LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 012 **RAI #: AQ-02** **Category:** Aquatic Ecology

Statement of Question:
Section 3.7.5.1 of the ER (page 3-59) states that Exelon and IDNR meet annually to discuss activities within the cooling pond at LSCS, including an assessment of the fish populations within the cooling pond and stocking rates for the following year. The ER further states that smallmouth bass in the LSCS cooling pond do not appear to be thermally stressed.

a. Provide copies of the Lake Management Plan meeting minutes for the past 10 years. In addition, provide copies of any fish population assessments completed in the cooling pond for the past 10 years.
b. Describe why Exelon concluded that smallmouth bass in the LSCS cooling pond do not appear to be thermally stressed.

Response:

a. Copies of excerpts containing the LSCS portions of the minutes from annual meetings between IDNR and Exelon Generation staff members to discuss implementation of the Braidwood, LaSalle County and Clinton Station Lake Fishery and Land Management Plans during 2005 through 2014 are provided as Attachment 1 to this response. Exelon Generation is not aware of any fish population assessments completed in the LSCS cooling pond other than results from the annual fish surveys conducted by IDNR, which are reported in the annual meeting minutes and an assessment performed in 2002, which is being provided as Attachment 2 to this response (see response to RAI AQ-02.b, below).

b. The assertion in the ER that smallmouth bass in the LSCS cooling pond do not appear to be thermally stressed was based on three pieces of evidence: (1) an EA Engineering, Science, and Technology assessment of the LaSalle Cooling Pond recreational fishery (Monzingo 2002), which is being provided as Attachment 2 to this response, (2) information in the minutes from annual meetings between IDNR and Exelon Generation regarding implementation of the Braidwood, LaSalle County and Clinton Station Lake Fishery and Land Management Plans, which is being provided for years 2005 through 2014 as Attachment 1 to this response, and (3) results of interviews of Exelon Generation corporate and onsite LSCS environmental personnel conducted in 2013 as part of the New and Significant Information investigation that supports the LSCS license renewal ER.

   Monzingo (2002) reported that PSD (Proportional Stock Density), RSD (Relative Stock Density), and R_w (Relative Weight) values for LSCS cooling pond smallmouth bass were markedly higher in 1999-2000-2001, years when both LSCS units were operating, than they were in 1997, when neither unit was on line, and 1998, when only one unit was on line. Monzingo suggested that warmer water increased the number of forage fish in the cooling pond, producing “an improvement in the smallmouth bass population.”
   Ken Clodfelter, the IDNR district biologist responsible for managing the LSCS cooling pond’s recreational fishery, reported in the minutes of three consecutive annual IDNR/Exelon Generation meetings regarding Lake Fishery and Land Management Plans that body condition of smallmouth bass in the cooling pond was improved (relative to unspecified earlier years):

- Smallmouth bass numbers appeared to be up especially on the East end of the cooling pond. The body condition was improved in 2010 despite prolong[ed] periods of high water temperatures in the cooling pond. (2010)
- Smallmouth bass numbers were good especially on the East end of the lake. The body condition of the smallmouth bass was improved in 2011 despite prolong[ed] periods of high water temperatures in the cooling pond. (2011)
- Smallmouth bass numbers were good especially on the East end of the lake. The body condition of the smallmouth bass was improved in 2012 despite prolong[ed] periods of high water temperatures in the cooling pond. (2012)

The last two annual reports coincided with the severe drought of 2011-2012. Accordingly, this information was interpreted to indicate that smallmouth bass were not thermally stressed because a thermally stressed population of smallmouth bass is unlikely to show improved body condition during a period of higher-than-normal water temperatures.

List of Attachments

1. LSCS Portions of Meeting Minutes From Annual IDNR/Exelon Generation Discussions Regarding Implementation of the Braidwood Station, LaSalle County Station and Clinton Station Lake Fishery and Land Management Plans during 2005 through 2014
2. Monzingo, Richard, Ph.D. (EA Engineering, Science, and Technology), 2002. Assessment of the LaSalle County Station Cooling Pond. Deerfield, IL. March 2002

NON-EXELON

RAI # AQ-02

ATTACHMENT 1

2005

IDNR and Exelon Meeting Minutes
Review of Braidwood, LaSalle and Clinton Station
Lake Fishery and Land Management Plans
Springfield, Illinois
January 26, 2006

Note: The January 26, 2006 meeting with IDNR Staff in Springfield, Illinois to review the 2005 fishery and land management plan accomplishments and to review the 2006 fishery and land management plans was originally scheduled for December 7, 2005 and was postponed to January 26, 2006 due to schedule conflicts.

LaSalle County Station Cooling Lake: 2005 Fishery Management Accomplishments

June 29, 2005 Fish Kill

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LaSalle Cooling Lake suffered its first major fish kill on June 29, 2005. The last major fish kill was in 2001. The coolest water in the lake at the time of the June 29, 2005 fish kill was in excess of 95 degrees and had been for several days. Striped bass hybrids comprised 95 per cent of the fish killed. A total of 1439 striped bass averaging 6 pounds; 36 smallmouth bass, 20 walleye, 11 channel catfish, 4 blue catfish, 3 yellow bass and 2 sauger comprised the fish kill.

Fish Stockings in 2005

The following fish were stocked in LaSalle Lake in 2005:

Species	Date	Size	Number Stocked
Smallmouth Bass	7-19-05	3.7	5,216
	8-01-05	4.2	4,300
	8-15-05	4.2	4,332
	8-15-05	3.2	1,564
	8-23-05	4.2	1,178
	9-16-05	4.3	1,178
		Total =	**18,512**
Largemouth Bass	8-02-05	3.5	6,935
	8-08-05	3.6	7,645
	8-16-05	4.0	16,600
	8-22-05	4.0	8,819
	8-23-05	4.3	1,366
	9-07-05	4.2	2,500

9-09-05	4.2		5,500
9-12-05	4.2		2,280
		Total =	**51,645**

Largemouth bass	9-07-05	2.5	52,085
		Total =	**52,085**
Bluegill	10-20-05	1.3	108,388
		Total =	**108,388**
Redear Sunfish	10-27-05	1.0	36,509
		Total =	**36,509**
Striped Bass Hybrids	6-20-05	1.8	20,580
		Total =	**20,580**

2005 LaSalle Cooling Lake Fall Fish Survey

Blue catfish (~ 5" long) were stocked in LaSalle Cooling Lake for the first time in 1999. No blue catfish were stocked in 2005. They were not available from Arkansas. IDNR had hoped to be able to evaluate whether any successful reproduction and recruitment had occurred in the lake in 2005. No definite natural recruitment was documented in 2005. A total of 135 blue catfish between 0.5 and 17 pounds were collected in 40 minutes of day-time electro-fishing. The DC rig control was set at a pulse rate of 15 per second and the voltage at about1.5 amps which was very effective at collecting blues and flathead catfish. Larger blues were observed but not netted. The smallest blue catfish collected was eleven inches. No spines were collected in 2005. In 2006 spines will be taken to better evaluate if natural reproduction is occurring. Anglers at LaSalle Lake during the fall are fishing almost exclusively for blues. One angler reported catching a 42 pound blue in 2005 and good numbers of blues in the 20 to 30 pound range were caught. If blues are stocked in 2006, IDNR will try to sample prior to their stocking or mark stocked fingerlings with a fin clip. It couldn't be determined if the blues are having any effect on the *Corbicula* in the lake as *Corbicula* density levels have never been determined. They may have had an impact on the gizzard shad but not the threadfin shad.

Largemouth Bass resurgence was very promising in 2003. In 2004 and 2005 CPUE had decreased dramatically using the DC rig. IDNR hatchery staff reported doing much better using a 5,000 watt AC generator which was used. The reason for the increase in effectiveness could not be determined. A tremendous sample of 0+ and 1+ largemouth were collected (180/hr). All largemouth bass collected greater than 12 inches had Relative Weights (WR) greater than 120.

Smallmouth Bass 0+ and 1+ combined were collected at a rate of 104/hour. Smallmouth bass greater than 16 inches had lower Relative Weights (Wr) than the smaller smallmouth bass.

Channel catfish were collected at a rate of 60/hr using the AC electrofishing rig. The majority of the channel catfish collected were between 0.75 an1.25 pounds. The body condition was slightly better than in the last few years. [Note: There is a very healthy population of threadfin shad in LaSalle Cooling Lake, however, it is not understood why channel catfish are so small].

LaSalle Lake has an excellent population of quality sized bluegill compared to most cooling lakes. Quality sized bluegill were collected at 54/hr and had Wr greater than 100. The East side of the lake is noted for its fat 7 to 8 inch bluegill. Bluegill are stocked in the lake when excess bluegills are available at the hatchery.

Carp between 2,5 and 8 pounds were collected and all had poor relative weights and the majority suffered from scoliosis or lordosis [which is a curvature of the spine possibly due to a calcium deficiency].

Gizzard and threadfin shad were collected at extremely low rates using the DC rig. It was thought that the blues might be having an effect on their densities. However, when IDNR staff switched electrofishing gear, they collected threadfin in record numbers 12.0/min. but gizzard shad numbers were down (1.5/min).

Year	Threadfin shad/Minute	Gizzard shad/Minute
2005	12.0	1.5
2004	1.9	3.7
2003	7.5	3.5
2002	7.8	3.5
2001	5.7	1.8
2000	10.8	7.5

One two pound striped bass hybrid was collected.

2005 LaSalle Cooling Lake Work Plan Results

No bank or boat fishing was to occur from October 16 to March 14. This goal was achieved.

IDNR annual fish survey in the fall of 2005. The survey was completed

IDNR will evaluate threadfin and gizzard shad populations. This was achieved in the annual survey.

IDNR will continue to stock thermal tolerant fish in 2005. The lake was stocked with largemouth bass, bluegill, redear sunfish and smallmouth bass in 2005. No blue catfish were available in 2005.

Focus studies and management on thermally tolerant fish. This was achieved.

Striped bass hybrids stocking success will again be evaluated in2006 if Exelon approves the stocking. Despite die-off in 2005 this is still one of the most sought after species in the lake. A creel will be conducted in one of the up-coming years to further evaluate their contribution to the anglers.

The objective will be the same in 2006 except spines will be taken from some blue catfish and blues will be marked with a fin clip if stocked in 2006. This will help determine if natural reproduction and subsequent recruitment is occurring. These results may determine if subsequent stockings are needed.

2005 LaSalle Lake Land Management Accomplishments

No hunting program at site. Only public access is for fishing.

Aerial waterfowl census flown in January, October, November and December. Flights were flown in the morning.

District Wildlife Biologist offered assistance in developing Acres for Wildlife Plan on Company property. Application sent by mail with a follow-up e-mail. John Petro to follow-up with Scott Jacoby.

2006 LaSalle Lake Proposed Work Plan

No bank or boat fishing from October 16 through March 14.

IDNR annual fish sampling will take place in the Fall.

IDNR will evaluate threadfin shad population.

IDNR will continue to stock bluegill and blue catfish, as available.

2006

IDNR and Exelon Meeting Notes
Review of Braidwood, LaSalle and Clinton Station
Lake Fishery and Land Management Plans
Springfield, Illinois
December 20, 2006

LaSalle Cooling Lake: 2006 Fishery Management Accomplishments

Fish Kills

There were no fish kills observed at the LaSalle Cooling Lake in 2006.

Fish Stockings in 2006

LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	7-24-06 / 9-18-06	3.6 - 4.4	19,562
Smallmouth Bass	9-18-06	2.8	11,290
Largemouth Bass	8-08-06 / 9-06-06	4.0 -5.0	43,169
Largemouth Bass	9-06-06 / 9-12-06	2.4-2.9	18,882
Striped Bass Hybrid	06-05-06	1.8	20,580
Bluegill	10-17-06 / 10-20-06	1.3	345,134
Redear Sunfish	10-17-06	1.2	101,145
Blue Catfish Hybrids	04-27-06	6.5	35,000*
Blue Catfish	10-02-06	6.0	19,200

* These fish were purchased from Saul Fish Farm in Arkansas by Exelon

Field Activities by Ken Clodfelter, IDNR

A general fish survey was conducted in October, 2006. The survey resulted in an excellent collection of quality size bluegill. Larger bass numbers were down from the 2005 survey. Channel catfish were collected in large numbers but were in extremely poor body condition.

A special survey was conducted in November, 2006 for blue catfish. A total of 311 blues were collected in only 65 minutes of electro-fishing. Attachment is included. Spines were taken to see if blues can be aged from this cooling lake.

Gizzard and threadfin shad numbers were both down in 2006. The body condition of the gizzard shad was extremely poor.

Redear sunfish were stocked again this year to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce.

All scheduled activities for 2006 were completed. Proposed activities in 2007 will be the same. There may be a creel conducted on the lake in 2007 or 2008.

One problem at the lake and the hatchery is the cormorant population. The population is increasing exponentially each year. A study on Leach Lake reported that the cormorants there were eating 1,250,000 pounds of walleye and yellow perch a year. Cormorants have been a problem at the LaSalle Hatchery since 1995 when 3 muskie ponds were cleaned out from predation. Since that time IDNR has been using propane cannons and pyrotechnics to scare the cormorants away. However, this only works for a week or so and it takes repeated attempts to scare the birds away. They may fly to next pond or a short distance before returning to the pond a few minutes later. Cormorants do not frequent the ponds until fish reach 3.5 - 4.0 inches, which is usually when harvest begins. The cormorants roost on the shad (barrier) net and concrete structures in the lake which is 200- 300 yards from the hatchery ponds. The birds will also fly into the ponds more in the early morning and evenings and weekends when there is less human activity around the ponds. Damage and losses are difficult to quantify other than if the birds are left to frequent the ponds on their own production would be significantly less. IDNR Staff believes that cormorants would feed in the ponds much less if some of them were eliminated by lethal means.

