYSTAL LAKE PARK DISTRICT



Monitors Lake and Hydrology



Flow Logger

Staff Gauge



Stilling Well

CITY OF CRYSTAL LAKE



Monitors Water Quality Entering Lake

City Sampling Locations:

- A. Lake
- B. Crystal Creek
- C. Sod
- D. Lippold Park Eff.
- E. Lippold Park Inf.
- F. Lippold Park West
- G. Lippold Park Center
- H. Lippold Park East
- I. Cove Pond Infl.
- J. Cove Pond Eff.

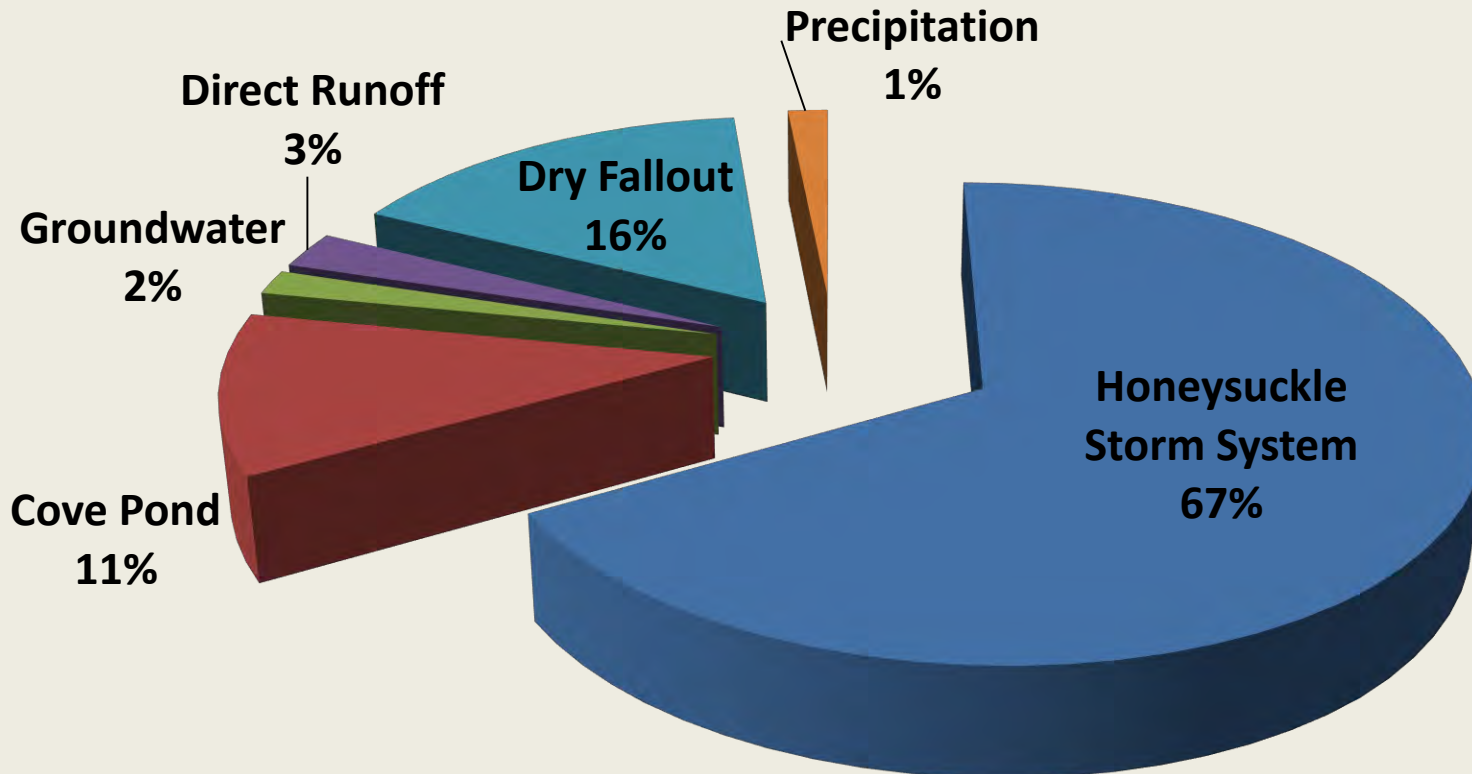


Position 42°14'22"N 88°21'07"W

Sources: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getma



Monitors Water Quality Entering Lake



Total Phosphorous Annual Inputs

CITY OF CRYSTAL LAKE



Sets Lake Use Regulations



Enforces Lake Regulations

**CRYSTAL LAKE
Boating & Safety Regulations
2014 Edition**

The City of Crystal Lake and the Village of Lakewood welcome you to another fun-filled boating season on Crystal Lake. We hope you have a safe and enjoyable summer!

The City of Crystal Lake and the Village of Lakewood have jointly approved an ordinance governing the use of watercraft on the lake. The following is an overview of this ordinance.

1. Decals
All watercraft operated on Crystal Lake must display a "Lake Usage Decal." The non-refundable fees for this decal are as follows:

TYPE OF WATERCRAFT	COST
Human-Powered * (e.g., canoes, kayaks, rowboats)	\$15
Non-human powered (e.g., motorboats, sailboats, sailboards, jet skis)	\$25
Replaced watercraft (with old sticker)	\$1

**If a motor is added to a human-powered watercraft, the higher fee applies.*

Decals must be placed on the **right side**, near the back, of the watercraft and be clearly visible. Sailboards should display the decal on the back **right top** of the board. Decals must be purchased and displayed for the entire season, and are only available to residents of Crystal Lake, Village of Lakewood, or the Crystal Lake Park District.

2. Wake Zones