Ken Clodfelter's documented one issue involving sampling in the discharge area. He has a station in the discharge canal that starts just inside the restricted area where the water is pumped into the lake from the river. He called the plant to let them know that he would be sampling on a certain day. He drove his boat all the way around and started his sample when security arrived and said that he had to have his boat searched prior to sampling this area. Ken told them that he had not come through the plant and that he had done it this way for twenty years. Ken said he had no problem if Security wanted to search his boat but was told that since it had not been searched prior to him entering the restricted area that he would have to leave the restricted area. Ken continues to work with the plant about future samples so we can avoid any problems in the future.

Follow-up Action Items for LaSalle Lake and Fish Hatchery

IDNR seems to stock very heavily with small BLG/RSF. Are these fish surviving and recruiting to creel?

Fish Hatchery: Are cormorants developing into a major problem with the fish rear ponds at the LaSalle Fish Hatchery? IDNR believes this to be the case. IDNR has identified a trapper who would like to attempt trapping cormorants, however, a more effective method may be lethal removal. Estimated damages/loss to hatchery production would be helpful. Exelon wants to help with potential remedies, if needed.

2006 LaSalle Lake Land Management Accomplishments

- Completed all buoy and sign maintenance.
- Mowed areas of Fragmities in picnic area.
- Added rock to potholes in parking lots and dike road.
- Began conversion of storage garage into concession stand.
- Added Acessible railing to Accessible fishing walkway at Veteran's point.
- CDB breakwall, bank stabilization, and new dock project was completed.
- Held Annual Disabled Veteran's Fishing event at Veteran's Point.
- Facilitated bird counts by Audubon Society.

2007 LaSalle Lake Proposed Work Plan

- Buoy and Sign maintenance.
- Continue to work to eradicate fragmities.
- Continue to maintain parking lot and fill potholes in dike road.
- Complete Phase 1 of conversion of garage to concession stand

- Try to locate and/or obtain articulating boom mower for fragmities control and control of woody shrubs on lake-side of dike.
- Annual Disabled Veteran's fishing event.
- Audubon Bird Counts.
- Site report mentioned a garage conversion for concession? Can a few more details be provided. Also what happened to the log cabin moving project? John mentioned that this slipped off his radar screen and he was concerned that he did not help more. IDNR had gotten several bids from area contractors to dissassemble the log building at Starved Rock, move it to LaSalle Lake, and reassemble it on a pre-poured concrete pad at the Lake complete with windows, doors and a new roof. John Petro thought that he could get labor and materials from the plant to form and pour the pad. The low bid was $59,000.00. Ted Love, IDNR was told by IDNR Engineering that bid was not high enough, that the contractor would not be able to do it for that amount. So IDNR was told that they needed to upgrade the existing garage building so it could acommodate a concession operation. Ted Love, IDNR got bids on that from area contractors. The low bid for that was $38,000.00. IDNR did not have the money for this so they had been using site staff, and dollars, and some money from the Region to make the building structurally sound and weather-tight, by tearing off the old siding, replacing it, sheathing the building, framing out for windows and doors, and putting siding on it. IDNR is working on that now. IDNR will have to do what they can after that as money becomes available.
- Other projects that need to be done at the Lake that are outside IDNR's budget capabilities that they could use help on if Exelon is able are as follows:
- Ted Love, IDNR reported that IDNR is in desperate need of a maintenance building for the Lake's equipment. IDNR needs to house a utility tractor and mower, an end-loader, two boats, a three point hitch sprayer, large bush hog, grader blade and other miscellaneous equipment. Some of that equipment was stored in the garage before it became our concession building. The rest of it has sat outside which is unsightly and is hard on the equipment. IDNR also does all of the repairs of tables, etc. outside since they do not have room inside to do this work. IDNR Staff has bids on a storage/maintenance building that would fit its needs. The low bid was $32,000.00.
- Ted Love, IDNR reported that IDNR needs an articulating arm boom mower to mow the slopes of the dikes. IDNR tries to keep the woody vegetation from growing on the lake side dike slopes and also mow what they can on the outside dike slopes. IDNR also tries to keep the fragmities and woody vegetation from growing in the drainage ditches along the entrance roads. IDNR has a sliding bush hog mower that could do some of this but it is no longer operable. IDNR could do a much better job with the articulating arm boom mower. Ted Love,

IDNR got a price on such a mower from Alamo, which is the brand IDOT and the County use. The price is $28,000.00

- IDNR needs to finish off the rip rapping of the shoreline along the picnic area at the Lake. IDNR has rip-rapped about half of the shoreline through a project just completed that also included the break-wall.
- Down the road a couple of years IDNR is also going to need to construct and fence a parking lot on the east side of the Lake, on five acres IDNR owns there for that purpose, and provide a set of stairs up the dike to access the lake. This would primarily be used for the long awaited winter fishing program we have talked about and was in the original plan since 1986. However that program will require more staff than we currently have so it is not as pressing as the above projects.

2007

IDNR and Exelon Meeting Notes
Review of Braidwood, LaSalle and Clinton Station
Lake Fishery and Land Management Plans
Yorkville, Illinois
January 24, 2008

The January 24, 2008 meeting with IDNR Staff in Yorkville, Illinois to review the 2007 fishery and land management plan accomplishments and to review the 2008 fishery and land management plans was originally scheduled in December, 2007 and was postponed to January 24, 2008 due to schedule conflicts.

On January 24, 2008, Steve Pallo, IDNR, and Jeremiah Haas and John Petro from Exelon Generation met to review ad discuss the 2007 fishery accomplishments and the 2008 fishery plans for Clinton, Braidwood and LaSalle cooling lakes.

On March 25, 2008, Tim Hickmann, IDNR prepared the 2007 land management accomplishments and the 2008 land management goals with input from Clinton, Braidwood and LaSalle IDNR Land Management staff and provided this information to John Petro in an e-mail.

LaSalle Cooling Lake: 2007 Fishery Management Accomplishments

- **Fish Kills -** There were no fish kills observed at the Lake in 2007.

- **Fish Stockings in 2007 -** LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff.

Species	Date	Size Inches	# Stocked
Smallmouth Bass	7-24-07/10-19-07	3.6-4.6	21,816
Largemouth Bass	7-23-07/8-21-07	3.6-4.4	48,021
Largemouth Bass	8-28-07	2.6	12,870
Striped Bass Hybrid	7-12-07	2.6	10,290
Bluegill	10-09-07/10-22-07	1.2	463,286 (Note 1)
Redear Sunfish	10-16-07	1.3-2.0	15,336 (Note 1)
Blue Catfish	8-28-07	5.0	10,800

Note 1: The numbers of bluegill and redear sunfish were stocked by IDNR in LaSalle Cooling Lake due to State Hatchery production numbers. There was no identified stocking of certain fish species identified for Exelon.

Field Activities by Ken Clodfelter, IDNR

- A general fish survey was conducted in November. The survey resulted in an excellent collection of quality size bluegill. Bluegills greater than 6 inches were collected at the incredible rate of 351 and 207 per hour on the 2 stations on the East end of the lake. Larger bass numbers were down from the 2005 survey although good numbers of YOY were collected. Smallmouth bass numbers appeared to be up especially on the East end

of the lake. Channel catfish were collected in large numbers. Although their body condition had improved slightly especially those greater than 14 inches, they still only exhibited fair body condition.

- A special survey was conducted on October 24, 2007 for blue catfish. A total of 192 blues were collected in only 55 minutes of electrofishing. The catch rate would have been greater but the water temperature was 83 degrees in the warm section. It is much hard to keep the blues in the electric field in warm water. They want to dive deep right before you dip them. Anglers reported catching at least 3 blues between 40 and 45 pounds. The largest blue we collected was 27.4 pounds.

- Gizzard shad numbers appeared to be down in 2007. Only a few gizzard shad older than 1 year old were collected. The body condition of the gizzard shad was extremely poor in 2006, in 2007 the condition had improved on the smaller fish. The threadfin shad numbers were strong. A fairly large number of recently hatched small threadfin observed.

- Redear sunfish were stocked again this year to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce.

- All scheduled activities for 2007 were completed.

- The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the State Fish Hatchery.

- Ken Clodfelter reported that he moved Station 1 out of the restricted area to eliminate any problems with security. He reported that he had been thinking about moving this station anyhow.

Follow-up Action Items for LaSalle Lake and Fish Hatchery

- There was a creel survey conducted on the lake in 2007. The results of the creel survey were not available at the time of this report. Follow-up action for Steve Pallo was to get the 2007 creel survey information from Ken Clodfelter.
- Develop plan for cormorant control and public communication at LaSalle Fish Hatchery. John Petro to send Steve Pallo any information on permits required to take cormorants. A Federal Take Permit from USFWS is required for the taking or cormorants.

2007 LaSalle Lake Land Management Accomplishments

- Buoy and Sign maintenance
- Work to eradicate Phragmites sp. from wetlands
- Held Annual Disabled Veteran's fishing event

- Conducted Audubon Bird Counts
- Planted swamp white oak and other wetland species along riprap shore

2008 LaSalle Lake Proposed Work Plan

- Continue Buoy and Sign maintenance.
- Continue to work to eradicate Phragmities.
- Continue to maintain parking lot and fill potholes in dike road.
- Proposed open for winter fishing – depends on staffing levels.
- Host the Annual Disabled Veteran's fishing event.
- Participate in Audubon Bird Counts.
- Stay abreast of the local proposal for construction of a private electric-generation wind farm in the vicinity of the Lake. Staff has concerns/questions about the potential impact on lake usage by migratory birds. Some have also questioned whether interception of prevailing wind patterns (integral to proper lake cooling) by the windmills could alter the cooling capacity of the lake leading to more thermal pollution

2008 LaSalle Cooling Lake IDNR Capital Needs

- Build parking lot on east side for easier access to east dike, construct fence around lot, install lockable gates.
- Complete Phase 1 of conversion of garage to concession stand and get concessionaire, add bathroom & sewage treatment ($15-20,000)
- Build storage building to house & work on equipment
- Locate and/or obtain articulating boom mower for Phragmities control and control of woody shrubs on lake-side of dike.

2008

IDNR and Exelon Meeting Notes
Review of Braidwood, LaSalle and Clinton Station
Lake Fishery and Land Management Plans
At Quad Cities Station
March 12, 2009

LaSalle Cooling Lake Points of Interest For 2008

1. Fish Kills - There were no fish kills observed at the Lake in 2008.

2. Fish Stockings in 2008 - LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff at LaSalle Hatchery.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	7-21-08 /09-12-08	3.8 - 4.6	25,365
Largemouth Bass	7-08-08 / 8-21-08	2.3 - 2.4	21,318
Largemouth Bass	8-05-08/09-22-08	4.0-4.5	45,077
Striped Bass Hybrid	6-18- 08/6-23-08	1.3	73,914
	9-17-08	3.0	6,975
Bluegill	10-15-08	1.4	55,466
Redear Sunfish	10-27-08/11-3-08	1.4 - 2.2	34,151
Blue Catfish	09-11-08	5.0	18,560

Field Activities:

1. A general fish survey was conducted on October21 and October29in 2008. The survey resulted in an excellent collection of quality size bluegill. Bluegills

greater than 6 inches were collected at the incredible rate of 192 and 330 per hour on the 2 stations on the East end of the lake. This has always been the hot spot for bluegills. Larger bass numbers were down from the 2005 survey although good numbers of YOY and 1+ bass were collected . Smallmouth bass numbers appeared to be up especially on the East end of the lake. Channel catfish were collected in large numbers. Although their body condition had improved slightly especially those greater than 14 inches, they still only exhibited fair body condition.

2. A special survey was conducted 10-29-08 for blue catfish. A total of 225 blues were collected in only 112 minutes of electrofishing. The catch rate would have been greater but rough water made collection difficult at two of the stations. Also no chase boat was used in 2008. Anglers reported catching at least 2 blues greater than 50 pounds. The largest blue we collected was 32.5 pounds.

3. Gizzard shad numbers appeared to be down in 2008. Only a few gizzard shad older than 1 year old were collected. The body condition of the gizzard shad was extremely poor in 2006, in 2008 the condition had improved on the smaller fish but the Wr of the larger gizzard shad was still poor. The threadfin shad numbers were strong. A fairly large number of recently hatched small threadfin were observed.

4. Redear sunfish were stocked again this year to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce. A few from last year were collected in the survey.

5. While collecting fish for the Rockford Sport Show we did collect 10 striped bass hybrids between 5 and 8 pounds and saw numerous others. A creel conducted in 2007 had the striped bass hybrid as the number 3 species in terms of pounds per acre harvested. We also collected a lot more large largemouth and smallmouth bass than we did in are survey.

All scheduled activities for 2008 were completed. Proposed activities in 2009 will be the same. There was a creel conducted on the lake in 2007. The creel report had blue catfish as the most harvested fish species in the

lake. More than twice as many pounds of blues were harvested as any other species. Over 32,000 pounds of blues were harvested.

The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the Hatchery.

I moved my Station 1 out of the restricted area to eliminate any problems with security. I had been thinking about moving this station anyhow. I did go inside restricted area once to collect fish for a sport show in January. The plant was very cooperative. Two of the chemists volunteered to be my dippers and I think they had a great time as we collected some big bass and striped bass hybrids.

Illinois Department of Natural Resources Land Management Report

LaSalle Lake Management Plan

2008 Land Management Activities

- Buoy and Sign maintenance……completed
- Continue to work to eradicate Phragmites……ongoing
- Continue to maintain parking lot and fill potholes in dike road…….ongoing
- Complete Phase 1 of conversion of garage to concession stand …….not completed
- Try to locate and/or obtain articulating boom mower for Phragmites control and control of woody shrubs on lake-side of dike. …….. No funds
- Annual Disabled Veteran's fishing event……done
- Audubon Bird Counts……done

We were able to get a two mile buffer setback for windmill construction on the south east and north sides of the Lake to protect the use of the Lake by migrating birds.

Proposed Plans 2009 and beyond

- Buoy and Sign maintenance.
- Continue to work to eradicate Phragmites.
- Continue to maintain parking lot and fill potholes in dike road.
- Try to locate and/or obtain articulating boom mower for Phragmites control and control of woody shrubs on lake-side of dike.
- Annual Disabled Veteran's fishing event.
- Audubon Bird Counts.
- Build parking lot on east side for easier access to east dike, construct fence around lot, install lockable gates.
- Complete Phase 1 of conversion of garage to concession stand and get concessionaire, add bathroom & sewage treatment ($15-20,000)
- Build storage building to house & work on equipment

Braidwood Lake Management Plan

2008 Land Management Activities

- Fishing March 1st through October 20th, 6AM to sunset seven days a week. General fishing went well for the season. Some nice catches of channel cats in the 15 pound class and blues starting to mature. Bluegill was a main target for shore line fisherman. There were no major accidents on lake other than a few stranded boats. Waterwillows were planted at Braidwood Lake Shoreline.
- Bass tournaments (10 tournaments) were held with low yield on largemouth bass.
- No major fish kills.
- Fossil hunting on Esconi Hill, Field Museum and colleges throughout midwest. Low harvest on nodules.

Waterfowl:

- Youth Hunt, 22 hunters, 28 ducks harvested
- Duck and Goose, 1,721 hunters with 2,068 ducks harvested
- 2,471 hunters, 955 geese harvested

Goose and duck were below average compared to last year's harvest. Weather was the biggest part of the decline.

- Attendance 894,983.
- Garbage and Pit Privies $10,000.00
- Two boat access ramps shall be extended 15 feet. Project currently under design.

Proposed Capital Needs for 2009 and beyond

- Replace 25, 9 inch buoys and hardware - $5,000 needed

Clinton Lake Management Plan

2008 Land Management Activities

- Completed construction of Salt Creek Wetland levee - concrete rip rap, built two waterfowl blinds, built one observation tower, planted vegetative cover on levee's - used pump donated to project by Exelon to fill impoundment area last fall
- March 29, 2008 - 30 mile race at North fork Hiking Trail - had 75 registered, 72 starters and 60 finishers
- Check and clean almost 150 wood duck nest boxes with the help of Clinton Lake Waterfowlers Association in February
- Got the Region Bobcat bull hog and cleared brush and invasive plant species on 30 fields totaling 100 acres in February, March, April and May
- Saturday and Sunday, April 5 and 6 - held 2nd annual youth turkey hunt - had 13 kids hunt and only two turkey harvested; everyone had fun and learned a lot
- October 25 - Youth Pheasant Hunt was successful; 21 hunters harvested a total of 24 cock pheasants
- November 13, 14 and 15 - annual Handicapped Shotgun Deer Hunt - 23 hunters harvested 17 deer; successful because of all of our volunteers
- Conducted prescribed burn on 20 fields totally 140 acres, which was less than normal due to weather conditions
- Planted four fields with sunflowers for increased dove hunting opportunities; unfortunately, the sunflowers were washed out and the new fields were grass. Wheat was planted last fall to increase hunter success and enhance Sunflowers.
- Performed fall prescribed burn on five fields in Mascoutin of 21 acres
- Repaired lift pump at the Ringneck Ridge shower building
- Repaired one hydrant in the campground

- Repaired major water leaks by dump station
- Community Service worker did 130 hours of picking up litter
- Blocked off IP beach area for Eagles until late July with NO BOAT buoys
- Major dock damage from ice over winter; site staff have repaired stiff arms from North Fork dock to shore
- Replace cable and buoys at Mascoutin beach
- Earth Day - 30 young adults from Springfield high school planted 100 trees at Mascoutin campground
- Installed five lighted buoys on Clinton Lake dam
- Staff constructed six new handicap blinds for Handicap Shotgun Deer Hunt

Proposed Plan 2009 and beyond

- Stabilize Shoreline - A meeting has been scheduled with the Clinton Watershed group for April 1st, 2009 to hear a presentation from Lake Rip Rap, Inc and to discuss the needs for the Clinton Lake shoreline.
- Continue discussions to secure the donation of the Region 3 Office building.
- Federal Recreational Trails program will continue as current projects are being completed and 2 new projects are in the process of being funded - Beach/Campground trail and North Fork Trail
- Continue to monitor the Eagle's nesting at the peninsula area. A pair currently has young ones in the nest.
- Continue to work on eradicating Teasel whenever possible and control of woody invasives using the Regional Bull Hog equipment in rotation with other sites.
- Control Reed Canary Grass and plant food plots in Salt Creek Wetland.
- Work with partners, Exelon and Ducks Unlimited to get a new wetland done on the south side of the hot water flume.
- Working to improve dove hunting. Site staff are going to be planting and will be adding wheat in conjunction with sunflowers

Capital Needs

- Stabilize the shoreline

- Continue dialogue with Exelon regarding inclusion of four additional parcels (referenced in attached January 10, 2005 letters from Jim Capel) to the lease
- Continue dialogue with Exelon regarding donation of Region 3 office building

2009

IDNR and Exelon Meeting Notes
Review of Braidwood, Clinton and LaSalle
Lake Fishery and Land Management Plans
February 17, 2010

Meeting Notes:

On February 17, 2010, Steve Pallo, IDNR and John Petro, Exelon Generation met to review the 2009 fishery and land management accomplishments for Braidwood Station, Clinton Station and LaSalle County Station cooling lakes and the planned 2010 fishery and land management plans for these same cooling lakes. Details of the discussion points follow.

LaSalle Lake – 2009 Fisheries Field Activities

LaSalle Lake Fish Kills

There was a fish kill at LaSalle Lake around June 24. The day I checked there were only about 20 sport fish and a lot of Gizzard shad. Anglers reported dead striped bass Hybrids I didn't see them nor did the LaSalle Hatchery employees.

LaSalle Lake Fish Stockings in 2009

LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff at LaSalle Hatchery.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	8-04-09 /09-18-09	3.7 - 4.6	21,155
Largemouth Bass	9-24-09	2.7	9,450
Largemouth Bass	8-03-09/09-09-09	3.7-4.4	41,757
Striped Bass Hybrid	6-15- 09/6-22-09	1.3-1.5	60,556
	10-1-09	3.8	7,848
Bluegill	10-23-09	1.3	11,740
Blue Catfish	08-26-09	4.0	34,452

LaSalle Lake Field Activities

1. A general fish survey was conducted on October 28 and November 3 in 2009. The survey was shorter than most years do to health problems. I would like to thank Randy Petges and Rick Bushman from LaSalle Hatchery for completing the survey.The survey resulted in an excellent collection of quality size bluegill. Bluegills greater than 6 inches were collected at the incredible rate of 142 and 114 per hour on the 2 stations on the East end of the lake. This has always been the hot spot for bluegills. Larger bass numbers were down from the 2005 survey although good numbers of YOY and 1+ bass were collected . Smallmouth bass numbers appeared to be up especially on the East end of the lake. Channel catfish were collected in large numbers. Although their body condition had improved slightly especially those greater than 14 inches, they still only exhibited fair body condition.

2. A special survey was conducted 10-28-09 for blue catfish. A total of 75 blues were collected in only 30 minutes of electrofishing. The catch rate would have been greater but no chase boat was used in 2009. Anglers reported catching at least 2 blues greater than 50 pounds. The largest blue we collected was 30.0 pounds.

3. Gizzard shad numbers appeared to be down in 2009. Only a few gizzard shad older than 1 year old were collected. The body condition of the gizzard shad was extremely poor in 2009, in 2008 the condition had improved on the smaller fish but the Wr of the larger gizzard shad was still poor. The threadfin shad numbers appeared to down from 2008.

4. Redear sunfish were stocked again in 2008 to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce. A few from last year were collected in the survey.

5. Fish were collected for Sport Shows on January 9 and February 17. The sample on February 17 resulted in the collection of 35 striped bass hybrids between 7 and 12 pounds. We saw numerous others but did not dip them. Also 89 largemouth bass greater than 12 inches were collected.. A creel conducted in 2007 had the striped

bass hybrid as the number 3 species in terms of pounds per acre harvested. We also collected a lot more large largemouth and smallmouth bass than we did in are survey.

All scheduled activities for 2009 were completed. Proposed activities in 2010 will be the same. There was a creel conducted on the lake in 2007. The creel report had blue catfish as the most harvested fish species in the lake. More than twice as many pounds of blues were harvested as any other species. Over 32,000 pounds of blues were harvested.

The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the Hatchery.

I moved my Station 1 out of the restricted area to eliminate any problems with security. I had been thinking about moving this station anyhow. I did go inside restricted area once to collect fish for a sport show in January. The plant was very cooperative. Two of the chemists volunteered to be my dippers and I think they had a great time as we collected some big bass and striped bass hybrids.

LaSalle Lake -2010 Planned Fisheries Field Activities

Planned activities for 2010 will be the same as 2009.

LaSalle Lake – 2010 Land Management Activities

I have only repairing the roof on our old pole building at Illini as a new project. Everything else is routine maintenance.

We have a tree disease issue that is affecting red oaks in the Main Parking Lot area at Illini. We will have to cut those trees down and trench around the roots.

I have been given the task of eliminating all overtime so we will be asking for the following:

- We will ask to open LaSalle Lake on April 1 instead of March 15 and close on September 30 instead of Oct.15.

- We will ask to close hunting at the Marseilles Area from September 15 though September 30.
- We will ask to only hunt Wednesday through Sunday November through the close of the season in January.

2010

IDNR and Exelon Meeting Notes
Review of Braidwood, Clinton and LaSalle
Lake Fishery and Land Management Plans
December 20, 2010

Meeting Notes:

On December 20, 2010, Steve Pallo, IDNR, Jeremiah Haas, Quad Cities Station Fishery Biologist and John Petro, Exelon Generation met in Clinton, Illinois to review the 2010 fishery and land management accomplishments for Braidwood Station, Clinton Station and LaSalle County Station cooling lakes and the planned 2011 fishery and land management plans for these same cooling lakes. Details of the discussion points follow.

LaSalle Lake – 2010 Fisheries Field Activities

Fish Kills - There was a small fish kill at LaSalle Lake around July 8th.. The day I checked there were only about 20 sport fish and a lot of small gizzard shad. Anglers reported dead striped bass hybrids I didn't see them. LaSalle Hatchery employees report seeing just a few dead striped bass hybrids.

Fish Stockings in 2010 - LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff at LaSalle Hatchery.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	July-Sept	4.0	21,118
Largemouth Bass	Sept	2.6	8,912
Largemouth Bass	Sept.-Oct.	4.0	41,522
Striped Bass Hybrid	June	1.5	41,284
Redear Sunfish	October	1.3	4,830
Bluegill	October	1.3	84,661
Blue Catfish	Sept	5.3	19,800

2010 Field Activities:

A general fish survey was conducted on October 18 and 19th in 2010. I would like to thank Randy Petges, Rick Bushman and Jeff Hoffelt from LaSalle Hatchery for assisting in the survey. The water temperature in the warm pool at the time of the survey was still an incredible 96 degrees. The survey resulted in an excellent collection of quality size bluegill. Bluegills greater than 6 inches were collected at the incredible rate of 132 and 222 per hour on the East end of the lake. In 2009, bluegill were collected at a rate of 142 and 114 per hour on the 2 stations on the East end of the lake. This has always been the hot spot for bluegills. The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the Hatchery. Larger sized bass numbers were about the same as the past three years. Good numbers of YOY and 1+ bass were collected . Smallmouth bass numbers appeared to be up especially on the East end of the lake. The body condition was improved in 2010 despite prolong periods of high water temperatures in the lake. Channel catfish were collected in large numbers. Although their body condition had improved slightly especially those greater than 14 inches, they still only exhibited fair body condition.

A special survey was conducted 10-18-10 for blue catfish. A total of 144 blues were collected in only 60 minutes of electro fishing. The blues are collected using a very low setting on the DC control box. A chase boat was used in 2010 to help increase effectiveness of the survey. The collected blues ranched from 1/3 pound to 25 pounds. Larger blues were seen but we were not able to collect them. Anglers reported catching at least 2 blues greater than 50 pounds. A creel conducted in 2007 reported blues were the number 1 harvested fish. With more than twice as many as any other fish species.