Portions of the lake are designated as a wake area. The wake area is that portion of the lake which lies within the confines of the buoys. Wake speed motor boating activities must take place within the wake zone.

3. Wake Times
The following are designated as Wake Times and shall be in effect from the Memorial Day weekend through the Labor Day weekend:

Sundays & Holidays*: 8 AM - 2 PM
Monday, Wednesday, Friday: 8 AM - 8 PM
Tuesday, Thursday, Saturday: 8 AM - 5 PM

***Holidays are Memorial Day Monday, Independence Day, and Labor Day.**

If there is to be a fireworks display, wake hours will also end about 10 a.m. on the day of fireworks so that the display can be set up.

Wake hours shall automatically be suspended when the water level of Crystal Lake is more than 9" higher than the level of the spillway.

Notice shall be posted at all private beaches and public entrances to the lake notifying users of the suspension of wake hours. Users will also be informed through the media and/or written notice.

4. Counterclockwise Travel
All motorboats operating above no wake speed shall travel in a general counterclockwise direction around the lake.

5. Speed Limit
No boat shall operate on Crystal Lake at speeds in excess of 40 MPH at any time.

6. Jet Skis
JET SKIS ARE SUBJECT TO THE SAME REGULATIONS AS POWER BOATS.

7. Swimming and Flotation Devices
It shall be unlawful to swim or use recreational flotation devices (such as air mattresses) outside of the designated NO WAKE zones unless accompanied by a manned boat or a boat at anchor.

8. Penalties
Any person, firm, or corporation violating any provision of these rules and regulations can be fined up to \$500 for each offense.

ALL State and local regulations are applicable and enforced.
Wake times l

USERS OF CRYSTAL LAKE MUST RESPECT AND COMPLY WITH ALL LAKE REGULATIONS INCLUDING NO WAKE ZONES.