Gizzard shad numbers appeared to be up in 2010. More gizzard shad older than 1 year old were collected in 2010 than the last 3 years. The body condition of the gizzard shad improved to fair compared to extremely poor in 2009, in 2008 the condition had improved on the smaller fish but the Wr of the larger gizzard shad was still poor. The threadfin shad numbers appeared to down from 2010 also appeared to be up slightly.

Redear sunfish were stocked again in 2010 to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce. A few from last year were collected in the survey. Redears will be hard to sample in LaSalle Lake. A creel in a few years should help determine the success of this stocking program.

Fish were collected for Sport Shows on January 9 and February 17. The sample on February 17 resulted in the collection of 35 striped bass hybrids between 7 and 12 pounds. We saw numerous others but did not dip them. Also 89 largemouth bass greater than 12 inches were collected.. A creel conducted in 2007 had the striped bass hybrid as the number 3 species in terms of pounds per acre harvested. We also collected a lot larger largemouth and smallmouth bass than we did in are survey.

The IHSA fishing tournament on April 23,2010 was very successful. The tournament resulted in the second most fish and pounds of bass being caught out of all the lakes used in the tournament.

All scheduled activities for 2010 were completed. Proposed activities in 2011 will be the same. There was a creel conducted on the lake in 2007. The creel report had blue catfish as the most harvested fish species in the lake. More than twice as many pounds of blues were harvested as any other species. Over 32,000 pounds of blues were harvested.

I moved my Station 1 out of the restricted area to eliminate any problems with security. I had been thinking about moving this station anyhow. The plant has been very cooperative when I have called them on anything dealing with the lake.

2011

IDNR and Exelon Meeting Notes
Review of Braidwood, Clinton and LaSalle
Lake Fishery and Land Management Plans
February 22, 2012

Meeting Notes:

On February 22, 2012 the following attendees met at the American Fisheries Society Meeting held at Starved Rock State Park to review the 2011 fishery and land management accomplishments for Braidwood Station, Clinton Station and LaSalle County Station cooling lakes and the planned 2012 fishery and land management plans for these same cooling lakes:

- Dan Sallee, IDNR
- Rick O'Neil, IDNR
- Rob Miller, IDNR Braidwood Lake Fishery Biologist
- Mike Garthaus, IDNR Clinton Lake Fishery Biologist
- Ken Clodfelter, IDNR LaSalle Lake Fishery Biologist
- Rick Bushman, IDNR LaSalle Fish Hatchery
- Mike Conlin, Retired IDNR Fisheries Chief
- Jeremiah Haas, Quad Cities Station
- Keith Volker, Clinton Station
- John Petro, Exelon Generation

Highlights of the February 22nd discussion follow:

LaSalle County Lake

- The plan going forward is to continue to stock blue catfish and hybrid stripers
- IDNR asked for LaSalle County Station's help in doing a permanent repair to the power supply that feeds the LaSalle Fish Hatchery. The underground power supply, which parallels the access road to the Fish Hatchery, has failed twice in the risk which jeopardizes Fish Hatchery operations,
- IDNR asked that LaSalle County Station grade the access road to the boat ramps and Fish Hatchery and investigate and budget for blacktopping these roadways in the future.

LaSalle County Station Cooling Lake – 2011 Points of Interest

DISTRICT FISHERIES BIOLOGIST: Ken Clodfelter

1. Fish Kills - There was a fish kill on LaSalle Lake in July . The kill was mainly threadfin shad and a few gizzard shad. The threadfin die-off was pretty large. Mainly young of the year fish. Anglers also reported a few dead striped bass hybrids and smallmouth bass. LaSalle Hatchery employees report seeing a few dead striped bass hybrids.

2. Fish Stockings in 2011 - LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff at LaSalle Hatchery.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	July-Sept	4.0	22,733
Largemouth Bass	Sept	2.0	3,311
Largemouth Bass	Sept.-Oct.	4.0	25,532
Largemouth Bass	Sept	6.0	1,627
Striped Bass Hybrid	June	2.0	52,642
Redear Sunfish	October	1.3	4,830
Bluegill	October	1.3	364,731
Blue Catfish	Sept	5.0	23,368

Field Activities:

1. A general fish survey was conducted on October 24 and 27 in 2011. I would like to thank Randy Petges, and Jeff Hoffelt from LaSalle Hatchery for assisting in the survey. The water temperature in the warm pool at the

LaSalle County Station Cooling Lake – 2011 Points of Interest

DISTRICT FISHERIES BIOLOGIST: Ken Clodfelter

1. Fish Kills - There was a fish kill on LaSalle Lake in July . The kill was mainly threadfin shad and a few gizzard shad. The threadfin die-off was pretty large. Mainly young of the year fish. Anglers also reported a few dead striped bass hybrids and smallmouth bass. LaSalle Hatchery employees report seeing a few dead striped bass hybrids.

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Striped Bass Hybrid	June	2.0	52,642
Redear Sunfish	October	1.3	4,830
Bluegill	October	1.3	364,731
Blue Catfish	Sept	5.0	23,368

Field Activities:

1. A general fish survey was conducted on October 24 and 27 in 2011. I would like to thank Randy Petges, and Jeff Hoffelt from LaSalle Hatchery for assisting in the survey. The water temperature in the warm pool at the

time of the survey was 79 degrees and 65 degrees on the cool side. The survey resulted in an excellent collection of quality size bluegill. Bluegills greater than 6 inches were collected at the incredible rate of 231 and 300 per hour on the East end of the lake. In 2010, bluegill were collected at a rate of 156 and 222 per hour on the 2 stations on the East end of the lake. This has always been the hot spot for bluegills. The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the Hatchery. The collection rate of larger sized bass has been down the last few years. Good numbers of YOY and 1+ bass were collected. Smallmouth bass numbers were good especially on the East end of the lake. The body condition of the smallmouth bass was improved in 2011 despite prolong periods of high water temperatures in the lake. Channel catfish numbers were down in 2011 but their body condition had improved especially those greater than 14 inches, Threadfin shad numbers were way down only a few were observed. The summer kill must have really reduced their population. Gizzard shad numbers were not up but their body condition greatly improved

2. A special survey was conducted 10-27-11 for blue catfish. A total of 130 blues were collected in only 60 minutes of electro fishing. The blues are collected using a very low setting on the DC control box. A chase boat was not used in 2011. The chase boat increases the blue catfish harvest but other personnel were all busy. The collected blues ranched from 0.8 pound to 31 pounds. Larger blues were seen but we were not able to collect them. Anglers reported catching at least 2 blues greater than 50 pounds. A creel conducted in 2007 reported blues were the number 1 harvested fish. With more than twice as many pounds harvested as any other fish species. People real like this fish. They will fish for them even in the hot weather.

3. Gizzard shad numbers appeared to be about the same in 2011. More gizzard shad older than 1 year old were collected in 2011 than the last 3 years. The body condition of the gizzard shad improved to average in 2011 compared to fair in 2010 and to extremely poor in 2009, In 2008 the condition had improved on the smaller fish but the Wr of the larger gizzard shad was still poor. The threadfin shad numbers appeared to be way down in 2011. The July fish kill appeared too really hurt their numbers.

4. Redear sunfish were stocked again in 2011 to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce. A few from last two years were collected in the survey. Redears will be hard to sample in LaSalle Lake. A creel in a few years should help determine the success of this stocking program.

5. Fish were collected for the Rockford Sport Show on March 2,2011. The sample resulted in the collection of 10 striped bass hybrids A creel conducted in 2007 had the striped bass hybrid as the number 3 species in terms of pounds per acre harvested. We also collected a lot larger largemouth and smallmouth bass than we did in are survey.

6. The IHSA fishing tournament on April 23, 2011 was very successful. The tournament resulted in the second most fish and pounds of bass being caught out of all the lakes used in the tournament.

7. A fish outing for disabled veterans was conducted again this year. The LaSalle station personnel have expressed interest in helping with this in the future. LaSalle Station had a family fishing outing this year and Jeremiah Haas did a talk on fish biology and identification.

All scheduled activities for 2011 were completed. Proposed activities in 2012 will be the same. There was a creel conducted on the lake in 2007. The creel report had blue catfish as the most harvested fish species in the lake. More than twice as many pounds of blues were harvested as any other species. Over 32,000 pounds of blues were harvested. Another creel will be conducted around 2017 if money is available.

I moved my Station 1 out of the restricted area to eliminate any problems with security. I had been thinking about moving this station anyhow. The plant has been very cooperative when I have called them on anything dealing with the lake. Plant staff have assisted me with my survey.

2012

IDNR and Exelon Meeting Notes
Review of Braidwood, Clinton and LaSalle
Lake Fishery and Land Management Plans
March 6, 2013

Meeting Notes:

On March 6, 2013 the following attendees met during lunch at the American Fisheries Society (AFS) Meeting held at Rend Lake Conference Center to review the 2012 fishery and land management accomplishments for Braidwood Station, Clinton Station and LaSalle County Station cooling lakes and the planned 2013 fishery and land management plans for these same cooling lakes:

- Rob Miller, IDNR Braidwood Lake Fishery Biologist
- Mike Garthaus, IDNR Clinton Lake Fishery Biologist
- Ken Clodfelter, IDNR LaSalle Lake Fishery Biologist
- Jeremiah Haas, Quad Cities Station

Highlights of the March 6, 2013 discussion follow:

LaSalle County Lake

No lake issues or requests at this time. Fish populations doing well. Ken and I both expected a fish kill during the 2012 extreme heat, but no kill occurred to our surprise. Did discuss the possibility of the lake not opening due to budget issues. Further develops coming on that issue.

LaSalle County Station Cooling Lake

IDNR District Fisheries Biologist: Ken Clodfelter

2012 LaSalle Cooling Lake Points of Interest

2012 Fish Kills - There was a fish kill on LaSalle Lake in July. The kill was not a major kill. The fish affected in the order of abundance were: blue catfish, striped bass hybrids, gizzard shad, largemouth bass, smallmouth bass and carp. There may have been 50-100 blues and strippers involved in the kill. LaSalle Hatchery employees tried to monitor the lake daily for fish kills as the temperatures were extremely hot in 2012.

Fish Stockings in 2012 - LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff at LaSalle Hatchery.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	July-Sept	4.0	20,683
Largemouth Bass	Sept	2.0	79,304
Largemouth Bass	Sept.-Oct.	4.0	4,862
Striped Bass Hybrid	June	1.5	21,399

Bluegill	October	1.5	73,681

2012 LaSalle Lake Field Activities:

1. A general fish survey was conducted on October 22, 23 and 29 in 2012. I would like to thank Randy Petges, and Rick Bushman from LaSalle Hatchery for assisting in the survey. The water temperature in the warm pool at the time of the survey was still 90 degrees and 72 degrees on the cool side. The survey resulted in an excellent collection of quality size bluegill. Bluegills greater than 6 inches on the two stations on the East end in 2012 were collected at a rate of and 308 greater than 6 inches were collected at the incredible rate of 231 and 300 per hour on the East end of the lake. In 2010, bluegill were collected at a rate of 156 and 222 per hour on the 2 stations on the East end of the lake. This has always been the hot spot for bluegills. The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the Hatchery. The collection rate of larger sized bass has been down the last few years. Good numbers of YOY and 1+ bass were collected. Smallmouth bass numbers were good especially on the East end of the lake. The body condition of the smallmouth bass was improved in 2012 despite prolong periods of high water temperatures in the lake. Channel catfish numbers were down in 2011 and 2012 but their body condition had improved especially those greater than 14 inches, Threadfin shad numbers were way down only a few were observed. The summer kill must have really reduced their population. Gizzard shad numbers were not up but their body condition greatly improved

2. A special survey was conducted 10-22-12 and 10-29-12 for blue catfish only. In the warm pool a total of 84 blues were collected in only 35 minutes of electro-fishing or 144 blues per hour. In the cool pool Blues were collected at 136 per hour. The body condition or Relative weights of the blues were down slightly in 2012. The condition will be monitored again in 2013. The blues are collected using a very low setting on the DC control box. A chase boat was used in 2012. The collected blues ranched from 0.5 pound to 20 pounds. Larger blues were seen but we were not able to collect them. Anglers reported catching at least 2 blues greater than 50 pounds. A creel conducted in 2007 reported blues were the number 1 harvested fish. With more than twice as many pounds harvested as any other fish species. People real like this fish. They will fish for them even in the hot weather.

3. Gizzard shad numbers appeared to be about the same in 2012. More gizzard shad older than 1 year old were collected in 2012 than the last 3 years. The body condition of the gizzard shad improved to average in 2012 compared to fair in 2010 and to extremely poor in 2009, In 2008 the condition had improved on the smaller fish but the Wr of the larger gizzard shad was still poor. The threadfin shad numbers appeared to be way down in 2011 but back up in 2012. The July fish kill in 2011appeared too really hurt their numbers but in 2012 numbers recovered..

4. Redear sunfish were stocked again in 2011 to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce. A few from last two years were collected in the survey. Redears will be hard to sample in LaSalle Lake. A creel in a few years should help determine the success of this stocking program.

5. Fish were collected for the Rockford Sport Show on March 2,2011. The sample resulted in the collection of 10 striped bass hybrids A creel conducted in 2007 had the striped bass hybrid as the number 3 species in terms of pounds per acre harvested. We also collected a lot larger largemouth and smallmouth bass than we did in are survey. None were collected in 2012 or 2013.

6. The IHSA fishing tournament on April 23, 2012 was very successful despite the weather. In 2011the tournament resulted in the second most fish and pounds of bass being caught out of all the lakes used in the tournament. I have been told that they have decide to drop all cooling Lakes in 2013 because of safety concerns.

7. A fish outing for disabled veterans was conducted again this year. The LaSalle station personnel have expressed interest in helping with this in the future.

8. All scheduled activities for 2012 were completed. Proposed activities in 2013 will be the same. Except LaSalle lake may not be used in the IHSA bass fishing tournament There was a creel conducted on the lake in 2007. The creel report had blue catfish as the most harvested fish species in the lake. More than twice as many pounds of blues were harvested as any other species. Over 32,000 pounds of blues were harvested. Another creel will be conducted around 2017 if money is available.

9. I moved my Station 1 out of the restricted area to eliminate any problems with security. I had been thinking about moving this station anyhow. The plant has been very cooperative when I have called them on anything dealing with the lake. Plant staff assisted me with my survey.

2013

IDNR and Exelon Meeting Notes
Review of Braidwood, Clinton and LaSalle Lake Fishery and Land Management Plans
March 5, 2014

Meeting Notes:

On March 5, 2014 the following attendees met during lunch at the American Fisheries Society (AFS) Meeting held at the Parke Hotel and Conference Center in Bloomington, Illinois to review the 2013 fishery and land management accomplishments for Braidwood Station, Clinton Station and LaSalle County Station cooling lakes as well as the planned 2014 fishery and land management plans for these same cooling lakes:

- Rob Miller, IDNR Braidwood Lake Fishery Biologist
- Mike Garthaus, IDNR Clinton Lake Fishery Biologist
- Ken Clodfelter, IDNR LaSalle Lake Fishery Biologist
- Jeremiah Haas, Quad Cities Station Fish Hatchery
- John Petro, Exelon Environmental
- Keith Volker, Clinton Power Station
- Dr. David Bergerhouse, Southern Illinois University

Highlights of the March 5, 2014 discussion follow:

LaSalle County Lake

- Reviewed the results of the 2013 fishery monitoring report that is attached.
- There was no major fish kills in 2013 despite extended periods of high water temperatures.
- Ken Clodfelter, IDNR plans to install four or five fish cribs directly in front of the handicapped fishing pier as fish attractors.
- Ken Clodfelter, IDNR discussed a number of 2014 improvement initiatives that he would like Exelon to help with, specifically:
  1. Fish Hatchery Roof-The metal roof on the hatchery building needs to be replaced or repaired and painted. Justification: The hatchery building was built in the early 1980s and is over 30 years old. It is rusted and deteriorating.
  2. Office Trailer-The mobile trailer used for the hatchery office needs to be replaced. Justification: The office trailer needs the floor, windows and roof replaced. The windows and roof leak and the floor is worn through the tile and is beginning to wear through the wood.
  3. Cormorant Predation-The shad net and concrete structures in the lake are used by cormorants as roost from July-September each year. It is estimated that 200-300 cormorants live on these structures that are located less than 100 yards from some of the hatchery ponds. At times when high numbers of 3-4 inch fingerling fish are in the ponds, there is continual cormorant feeding in the ponds or circling the ponds. Pyrotechnics, propane cannons, human activity and vehicles are used with limited effectiveness in attempts to discourage the cormorants from predating on the fish in the ponds.
  4. Rearing Pond Roads-The gravel road that goes around the hatchery ponds needs repair. Justification: The roads around the hatchery ponds are used by heavy fish hauling trucks and the layer of gravel that was put down 20 years ago when the DNR took over the hatchery has been absorbed into the ground. A new gravel base would allow trucks not to sink into the mud.
  5. LaSalle Fish Hatchery Equipment List

Description	Source	Cost
Bird Gard Super Pro, Generates bird distress cries and predator sounds to discourage predation by cormorants on	Reed-Joseph, PO Box 894 Greenville, MS 38702 1-800-647-5554	$750

fish.		
Pesticide Storage Container, Model 899004 Dimensions 43"W x 65"H x 34" D, for safe storage of herbicides used to control vegetation in fish culture ponds.	Justrite safety online, (800)396-1926	2 @ $1,946 each
8 inch Waterman Canal Gate, C-20, 84inch Ht, Would replace deteriorating gate valve on hatchery pond drain. If replacement valve works, 15 more drain valves would need replaced.	Water Products-Aurora, 3255 East New York, Aurora, IL 60504 (630) 898-6100	$1,150.00
	Total	$5,792

LaSalle County Station Cooling Lake

IDNR District Fisheries Biologist: Ken Clodfelter

Fish Kills

There was no major fish kills in 2013 despite extended periods of high water temperatures. There was a fish kill on LaSalle Lake in July of 2012. The kill was not a major kill. The fish affected in the order of abundance were: blue catfish, striped bass hybrids, gizzard shad, largemouth bass, smallmouth bass and carp. There may have been 50-100 blues and stripers involved in the kill. LaSalle Hatchery staff monitored the lake temperatures daily in the summer. They also looked for fish kills as the water temperatures were extremely hot in 2013.

2013 Fish Stockings

LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff at LaSalle Hatchery.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	July-Sept	4.0	22,354
Largemouth Bass	Sept	2.0	48,753
Striped Bass Hybrid	June	1.5	20,580
Bluegill	Oct	1.5	25,031

2013 Field Activities

1. A general fish survey was conducted on October 25, and 28 in 2013. I would like to thank Randy Petges, and Will Green from LaSalle Hatchery for assisting in the survey. The water temperature in the warm pool at the time of the survey was still 80 degree's and 66 degrees on the cool side. Despite windy conditions the survey resulted in an excellent collection of quality size bluegill. Bluegills greater than 6 inches on the two stations on the East end in 2013 were collected at 178 and 362 per hour. In 2012 they were collected at a rate of 153 and 308, in 2011 the rates were 231 and 300 per hour and in 2010, 156 and 222 per hour on the 2 stations on the East end of the lake. This has always been the

hot spot for bluegills. The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the Hatchery. The collection rate of larger sized bass has been down the last few years. Good numbers of YOY and 1+ bass were collected. Smallmouth bass numbers were good especially on the East and south end of the lake. The body condition of the smallmouth bass as improved in 2012 and 2013 despite prolong periods of high water temperatures in the lake. Channel catfish numbers were down in 2011 and 2012 but their body condition had improved especially those greater than 14 inches, Channel catfish numbers were back in 2013 with good body condition for larger fish. Threadfin shad numbers were up again in 2013. Only a few were observed in 2011. A summer kill must have really reduced their population. Larger gizzard shad numbers were up and their body condition had greatly improved in 2013. However very few small gizzard shad were collected in 2013.

2. A special survey was conducted 10-28-13 for blue catfish only. In the warm pool a total of 76 blues were collected in only 30 minutes of electrofishing or 152 blues per hour which is close to the 144 per hour in 2012. In the cool pool Blues were collected at 101 per hour in 2013 and 136 per hour in 2012.. The body condition or Relative weights of the blues were down slightly in 2012 and 2013 on the blues less than 10 pounds. The condition will be monitored again in 2014. The blues are collected using a very low setting on the DC control box. A chase boat was used in 2012. The collected blues ranched from 0.5 pound to 32 pounds in 2013. Larger blues were seen but we were not able to collect them. Anglers reported catching several blues greater than 50 pounds in 2013. A creel conducted in 2007 reported blues were the number 1 harvested fish. With more than twice as many pounds harvested than any other fish species. Anglers really like fishing for blue's in this lake. We also collected a few flathead catfish. The largest was 50 pounds..

3. Larger sized gizzard shad numbers were up in 2013. More gizzard shad older than 1 year old were collected in 2012 and 2013 than the previous 3 years. The body condition of the gizzard shad improved to average in 2012 and 2013 compared to fair in 2010 and to extremely poor in 2009, In 2008 the condition had improved on the smaller fish but the Wr of the larger gizzard shad was still poor. The threadfin shad numbers appeared to be way down in 2011 but back up in 2012 and 2013. The July fish kill in 2011appeared too really hurt their numbers but in 2012 numbers recovered..

4. No redear sunfish were stocked in 2013 because cormorants eat all the brood fish. Redear sunfish were stocked in 2011 to see if they could be another

thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce. A few from last two years were collected in the survey. Redears will be hard to sample in LaSalle Lake. A creel in a few years should help determine the success of this stocking program.

5. Seven striped bass hybrids were collected at station 5 in 2013. They were between 2.5 and 4 pounds. Fish were collected for the Rockford Sport Show on March 2,2011. The sample resulted in the collection of 10 striped bass hybrids A creel conducted in 2007 had the striped bass hybrid as the number 3 species in terms of pounds per acre harvested.

6. The IHSA fishing tournament on April 23,2012 was very successful despite the weather. In 2011the tournament resulted in the second most fish and pounds of bass being caught out of all the lakes used in the tournament. IHSA decide to drop all cooling Lakes in 2013 because of safety concerns.

7. The fish outing for disabled veterans was discontinued this year. The VA Hospital said they could no longer do this outing. The LaSalle station personnel have expressed interest in helping with programs like this in the future.

All scheduled activities for 2013 were completed. Proposed activities in 2014 will be the same. Except LaSalle lake will not be used in the IHSA bass fishing tournament. There was a creel conducted on the lake in 2007. The creel report had blue catfish as the most harvested fish species in the lake. More than twice as many pounds of blues were harvested as any other species. Over 32,000 pounds of blues were harvested. Another creel will be conducted around 2017 if money is available.

I moved my Station 1 out of the restricted area to eliminate any problems with security. I had been thinking about moving this station anyhow. The plant has been very cooperative when I have called them on anything dealing with the lake. Plant staff have assisted me with my survey.

I have included two attachments from LaSalle Hatchery of projects and needs if assistance is available.

<u>2014 LaSalle Project List for LaSalle Fish Hatchery</u>

6. Hatchery Roof-The metal roof on the hatchery building needs to be replaced or repaired and painted. Justification: The hatchery building was built in the early 1980s and is over 30 years old. It is rusted and deteriorating.

7. Office Trailer-The mobile trailer used for the hatchery office needs to be replaced. Justification: The office trailer needs the floor, windows and roof replaced. The windows and roof leak and the floor is worn through the tile and is beginning to wear through the wood.
8. Cormorant Predation-The shad net and concrete structures in the lake are used by cormorants as roost from July-September each year. It is estimated that 200-300 cormorants live on these structures that are located less than 100 yards from some of the hatchery ponds. At times when high numbers of 3-4 inch fingerling fish are in the ponds, there is continual cormorant feeding in the ponds or circling the ponds. Pyrotechnics, propane cannons, human activity and vehicles are used with limited effectiveness in attempts to discourage the cormorants from predating on the fish in the ponds.
9. Rearing Pond Roads-The gravel road that goes around the hatchery ponds needs repair. Justification: The roads around the hatchery ponds are used by heavy fish hauling trucks and the layer of gravel that was put down 20 years ago when the DNR took over the hatchery has been absorbed into the ground. A new gravel base would allow trucks not to sink into the mud.

2014 LaSalle Fish Hatchery Equipment List

Item	Description	Source	Cost
1	**Bird Gard Super Pro**, Generates bird distress cries and predator sounds to discourage predation by cormorants on fish.	Reed-Joseph, PO Box 894 Greenville, MS 38702 1-800-647-5554	$750
2	**Pesticide Storage Container**, Model 899004 Dimensions 43"W x 65"H x 34" D, for safe storage of herbicides used to control vegetation in fish culture ponds.	Justrite safety online, (800)396-1926	2 @ $1,946 each
3	**8 inch Waterman Canal Gate, C-20, 84inch Ht**, Would replace deteriorating gate valve on hatchery pond drain. If replacement valve works, 15 more drain valves would need replaced.	Water Products-Aurora, 3255 East New York, Aurora, IL 60504 (630) 898-6100	$1,150.00
		Total	$5,792

2014

IDNR and Exelon Meeting Notes
Review of Braidwood, Clinton and LaSalle
Lake Fishery and Land Management Plans
March 4, 2015

Meeting Notes:

On March 4, 2015 the following attendees met during lunch at the American Fisheries Society (AFS) Meeting held at the Parke Hotel and Conference Center in Bloomington, Illinois to review the 2014 fishery and land management accomplishments for Braidwood Station, Clinton Station and LaSalle County Station cooling lakes as well as the planned 2015 fishery and land management plans for these same cooling lakes:

- Rob Miller, IDNR Braidwood Lake Fishery Biologist
- Mike Garthaus, IDNR Clinton Lake Fishery Biologist
- Ken Clodfelter, IDNR LaSalle Lake Fishery Biologist
- Dan Stevenson, IDNR Asst. Chief of Fisheries
- Jeremiah Haas, Quad Cities Station
- Dr. David Bergerhouse, Southern Illinois University

Highlights of the March 4, 2015 discussion follow:

We had our annual lake lease meeting with the ILDNR on Wednesday at the Annual IL American fisheries society meeting. No major issues came up. We did talk about individual projects at each site. I'll work up official meeting minutes later and send them to everyone.