In addition to the regulations of the City of Crystal Lake, Lakewood, is regulated by the Safety Act. **the copy of given to you Crystal Lake comply with**

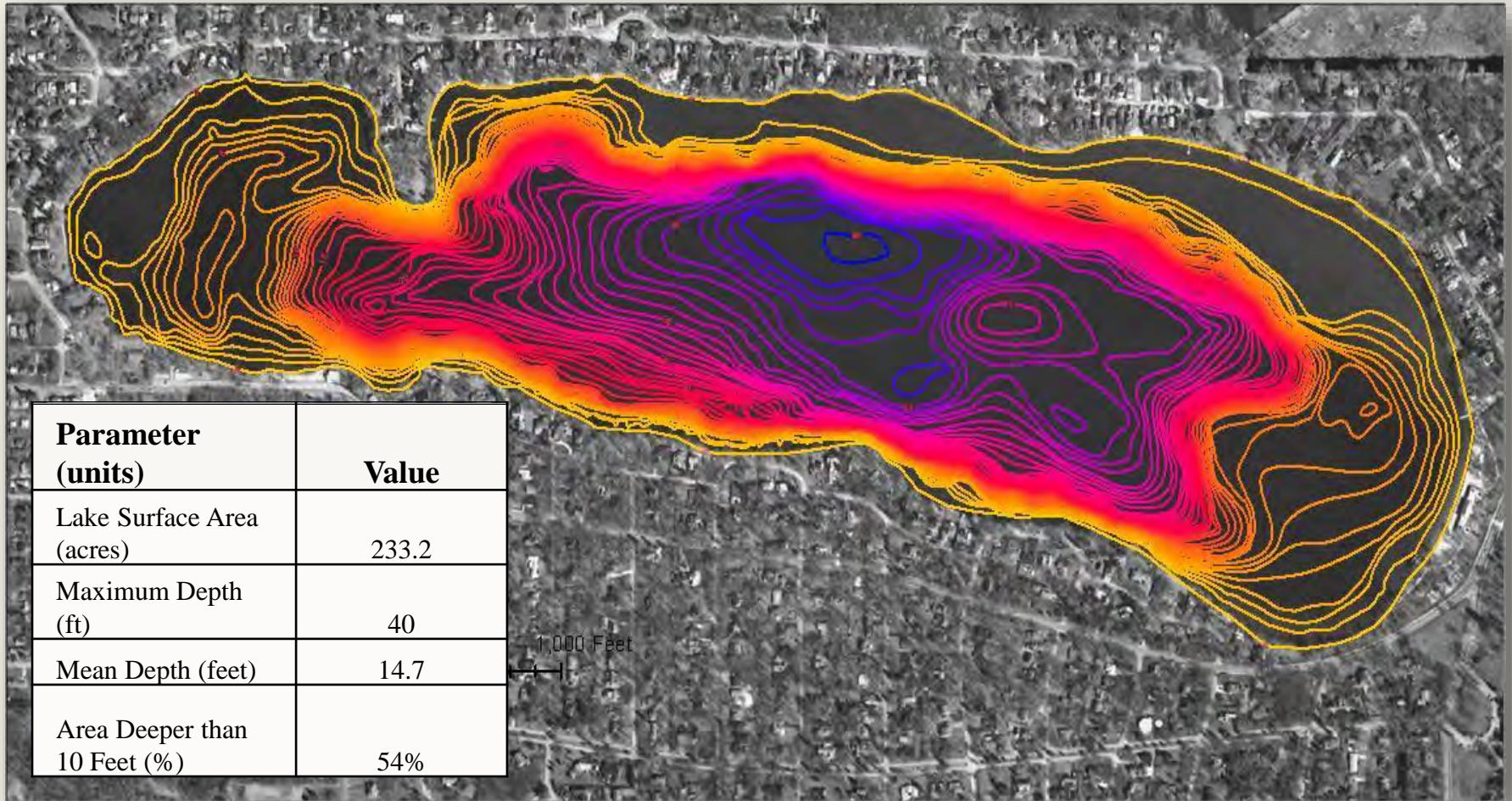
EMERGENCY INFORMATION

In case of **EMERGENCY** call: 911

For **NON-EMERGENCY** assistance, call:
Lakewood Police Department (815) 459-2151
Crystal Lake Police Department (815) 356-3620
Crystal Lake Park District (815) 459-0680