[NOTE -- BRAIDWOOD AND CLINTON HIGHLIGHTS ARE OMITTED]

LaSalle – Ken would like to deploy up to 20 of the porcupine structures in the lake. He is looking for someone to buy the materials and the rest he can take care of. I told him that the site may want to use this as a stewardship project, I will chat with you (Heather) individually about this. ALSO, Ken is going to retire in December, so we're losing a great "friend of the program." I told him he was not allowed to do so, but he does have 39 years in, so I couldn't argue too much. Don't be surprised if the state does not fill his position anytime soon afterwards. I'll keep you up to date on that.

My hatchery manager was in attendance and agreed we can support these fish request as long as the funding to do so is available. At this point, I believe all the sites can support the projects, with the exception of Braidwood, whom I have not received feedback from. Please let me know the proper folks to talk to at Braidwood.

Overall DNR is happy, so I amhappy. Great job in 2014. As everything in IL gets shook up with the new administration, we will have to adjust accordingly.

LaSalle County Lake

LaSalle Cooling Lake Points of Interest For 2014

1. Fish Kills – There was no major fish kills on LaSalle Cooling lake in 2014. There was no major fish kills in 2013 despite extended periods of high water temperatures. There was a fish kill on LaSalle Lake in July of 2012. The kill was not a major kill. The fish affected in the order of abundance were: blue catfish, striped bass hybrids, gizzard shad, largemouth bass, smallmouth bass and carp. There may have been 50-100 blues and stripers involved in the kill. LaSalle Hatchery staff monitored the lake temperatures daily in the summer.

2. Fish Stockings in 2014 - LaSalle Cooling Lake received a lot of warm water fish stockings because of the excellent job by the Hatchery Staff at LaSalle Hatchery. The number of largemouth bass stocked in LaSalle Lake was way down this year because, this is the year bass fingerlings were stocked in the Chain Of Lakes.

SPECIES	DATE	SIZE INCHES	# STOCKED
Smallmouth Bass	July-Aug	3.6-4.1	20,582
Blue Catfish	Oct	5.0	18,200
Largemouth Bass	Aug	4.8	2,660
Striped Bass Hybrid	June	1.3	26,047
Bluegill	September	1.0	100,130

Field Activities:

1. A general fish survey was conducted on October 20,21 and 22 in 2014. I would like to thank Randy Petges, Mark Mowers and Will Green from LaSalle Hatchery for assisting in the survey. The water temperature in the warm pool at the time of the

survey was still 86 degrees and 66 degrees on the cool side. Despite windy conditions the survey resulted in an excellent collection of quality size bluegill. Bluegills greater than 6 inches on the two stations on the East end in 2014 were collected at 188 and 88. In 2013 they were collected at a rate of 178 and 362 per hour in 2012 they were collected at a rate of 153 and 308, in 2011 the rates were 231 and 300 per hour and in 2010, 156 and 222. This has always been the hot spot for bluegills. The bluegill stockings appear to be having a positive result to the bluegill population. LaSalle Cooling Lake gets a lot of extra bluegill and other fish because of its close proximity to the Hatchery. The collection rate of larger sized largemouth bass has been down the last few years. Good numbers of YOY and 1+ bass were collected. Smallmouth bass numbers were good especially on the East and south end of the lake. The body condition of the smallmouth bass was excellent in 2014. The body condition of the smallmouth bass begin to improve in 2012 and 2013 despite prolong periods of high water temperatures in the lake. Channel catfish numbers in 2014 were about the same as other years. However the body condition improved especially for channel catfish greater than 11 inches. Channel catfish numbers were down in 2011 and 2012 but their body condition had improved especially those greater than 14 inches, Channel catfish numbers were back in 2013 with good body condition for larger fish. Threadfin shad numbers were down in 2014. They were collected at less than one per minute. Only a few were observed in 2011. A summer kill must have really reduced their population. Larger gizzard shad numbers were up and their body condition had greatly improved in 2013. However, very few small gizzard shad were collected in 2013. In 2014 numbers were about the same. The small gizzard shad were in good shape but shad greater than 9 inches were in poor body condition.

2. A special survey was conducted 10-21-14 for blue catfish only. A total of 246 were collected in 90 minutes. In the warm pool a total of 160 were collected in only 30 minutes. In 2013 in the warm pool a total of 76 blues were collected in

only 30 minutes of electrofishing or 152 blues per hour which is close to the 144 per hour in 2012. The body condition or Relative weights of the blues were down slightly in 2012 and 2013 on the blues less than 10 pounds. The body condition improved in 2014. The condition will be monitored again in 2015. The blues are collected using a very low setting on the DC control box. A chase boat was used in 2014. The collected blues ranched from 0.5 pound to 32 pounds in 2013. Larger blues were seen but we were not able to collect them. Anglers reported catching several blues greater than 50 pounds in 2014. A creel conducted in 2007 reported blues were the number 1 harvested fish. With more than twice as many pounds harvested than any other fish species. Anglers really like fishing for blue's in this lake. We also collected a few flathead catfish. The largest was 50 pounds.

3. Larger sized gizzard shad numbers were about the same in 2014 as the previous years. More gizzard shad older than 1 year old were collected in 2012 and 2013 than the previous 3 years. The body condition of the gizzard shad greater than 9 inches in 2014 was poor. The condition had improved to average in 2012 and 2013 compared to fair in 2010 and to extremely poor in 2009, The threadfin shad numbers appeared to be way down in 2011 and 2014. The July fish kill in 2011 appeared too really hurt their numbers but numbers rebounded in 2012 and 2013..

4. No redear sunfish were stocked in 2013 or 2014 because cormorants ate all the brood fish. Redear sunfish were stocked in 2011 to see if they could be another thermal tolerant fish species that may find LaSalle Cooling Lake to have suitable habitat to survey and reproduce. A few from last two years were collected in the survey. Redears will be hard to sample in LaSalle Lake. A creel in a few years should help determine the success of this stocking program.

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2015 LaSalle Cooling Lake Activities:

FISH STOCKINGS

Largemouth bass, smallmouth bass, striped bass hybrids, blue catfish and bluegill fingerlings have been requested in 2015.

FIELD ACTIVITIES

1. I hope to install porcupine structures around the handicap pier by boat lounge and area of East dike where disabled veterans fishing occurred.
2. Evaluated the use of these habitats in the fall if they get purchased.
3. Monitor water temperatures and dissolved oxygen levels in the summer.
4. Conducted survey to evaluate blue catfish stocking success.
5. Conducted annual fish survey by electrofishing to see how the rest of the fish species are doing.
6. No fishing regulation changes in 2015 except lake will be open 7 days a week. IThe Lake had been closed on Monday and Tuesday the last two weeks of March. And the first two weeks in October..

RAI # AQ-02

ATTACHMENT 2

Assessment of the LaSalle County Station Cooling Pond

Prepared for:

Exelon Generation Company
4300 Winfield Road
Warrenville, IL 60555

Prepared by:

Richard Monzingo Ph.D.
EA Engineering, Science, and Technology
444 Lake Cook Road, Suite 18
Deerfield, IL 60015

March 2002

Assessment of the LaSalle County Station Cooling Pond

Prepared for:

Exelon Generation Company
4300 Winfield Road
Warrenville, IL 60555

Prepared by:

Richard Monzingo Ph.D.
EA Engineering, Science, and Technology
444 Lake Cook Road, Suite 18
Deerfield, IL 60015

March 2002

1. Fish Stocking

Fish stocking in the LaSalle Cooling Pond began in 1978 soon after the reservoir was filled with water pumped from the Illinois River. Initially, the only species stocked were largemouth bass and bluegill. After the research fish hatchery became operational in 1981 species of fish being raised at the hatchery began to be introduced into the reservoir. These species included smallmouth bass, walleye, muskellunge and hybrid striped bass. The first hybrid striped bass stocking occurred in 1981 and continued in 1985, 1990, 1992-1995 and 1998-2000. The last planned stocking of walleye and muskellunge occurred in 1987 and 1988, respectively. In 1986, the cooling pond was opened to the public for fishing and in 1994, after the research studies were complete, ComEd leased the fish hatchery to the Illinois Department of Natural Resources (IDNR). The IDNR hatchery at LaSalle provides fish to cooling reservoirs and other areas that are open to the public. Over time there have been some unscheduled releases from the hatchery however they have been minor in nature.

The IDNR continues to stock fish into the LaSalle Cooling Pond. As shown in Table 1, for the five year period from 1997 through 2001, the following species were stocked, largemouth bass (241,283), smallmouth bass (111,288), blue catfish (138,574), hybrid striped bass (39,464), bluegill (267,676), and both black and white crappie (25,361). Largemouth bass and smallmouth bass were stocked in each of the five years whereas hybrid striped bass were stocked in only three years (1998-2000) as were bluegill (1997, 1998 and 2000). Blue catfish were stocked in 1999 and 2001 while crappie were stocked only in 1998. Hybrid striped bass were stocked to provide a trophy fishery and to help control the gizzard shad populations. The total number of striped bass stocked since 1981 is 160,274 (1981 to 1995 - 120,810 and 1998 to 2000 - 39,464).

The IDNR has always managed the LaSalle Cooling Pond with the understanding that the primary purpose for the reservoir is to serve as a heat sink for LaSalle Station. Inherent in this understanding, was the knowledge that thermal caused mortality events would occasionally occur. The opportunity to provide multiple uses by opening the cooling pond to the public for recreation has been supported by the State, the Company, and the NRC.

The IDNR has managed the cooling pond through daily catch limits, size limits, limits on fishing gear and by stocking. The management plans have been adjusted as necessary based on changes in the cooling reservoir. All of the stakeholders are aware that the more continuous operation of both units and the power uprates have increased the temperature maximum and duration of higher temperatures. The conditions present in the reservoir are no longer conducive for coolwater fish species such as walleye and muskellunge and these species are no longer stocked.

The IDNR decision process takes into consideration the temperature regime and the shad populations. The stocking of hybrid striped bass and the recent introduction of blue catfish were based on their use of shad as a primary food source and their contribution to the recreational fishery. They are aware that larger striped base hybrids will in all likelihood experience thermal caused mortality, but feel there is value to the continued stocking of this fish. The rationale being, the smaller fish can still contribute to the recreational fishery and help reduce the shad populations. Discussions are ongoing about stocking additional species that are more temperature tolerant. The IDNR have established a daily creel for

striped, white or hybrid striped bass of ten fish with no more than three over 17 inches in length. The creel limit for largemouth or smallmouth is one fish daily with an 18-inch minimum limit. These limits help keep fish that feed on shad, in the reservoir longer and at a larger size.

In 2002,the IDNR fisheries manager for the reservoir indicated that they would like to annually stock 40,000 4-inch largemouth bass fingerlings, 20,000 3-inch smallmouth bass fingerlings, and 20,000 hybrid striped bass fingerlings. Bluegill and blue catfish will be stocked when fingerlings were available. Marking studies conducted in the 90's showed that although some natural reproduction of both basses occurs, supplemental stocking is required to maintain the populations.

The LaSalle Cooling Pond can still provide a fishery for fish species, which are more tolerant of higher water temperatures. The recent stocking efforts and future plans are appropriate for this reservoir. They are no longer stocking true coolwater species and are exploring the stocking of more appropriate species. Exelon should continue to review the reservoir management plans and work with the IDNR to implement approved plans. The IDNR continues to be interested in stocking hybrid striped bass but it should be on an experimental basis considering the new temperature regime.

Due to the maintenance and operational problems high numbers of shad at the intake can cause, it is to the Station's advantage to continue to stock hybrid striped bass since they will help control the shad populations. The Company should investigate if the IDNR will provide a letter that will release Exelon from any liability associated with any thermal related fish mortality events of species stocked on an experimental basis. A similar letter was provided by the IDNR for the Braidwood Cooling Pond soon after stocking began at that facility.

2. LaSalle Cooling Pond Fish Community

Fish populations surveys also began soon after the 2058 surface acre-cooling pond was filled in 1978. Monitoring was conducted by a number of groups including ComEd Environmental Services, Southern Illinois University and by the Illinois Department of Natural Resources. Initial surveys were more intensive and designed to monitor the development of the fish community. When the Units became operational (1982 and 1984) the program expanded to provide data on the gizzard shad population. The IDNR program is designed to provide information on sport fish and to a lessor extent, the forage base (primarily shad). Currently the IDNR conducts fall surveys and makes supplemental observations when they collect fish for sport show exhibits during early January.

IDNR

IDNR provided data for the five-year period from 1997 through 2001. The main focus during this time period was on the major sport species largemouth bass, smallmouth bass, channel catfish, bluegill and hybrid striped bass. The IDNR evaluates the fisheries data by comparing catch per unit effort (CPUE), Proportional Stock Density (PSD), Relative Stock Density (RSD) and Relative Weight (Wr). Both PSD and RSD use length frequency distribution data, which can be used to evaluate the structure and condition of sport fish populations. The PSD index represents the percentage of "stock length" fish in a population that are equal to or longer than a "quality length". For bass the IDNR uses 8 inches as the stock length and 12 inches as the quality length (PSD = number fish that are of 12 inches or greater divided by the number of fish that are 8 inches or greater times 100). The RSD is similar but it allows

the calculation of more than one index because there can be more than one size group of interest in the management of a fish population. The length categorization system can use up to five size groups: stock, quality, preferred, memorable and trophy. Once PSD and RSD goals are developed for a population that population can be periodically monitored and management measures taken as needed. Both PSD and RSD are centered on larger fish. They focus on monitoring and management of catchable size fish and any fish smaller than stock lengths do not enter the calculations. The Relative Weight index is used to evaluate a fish's relative health or well being. It compares the measured weight with an expected weight based on a species specific length weight relationship.

Largemouth bass

The table below compares catches per hour, PSD, RSD 14 (RSD 14 = % of 8 inch fish that are also 14 inches or greater) and Wr for largemouth bass for the last five years. The IDNR management CPUE goal is 60+ fish per hour which was obtained in three of the last five years (2001, 2000 and 1997 although the majority of the individuals collected were less than 12 inches in length. The PSD goal is 40-60 % and the RSD 14 goal is 25-35 %. These goals were met in all years except 2000. Relative weight values close to a hundred are thought to reflect optimal health and utilization of the food resources for a given population and when considerably less than 100 may reflect problems in food availability or/ feeding relationships. The IDNR goal for Wr is 90 to 110. Based on Wr values ranging from 96.2 to 120.8 the largemouth bass population is in good condition.

Largemouth Bass					
	2001	2000	1999	1998	1997
CPUE	99	95	8	21	191
PSD	63.6	3.8	58.3	80.0	62.5
RSD 14	28.0	1.8	58.3	40.0	25.0
Wr	113.4	120.8	112.4	96.2	98.4

In overview, the largemouth bass population is being maintained by the stocking program due to the lack of spawning, and nursery habitat (loss of aquatic vegetation), which reduced successful natural reproduction. Those fish that are present have plenty to eat as shown by the high relative weight values. Although numbers of smaller fish are within the goal, due in large part to the stocking program, the number of larger fish are lower than desired, which is one of the reasons there is a daily creel limit one 18 inch bass. The IDNR note that they have observed bacterial infections on largemouth bass (although not smallmouth bass) collected from the discharge canal in January. ComEd and SIU made a similar observation in the 80's. IDNR suggests that if this is a common occurrence it could result in reduced numbers of larger fish. Largemouth bass is considered a warmwater fish and in one study is reported to have an upper incipient lethal temperature of 36.8° C (98.2 ° F) for adult fish acclimated at a temperature of 30° C (86° F). The upper incipient lethal temperature is the lowest temperature at which 50 % of a group of fish will die of heat stress over a fairly long time period, usually a week.

Smallmouth bass

The table below compares catches per hour, PSD, RSD 14 and Wr for smallmouth bass for the last five years. The IDNR management CPUE goal of 60+ fish per hour was obtained in each of the last five

years. For smallmouth bass the PSD goal is 40-60 % and the RSD 14 goal is 20-30 %. These goals were not met in 1997 and in 1998 the PSD (38.1) was under the goal. The goals were met in the remaining years. The IDNR goal for Wr is 90 to 110. Since 1999 Wr has been in the 90's and above goal whereas in 1997-8 the values were in the 80's and below goal. Relative weights have been good in the last five years and have improved in the last three years. Although the values for these four indices were lower in 2001 then in 1999 and 2000, they were higher than in 1997 and 1998 (except for CPUE). In 1997 neither unit was operating and in 1998 only one unit was operational (starting in late August). As the units came back on line, the temperatures increased, which resulted in an increasing forage base and an improvement in the smallmouth bass population.

Smallmouth Bass					
	2001	2000	1999	1998	1997
CPUE	61	119	111	76	127
PSD	71.2	85.2	78.3	38.1	17.3
RSD 14	33.0	33.5	45.7	21.2	7.7
Wr	95.5	97.6	93.8	83.2	81.2

Smallmouth bass have been doing well in the cooling pond because the early life stages appear to have been able to take advantage of the habitat provided by the riprap. Natural reproduction has been successful and is aided by the IDNR stocking program. The abundant forage base and the extended growing season due to the thermal input resulted in an increased growth rate in recent years. Smallmouth bass are sometimes classified as coolwater fish however they are tolerant to relatively high temperatures. In recent years they are more often categorized as warmwater fish. Upper incipient lethal temperature for adult smallmouth bass is near 35° C (95° F).

Bluegill

The table below compares catches per hour, PSD, RSD 7 and Wr for bluegill for the last five years. CPUE has been variable for the four years for which data is available (no data for 1998). The IDNR CPUE management goal of 60-300 fish per hour was obtained in three of the years. In 1997 and 2000 CPUE was at the low end of the goal range and in 1999 at the high end. In 2001 (CPUE = 43) the goal was not reached. For bluegill the PSD goal is 20-40% and the RSD 7 goal is 10-15 %. Both goals were exceeded in 2001 and the PSD goal was exceeded in 2000. The goals were not met in the other years. The IDNR goal for bluegill Wr is 90 to 110. Wr values were above 106 for the four years for which data is available. Relative weights have been above goal in most years indicating a population in good condition.

Bluegill					
	2001	2000	1999	1998	1997
CPUE	43	63	282	N/A	62
PSD	41.2	60.2	7.2	N/A	10.8
RSD 7	18.8	4.3	5.1	N/A	0.0
Wr	106.9	112.3	112.2	N/A	112.2

Bluegills are important as both a recreational fishery and as a forage base for many of the other sport species. The IDNR stated that the bluegill in the LaSalle Cooling Pond were doing better than most

cooling reservoirs. Bluegills are temperature tolerant and should continue to contribute to the sport fishery. The upper incipient lethal temperature for bluegill adults is 37° C (98.6° F) for fish acclimated at 33° C (91.4° F) according to the literature.

Catfish

The table below compares catches per hour, PSD, RSD 14 and Wr for channel catfish for the last five years. Data for 1998 is not available because poor weather conditions limited the sampling effort. The channel catfish CPUE has increased in each of the last three years and exceeded the CPUE goal of 5-15 fish. The PSD goal of 40-70% was reached in 1997 and 2001, was well below goal in 2000, and was somewhat better in 1999. The goal for channel catfish Wr is 90-110 and was met in each of the years for which data is presented.

Channel Catfish					
	2001	2000	1999	1998	1997
CPUE	80	55	37	N/A	3
PSD	55.4	8.4	20.5	N/A	60.2
Wr	95.0	93.4	95.8	N/A	96.2

Channel catfish is popular bottom orientated sport species that is highly tolerant of warm temperatures. Upper incipient lethal temperatures are reported as high as 38° C (100° F) for this species. IDNR began stocking another species of catfish; the blue catfish in 1999 followed up by another stocking in 2001. Ken Clodfelter (IDNR) indicated that during January 2002 he collected five blue catfish in the discharge canal. Two of these fish weighed 10-11 pounds and one weighed 23 pounds. These fish were stocked in 10/99 at 4.8 inches. These fish were stocked in an attempt to provide a trophy species that would do well in warmwater. It appears that could be a possibility. Blue catfish feed on or near the bottom and to a lessor extent in midwater. It is an opportunistic feeder eating a variety of foods including shad.

Striped bass hybrid

Striped bass hybrid was another fish that was stocked to provide a trophy fishery and because their primary diet is gizzard and threadfin shad. They are difficult to collect by electrofishing except when they are congregating in confined areas such as the discharge canal. They can be collected in gillnets but again areas where the nets can be set to optimize collection are limited. The IDNR data is limited due to these sampling limitations. Based on the 2000 creel survey (third most harvested fish by weight) and observations by the concessionaire, the IDNR has indicated that striped bass hybrids are an important part of the recreational fishery. Striped bass hybrids were among the fish that were killed in 2000 and 2001 during periods of elevated water temperatures. In 2000 IDNR counted 1256 fish averaging six and one half pounds and in 2001 they reported 238 averaging five pounds. The SIU research program, (the LaSalle hatchery was originally constructed to support this program) included stocking and monitoring striped bass hybrid and other cool water species in the Collins and Dresden Cooling Ponds. As a result of these studies the conclusion was reached that if there was water available below 95 F coolwater species could contribute to a cooling reservoir recreational fishery. The possibility of continuing to stock striped bass hybrid should be investigated due to its importance as a sport fishery and use of shad as a primary food source.

Shad

Shad populations in the cooling pond are of interest to both the IDNR and Exelon. Shad are the primary forage base that supports many of the sportfish in the cooling pond but they can also cause operational problems. The IDNR sampling program in 1997 and 1998, due to poor sampling conditions, did not try to collect shad; they concentrated on sport fish. Clodfelter did make the observation that the numbers of shad in 1997 and 1998 were low compared to the most recent years. The table below presents the shad CPUE's (fish per hour) for 1999-2001. Although the IDNR fall program does not focus primarily on shad, the program results can provide an indication of the status of the shad population. Populations of a forage species (low on food chain) are expected to be larger than the predator community and more variable as they respond to food limitations, other environmental limitations and predator pressure.

	CPUE		
	2001	2000	1999
Gizzard shad	108	451	71
Threadfin shad	344	645	12
Gizzard shad x threadfin shad hybrid	46	0	0
Total shad	498	1,096	83

The shad population is driven by the temperature regime in the cooling pond. The higher temperatures results in a larger population of plankton which the shad eat, results in a longer growing season for shad (as well as other species) and an increased growth rate. During the nearly two year period (9/96-8/98) when both units were off, the shad population would have not had the advantages brought about by residing in a heated waterbody. Although, as shown below there can be too much of a good thing. After Unit One returned to service in 8/98 and Unit Two in 4/99 the shad populations began to increase. The data from the last three years indicates that the shad population is now comprised of two shad species gizzard shad and threadfin shad. In 2001 gizzard x threadfin hybrids were also collected. The shad catch per hour was 83 in 1999, climbed to 1096 in 2000 and in 2001 was 498, an elevated although reduced level. The reduced level in 2001 was the result of a fish kill in July 2001. The IDNR reported that an estimated 90,800 shad weighing at least 2000 lbs were lost.

The addition of threadfin shad to the shad community although not expected is not surprising. Threadfin are a southern species (natural upper range is southern Illinois), which can not survive northern winters without a constant source of heated water. A cooling reservoir can provide that environment. When ComEd began to open the cooling ponds for recreation the IDNR were interested in stocking threadfin into the Edison cooling ponds to increase the forage base. However, due to the problems gizzard shad caused at the intakes in some of the ComEd cooling ponds, ComEd stopped allowing the practice. LaSalle Cooling Pond received one stocking of 2000 threadfin shad in May 83 but the stocking was probably unsuccessful since only Unit One was in commercial service. Any threadfin that may have been in the cooling pond would not have survived the 96-97 and 97-98 winter periods when there was no thermal input to the reservoir.

The current population is a result of a threadfin shad population in the Illinois River and Des Plaines Rivers. Monitoring programs conducted at facilities upstream of the LaSalle river intake have

recorded threadfin shad annually since 1998. It would appear that they were stocked at some locality, which resulted in their introduction into the upper Illinois Waterway. It would appear that there are enough thermal inputs to the river system to enable threadfin shad to survive over the winter.

Early life stages of threadfin and gizzard shad enter the cooling reservoir, in late spring and the summer months, when water is pumped from the river during spawning and developmental periods. The traveling screens located at the river screen house only screen out larger fish. Both gizzard and threadfin shad will survive and reproduce in the cooling pond in most years. If thermal extremes, either high or low, occur such that the populations are reduced or eliminated shad will be reintroduced with the river water.

The upper incipient lethal temperature for gizzard shad was 35.7° C (96.3° F) in one study and 36.5° C (97.7° F) in another (differences probably related to acclimation temperatures). The preferred temperature of gizzard shad is 22°-23° C (72 to 74° F). Gizzard shad will suffer cold shock mortality at 1 - 2.2 ° C (34 to 36° F). The preferred temperature of threadfin shad is 34°-36° C (93.2 to 96.8° F). At 10 to 13 ° C (50 to 55.4° F) threadfin become stressed and few survive 4.4 ° C (39.9° F).

Water Temperature

Fred Bevington from LaSalle Station provided available hourly water temperature data by unit (from each units thermal sensors) for the period 1998-2001. The data was processed to obtain daily minimum and maximum temperature values for Unit One, Unit Two and both units combined. In addition, daily minimum and maximum water temperatures were provided (from chart recorders) for 1996 through July 1998.

Table 2 provides the minimum and maximum temperatures for 1996 through July 1998 as read from the charts. The minimum water temperatures during the winter of 96/97 were 31.0, 30.5, and 33.0° F during December, January and February, respectively. During the same winter months in 97/98, the temperatures were <30.0, 31.0 and 34.0° F, respectively. The maximum recorded temperature in 1997 occurred in August (87.5 ° F). Neither unit was operating during these periods.

Table 2 also presents the minimum inlet (at the cooling pond intake) and the maximum outlet (discharge to the cooling pond) temperatures for the units combined, by month for the August 1998 through 2001 period. The combined **minimum** yearly **inlet** water temperature was recorded in January for 1999, 2000, and 2001 (44.8° F, 45.2° F, and 48.5° F, respectively). Neither unit was in-service during the winter of 1998. At the other end of the temperature range, the **maximum** yearly **outlet** water temperature, although occurring during the summer, did not always occur in the same month. In 1998, with one unit operating, a maximum outlet temperature of 106.2° F was recorded in August. This was the first month of operation in 1998 for the unit. In 1999 the combined maximum temperature was 122.0° F, in 2000 the temperature was 120.6° F and in 2001 it was 126.9° F. In 1999 and 2001 the maximum water temperature was reached in July, while in 2000 it occurred in August although the July temperature was similar (120.2° F).