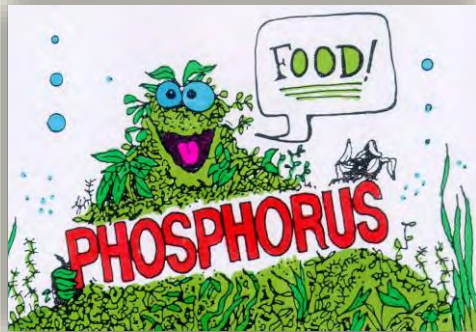
PHYSICAL CHARACTERISTICS



POINTS OF INTEREST



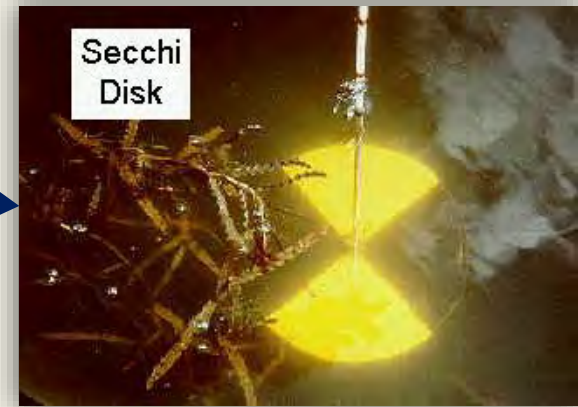
NUTRIENT / CLARITY RELATIONSHIPS



Total Phosphorus



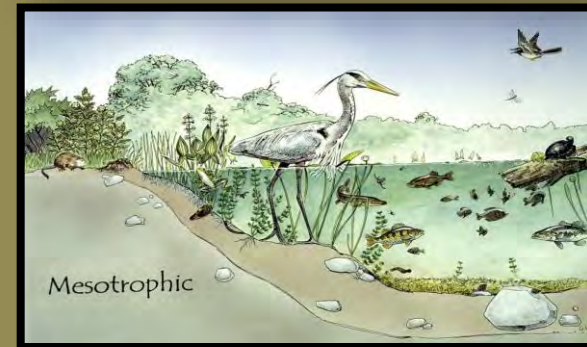
**Algae
(Chlorophyll a)**



**Water Clarity
(Secchi Disk)**

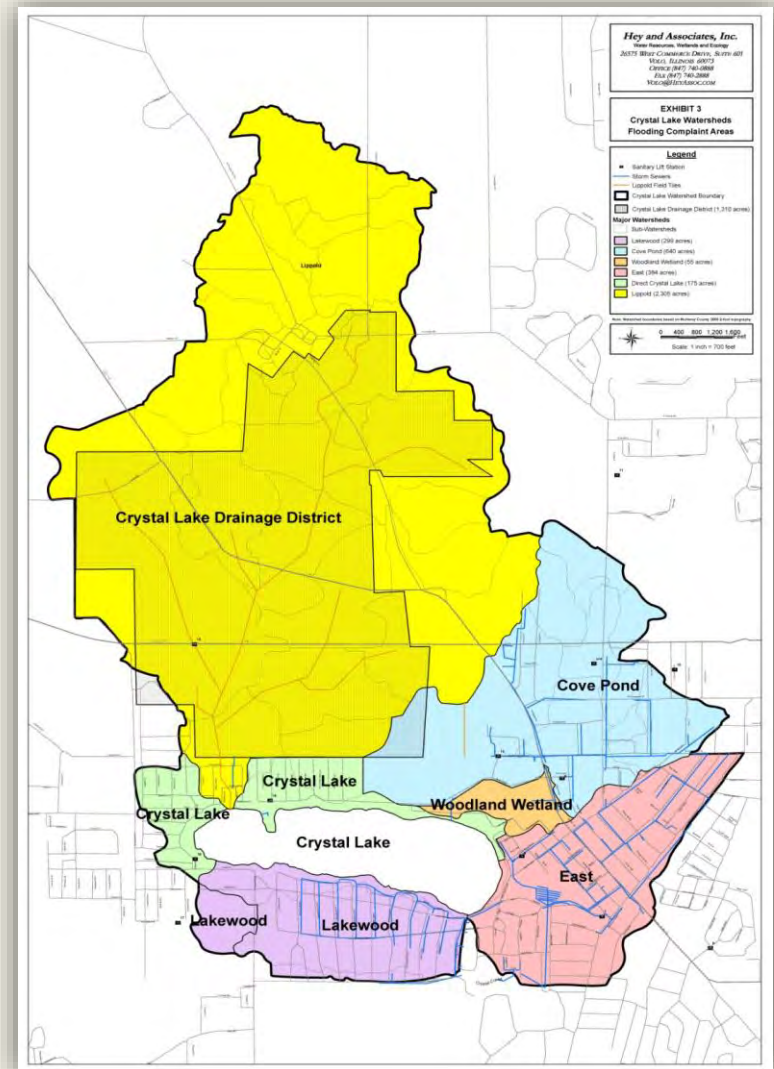
WHAT DO TSI RESULTS MEAN?