The temperature sensors for the units' usually do not record identical temperature values. Unit One often has the higher valve. The table below presents the highest **maximum inlet** (at the Intake) temperature recorded by either sensor for 1998-2001 from June through September. The highest

maximum inlet temperatures, in the last four years, occurred during 2001 in July and August. In the last three years temperatures at the intake were in the mid to high 90's during some part of the summer. Except for refuge area such as the borrow pits, the coolest water temperature in the cooling pond during these periods will be at the cooling pond intake.

Maximum Inlet Temperature (° F)				
	1998	1999	2000	2001
June	N.A.	93.3	86.8	92.5
July	N.A.	96.9	94.1	98.9
August	84.0	92.3	92.0	97.5
September	79.8	87.2	94.5	88.6

3. Gizzard Shad Control

Cooling reservoirs can provide excellent conditions for a number of forage and predator species to grow and multiply. In the period when cooling ponds like LaSalle's were being designed, the designers did not anticipate that fish could thrive in the environment. Forage fish, like gizzard and threadfin shad produce large numbers of young when conditions are favorable.

Small young of the year gizzard shad, have been a problem at intakes structures in cooling reservoirs, that were designed without an escape route for fish that end up in front of the screens. LaSalle's intake canal is a classic example. During times when shad have moved to the cool side of the pond, the configuration of the reservoir funnels them into the intake canal. The fish move into the canal and when they get to the dead end, they tend to congregate (especially the smaller fish), rather then move back up the canal against the 1-fps or more current. Shad make runs on the intake structure and can impact all the screens or a bank of screens. This can occur over a short time period or the run can be prolonged occurring over a longer period. Shad can overflow the trash basket resulting in their reimpingement, adding to the numbers of live shad being collected on the screens. In many cases the differential pressure on the screens becomes so great that the shear pins shear and/or a portion of the screen collapses.

The shad movements appear to be related to temperature and behavioral responses. Shad runs at facilities that were part of the old ComEd system occurred from spring through early fall. The fish that were most often involved in travelling screen plugging and damage have been 2 to 4 inches in length. Threadfin shad add to the problem because they are small, with a maximum size of six inches and a life span of three years. Gizzard shad grow that large in one year and can reach more than 14 inches with a life span of seven years. Gizzard shad outgrow the problem stage in one year however those that remain become reproducing adults. Within two years they are to big to serve as forage for the predators usually associated with cooling ponds such as largemouth bass, bluegill, channel catfish, and white bass. The majority of the gizzard shad the IDNR sampled in fall 2000 were 4.7 to 6.3 inches and in 2001 the majority were in the 5.1 to 6.7 inch range. As expected the threadfin shad were smaller, with the majority ranging from 2.8 to 3.5 inches in 2000 and 3.1 to 4.3 inches in 2001.

The current control of shad at LaSalle is based on physically keeping fish away from the intake by using a barrier net. Nets were successful used at what was the Public Service of Indiana's Gibson Plant. After review of other options and based on the Gibson success, ComEd installed nets at the

Collins and LaSalle Cooling Ponds. The entire Collins Cooling Pond was treated twice with a fish toxicant before a decision to use nets was made. Although numbers were reduced for a short time, ComEd continued to look for more successful approaches.

Nets were installed at LaSalle in 1982. They were originally made of Nylon with 1/2 inch mesh but were modified numerous times as ComEd staff gained experience. The final design included a 3/8 inch mesh net comprised of polyethylene because it keep smaller fish out, was more buoyant and was somewhat more resistant to biofouling. To provide redundancy a double barrier net system was used. The Gibson plant system was based on a triple barrier net system. In the 1993, as part of a cost savings initiative a decision was made to dispense with the second net at LaSalle.

In addition to the net(s) at LaSalle, a system was installed which used electricity to shock fishes congregating in the intake area. The concept was that by shocking the shad as they made a run on the intake, they would be dispersed so that the school would be more spread out when they reached the screens. This would spread the fish over more screen surface. The system has been used occasionally. I do not know how effective it has been.

Shad control approaches fall under the following classifications: behavioral mechanisms, diversion systems, physical barrier, biological, chemical, and temperature.

Behavioral systems depend on the response of fish to light, air bubbles, sound including noise and variable frequency sound generators or a combination of these responses. The responses vary by species and are not always consistent. Over time the individual fish may no longer respond as expected. These systems would not be a dependable alternative in a closed environment like a cooling pond. To be most effective, the fish should be able to leave the area after they have encountered a behavioral system (on a river they would move up or downstream). In a cooling pond they have no where to go and over time will keep encountering the system and may no longer respond to it.

A diversion system depends on diverting the fish away from the intake to an escape route. Unless you can divert the fish into the blowdown canal this system would also not work in a closed system. Diversion systems are another application of a physical structure in the water, which depend on a barrier (usually screens) and a current to move the fish in a predetermined direction.

Physical barriers prevent shad from reaching areas of concern. The barrier is effective if it keeps the fish out or reduces their numbers to the extent that the travelling screens can handle the load. Barriers include nets and leaky dikes. As long as they are properly installed and maintained, they will reduce the numbers of fish reaching the intake.

Biological control depends upon the stocking of predator fish(s) at high enough numbers to reduce the population through predation. Predators need to eat both the young fish (which are in the highest numbers) and feed upon the reproducing adult shad. Most of our freshwater predators feed upon fish they can swallow whole which is why adult gizzard shad have few predators. Striped bass is a predator, which will eat all size shad. Conditions in cooling ponds can be so favorable that more shad are produced they can be handled by the predators. Predator fish help control the shad population, but in the prolific cooling pond environment, they should be only one of the tools being used.

Chemical control using a fish toxicant like rotenone can be used to reduce the numbers of shad. In a totally closed system a toxicant could be used to kill all the shad as well as other fish. Toxicant application could be used to reduce the shad numbers in a given area, such as the area between the net and the intake. This technique was used to supplement the barrier nets at Collins. It was more necessary at that facility because the nets were not installed year round or maintained at the same level as the LaSalle installation. In order to use a fish toxicant in any water (public or private) in Illinois, it must be approved by the IDNR and applied under their direction (in most situations by them). If the whole pond was treated, blowdown to the river would need to be stopped until the poison dissipated or was detoxified by another chemical (potassium permanganate or chlorine for rotenone). If the intake canal was treated, the flow would need to be reduced as much as possible, in order to help controls costs by reducing the amount of chemical needed. The applicator will need to maintain the concentration at the low level needed to kill shad without reaching higher level concentrations, which will kill all the fish. Passage through the condensers should speed up the breakdown of the chemical but precautions may need to be taken to reduce impact on fish residing in the discharge canal. Timing of the toxicant application needs to be considered. Timing factors relate to water temperature, stage of shad life cycle, public access and power demand. The dead fish can cause their own problems if they are pulled into the intake faster then can be handled. The majority however should float to the surface and then sink to decompose on the reservoir bottom.

Temperature controls are usually natural and occur during the winter. In natural waters shad will experience mortality due to cold water temperatures. In LaSalle Cooling Pond this will not occur unless both units are down for an extended period, which is highly unlikely. During the last three winters, the lowest water temperature in the reservoir was in the mid to high 40's. These temperatures are above the 34 to 40° F temperatures at which shad will experience cold shock. The high water temperatures that the reservoir now obtains during the summer will provide a level of shad control. The shad die off in the summer of 2001 supports this statement. The upper incipient lethal temperature for gizzard shad is in the range of 96 to 98° F. These temperatures were reached in the reservoir in each of the last three years and in 2001 these temperatures were reached at the intake. Threadfin shad are more temperature resistant and will survive at higher temperatures than gizzard shad.

Shad control at LaSalle Cooling Pond should be accomplished using a multi-prong approach.

First and primary, because it provides predictable protection, is the use of a physical barrier to keep shad away from sensitive areas. This system as long as it is maintained, will protect the intake year round from any undesirable fish. The present system of one net and backup shocker system appears to have been effective since late 1993, when the station moved from a two net to one net system. The cleaning schedule should be reevaluated to insure that the net would stay in place when needed. The rate and amount of biofouling should be evaluated to see if the increased water temperatures year round will increase biofouling on the net.

The secondary approaches include temperature and stocking of predators will help reduce the numbers of shad. The summer water temperatures in most years will cause some amount of shad mortality. Continuation of fish stocking with an emphasis on fish species that are less sensitive to thermally enriched water will provide for recreational opportunities and reduce shad. An effort should be made to obtain a letter from the IDNR that states that Exelon will not be held responsible for thermal mortality events with experimental stocked fish (to include stripped bass hybrids). Such a letter was

provided by the IDNR when the Braidwood Cooling Pond was stocked with striped bass. The water temperatures in the cooling pond have reached levels where fish mortality events should be expected every summer. The magnitude will vary depending on the temperature level obtained, the duration of the thermal event, the temperature to which the fish have been acclimated and how long the refuge areas can provide refuge. During a particular thermal event, increased temperatures and/or reduced levels of dissolved oxygen will over time reduce the amount of refuge area available. Stocked fish will be among the fishes that are killed. The reduction of shad numbers due to temperature and stocking will vary from year to year depending upon each year's circumstances.

The other secondary approach is chemical control. This approach could be used most easily to reduce the shad numbers in given areas such as the intake canal. Treating the whole pond at once would be expensive and require no blowdown to the river for at least some period of time. If a whole pond treatment was desired, arrangements would need to be made in advance to obtain the quantities of toxicant needed. Treating small or large areas will require the direct involvement of the IDNR. Although shad can be targeted, some non-targeted fish will also be impacted until the concentration is diluted to the levels that effect only shad. Rotenone efforts are not permanent due to reintroduction of shad with water pumped from the river and the high probability that some shad that survive the treatment. Treatments will most likely need to be repeated annually. An annual program would probably consist of two treatments, one targeting adults in the spring and one targeting young of the year later in the year.

A program designed for shad control should also include inspections of the traveling screen and fish removal systems to ensure they are operating as designed. Inspection items should include: are the sprays oriented correctly, is the water pressure adequate to remove debris, how easy is it for fish to drop behind the screens, is the trash basket effective in retaining fish and are procedures in place so that the baskets are dumped as soon as necessary to prevent spillage back into the intake forebay.

Table 1. Summary of Fish Stocked into LaSalle Cooling Pond 1997- 2001.

	Fish Species					
	Largemouth bass		Smallmouth bass		Blue Catfish	
Year	Number	Size (inches)	Number	Size (inches)	Number	Size (inches)
2001	44,477	3.7 - 4.0	19,620	4.0 - 4.8	68,011	5.0 - 5.5
2000	63,798	2.8 - 4.1	20,580	3.8 - 4.0	—	—
1999	50,175	2.5 - 4.5	24,531	3.8 - 4.0	70,563	4.8
1998	41,176	3.6 - 5.5	22,166	3.8 - 3.7	—	—
1997	41,659	3.7 - 4.5	24,391	2.7 - 4.0	—	—
Total	241,283		111,288		138,574	

	Striped Bass Hybrid		Bluegill		Crappie	
Year	Number	Size (inches)	Number	Size (inches)	Number	Size (inches)
2001	—	—	—	—	—	—
2000	7,360	7.0	35,200	1.2	—	—
1999	11,524	2.0	—	—	—	—
1998	20,580	1.75	192,576	1.0	25,361	4.0
1997	—	—	39,900	1.2	—	—
Total	39,464		267,676		25,361	

Table 2. Monthly Minimum and Maximum Temperatures (° F) Units Combined.

	1996*		1997*		1998*	
	Minimum Temp.	Maximum Temp.	Minimum Temp.	Maximum Temp.	Minimum Inlet	Maximum Outlet
January	31.5	52.5	30.5	37.0	31.0	42.5
February	30.0	47.5	33.0	39.0	34.0	45.0
March	35.0	51.0	34.0	49.0	32.0	59.0
April	48.0	63.0	38.0	59.0	47.5	60.0
May	54.5	79.0	48.5	67.5	55.0	83.0
June	70.5	89.5	59.0	84.0	60.0	91.0
July	70.0	89.0	69.0	85.5	75.0	90.0
August	74.5	94.0	68.0	87.5	76.5	106.2
September	59.0	88.5	62.0	82.0	73.1	105.0
October	48.5	68.0	46.0	69.0	60.0	96.8
November	32.0	49.0	<30.0	57.9	53.3	90.8
December	31.0	36.0	<30.0	40.0	46.8	90.0

	1999		2000		2001	
	Minimum Inlet	Maximum Outlet	Minimum Inlet	Maximum Outlet	Minimum Inlet	Maximum Outlet
January	44.8	84.5	45.2	90.3	48.5	88.9
February	47.4	91.6	49.9	94.9	48.6	93.7
March	48.0	94.2	57.3	98.3	53.2	98.2
April	58.6	95.9	57.2	102.8	59.6	100.6
May	66.2	110.6	71.1	104.9	69.3	111.3
June	77.5	120.9	68.1	111.5	70.4	118.1
July	83.9	122.0	84.1	120.2	82.5	126.9
August	81.3	119.5	83.4	117.9	82.6	124.9
September	72.0	110.9	72.6	120.6	71.0	116.3
October	60.8	104.0	63.2	107.1	57.2	109.2
November	53.5	94.1	59.7	99.5	58.1	105.4
December	47.2	86.2	46.8	93.7	46.0	95.0

* January 96 through August 98 temperatures from chart recorder.

Notes: Underlined values indicate only one unit was operating.
No units were operating from late September 1996 through late August 1998.