- Crystal Lake is **Mesotrophic**
- Water is relatively clear
- Hypolimnion is anoxic in summer
- When TSIs for Phosphorus and Secchi are greater than the TSI for Chlorophyll a, it indicates that particulates or color dominate light attenuation
- Conclusion is that the lake continues to be in excellent health

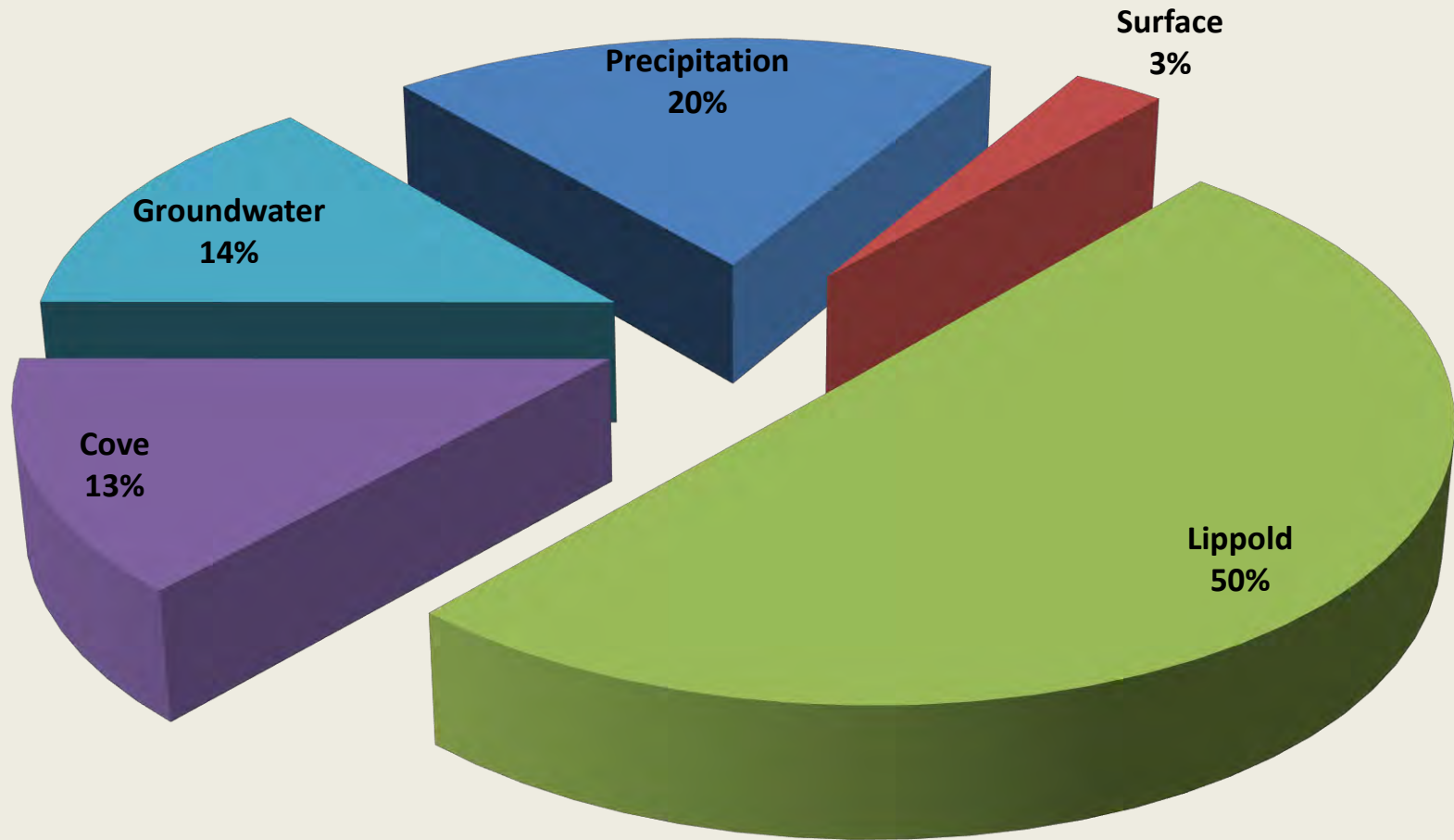


INFLOW WATERSHED AREAS

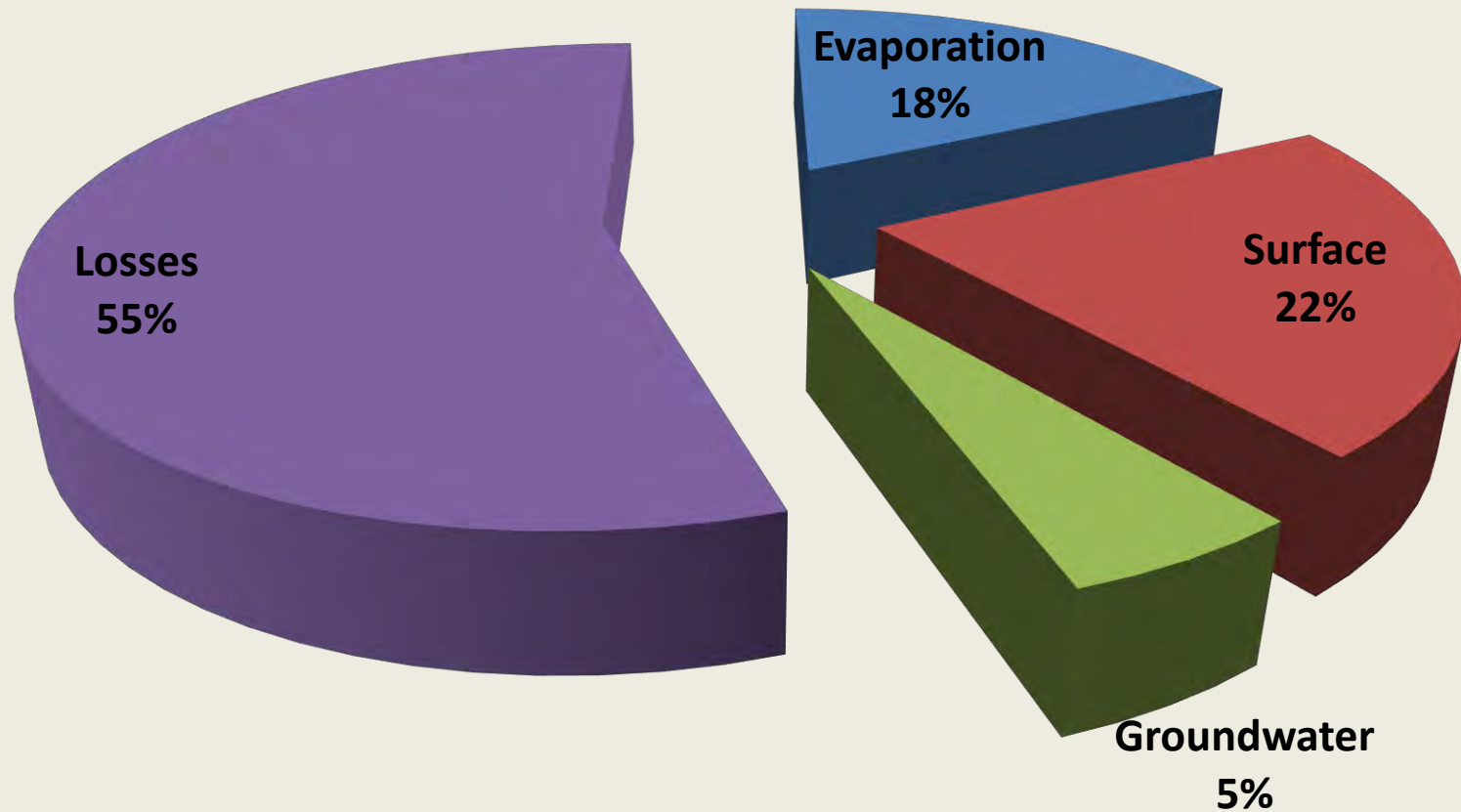
Name	Drainage Area (acres)
Lippold Watershed	2,400
Cove Pond and Woodland Wetland	640
Direct Drainage Area	190
Lake Surface Area	233
Total	3,463



HYDROLOGY (WATER INPUTS)



HYDROLOGY (WATER OUTPUTS)



AVERAGE WATER BUDGET

Inputs	—	Outputs	=	Change in Lake Level
Precipitation 1.0 cfs	—	Evaporation 1.0 cfs	=	0
Groundwater Inflow 0.8 cfs	—	Groundwater Outflow 0.3 cfs	=	+ 0.5 cfs
Tile Flow 3.0 cfs + Direct Surface Runoff 1.0 cfs	—	Surface Outflow 1.5 cfs	=	+ 2.5 cfs
		Net	=	<hr/> + 3.0 cfs

IDNR FISH SURVEY



- May/June 2013
- Great numbers of game fish
 - Largemouth Bass
 - Bluegill
 - Walleye
 - Channel Catfish
 - Smallmouth Bass
 - Black Crappie
 - Muskellunge
 - Northern Pike
- No Carp found during survey



CRYSTAL LAKE (McHenry Co.)
FISHERIES STATUS SUMMARY

LOCATION - Crystal Lake is located in the City of Crystal Lake in McHenry County. Crystal Lake is located northwest of the intersection of U. Routes 176 and 14.

DESCRIPTION - Crystal Lake is a 228-acre natural glacial lake located in the Fox River drainage. It is a deep (31 ft), clear-water lake that has gradually sloping bottom contours around much of the shoreline, extensive vegetated shallow-shelves (20 ft, deep) interspersed with off-shore, and rapid drop-offs to deep water in a few locations. Much of the shoreline is developed or residential housing, although three public parks (then with swimming beaches) and 18 private boat launch mooring areas are maintained around the lake. Boat rentals are available. There is no public boat launch. Residents of Crystal Lake can obtain access to the boat launch by contacting the Crystal Lake Park District. The best time for non-motors to access the lake is in the winter for ice fishing.

MANAGEMENT ACTIVITIES - The Crystal Lake Anglers Club and Crystal Lake Park District regularly stock this lake with Largemouth and smallmouth bass, walleye and muskie. The IDNR conducts stocking surveys every four or five years. The Crystal Lake Anglers Club has placed many fish structures throughout the lake. The most recent survey took place before the vegetation grew up on catch rates may have been a little low.

STATUS OF THE SPORT FISHERY - While some numbers were lower in the 2013 survey, this lake still supports a decent and abundant fishery.

LARGEMOUTH BASS - We caught largemouth bass at a rate of 43 fish per hour, slightly lower than the management goal of 60 fish per hour. They ranged in size from 6.7 to 17 inches, with an average of 11.34 inches. Overall size structure is good.

SMALLMOUTH BASS - Eight smallmouth bass were captured ranging in size from 8.2 to 16.6 inches with an average of 14 inches. The largest smallmouth bass weighed 3.6 pounds. Several more large smallmouth bass have been observed during visits from the boat in the deeper water.

WALLEYE - Walleye numbers were lower than they have in previous years, with only 18 being captured. This is most likely a good thing as walleye are difficult to target with no vegetation. Walleye ranged in size from 10.7 and 20.7 inches with an average of 15 inches. The heaviest walleye weighed 2.8 pounds.

BLACK CRAPPIE - Four black crappie were captured, ranging in size from 8.4 to 10.6 inches.

MUSKELLUNGE - Walleye numbers looked better than they have in previous years. Seven walleye were captured in 60 minutes of electrofishing - higher than the management goal of 10. Walleye ranged in size from 10.7 and 20.7 inches with an average of 15 inches. The heaviest walleye weighed 2.8 pounds.

NORTHERN PIKE - We caught one northern pike that was 23.7 inches long and weighed 16.5 pounds, which weighed 5.5 pounds.

CHANNEL CATFISH - We captured 10 channel catfish, ranging in length from 12.7 inches to 23.0 inches. The largest catfish weighed 5.6 pounds.

ADDITIONAL FISH SPECIES - See table on back of this page.

FISHING REGULATIONS - Site-specific regulations apply and are posted at access areas or available online at crystal.lakeidnr.org.

LAKE MAP

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SPECIES CAPTURED IN 60 MINUTES OF ELECTROFISHING:

Species	Number Collected	Length (inches) Min	Max	Avg	Weight (pounds) Min	Max
Largemouth Bass	43	6.7	16.97	10.95	0.11	2.44
Walleye	18	10.71	20.71	15.55	0.63	2.60
Smallmouth Bass	10	8.2	16.6	12.36	0.35	3.63
Channel Catfish	4	9.72	22.86	14.98	0.00	5.59
Northern Pike	1	8.35	33.61	16.37	0.00	16.50
Black Crappie	4	7.26	7.51	7.40	0.00	0.44
Muskellunge	1	2.87	9.83	5.89	0.00	0.41
Bluegill	1	3.86	7.00	5.43	0.00	0.27
Golden Shiner	1	1.97	2.87	2.42	0.00	0.27
White Sucker	1	8.96	8.96	8.96	0.00	0.27
Rock Bass	1	16.89	16.89	16.89	0.00	0.27
Brook Silverside	1	21.70	21.70	21.70	0.00	0.27
Common Carp	1	6.61	6.61	6.61	0.00	0.27
White Crayfish	110	5.94	5.94	5.94	0.00	0.27

CONTACT INFORMATION - The Crystal Lake Park District can be reached at 815-459-0030 or the IDNR Fisheries Biologist at 815-675-2386 ext. 234.

ZEBRA MUSSELS

- Zebra mussels were found in Crystal Lake in 2007.
 - Attached to aquatic plants, rocks, and native mussels on lake bottom
 - Numbers have been in decline since they peaked in 2009



PROTECT YOUR LAKE



STOP AQUATIC HITCHHIKERS!™

Prevent transport of aquatic invasive species.
Clean all recreational equipment.

www.ProtectYourWaters.net

VOLUNTEER LAKE MONITORING PROGRAM



New Volunteer(s) Needed...See VLMP Exhibit at Table 3

<http://www.epa.state.il.us/water/conservation/vlmp>

QUESTION AND ANSWER



Vince Mosca
Hey and Associates, Inc.

www.heyassoc.com