RS-15-179
ENCLOSURE B

LaSalle County Station, Units 1 & 2
Response Sheets For NRC License Renewal Environmental Review
Requests for Additional Information

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TABLE OF CONTENTS

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 001; RAI #: MA-01 Category: Meteorology, Air Quality & Noise

Statement of Question:
Provide the following meteorological information from the data recorded at the LaSalle County Station, Units 1 and 2 (LSCS) meteorological facility for the most recent 5 years for which data is available:

a. mean monthly and annual temperatures;
b. mean monthly precipitation and annual precipitation; and
c. seasonal and annual summary wind statistics in the form of wind direction, wind roses, annual average wind speed and peak wind gust.

Response:

a. Mean monthly temperature data are presented in Section 7 of the LSCS Meteorological Monitoring Program monthly monitoring reports. These monthly reports provide the basis for the LSCS Meteorological Monitoring Program annual reports. The average of the monthly mean temperatures and the average annual temperatures (based upon the monthly mean temperatures) for the years 2010 through 2014 are presented in Table 1 below.

Table 1
LaSalle County Station Mean Monthly Temperatures at 33 feet (°F)
2010 - 2014

	2010	2011	2012	2013	2014	AVERAGE Mean (for month)
January	19.1	20.5	30.2	26.8	16.0	22.5
February	25.0	26.8	33.0	27.0	15.4	25.4
March	42.9	38.3	53.2	32.2	31.7	39.7
April	57.2	49.9	52.4	47.7	49.8	51.4
May	62.7	61.2	66.5	63.6	62.5	63.3
June	72.1	71.7	72.8	69.8	71.3	71.5
July	75.9	79.0	80.1	72.5	69.3	75.4
August	75.3	73.3	72.3	72.1	71.7	72.9
September	65.7	61.6	63.6	66.7	63.2	64.2
October	56.3	54.6	50.6	53.7	52.5	53.5
November	41.9	43.9	39.8	37.2	33.6	39.3
December	20.8	35.0	35.4	23.9	31.5	29.3
AVERAGE Mean (for year)	51.2	51.3	54.2	49.4	47.4	

SOURCE: Monthly Reports on Meteorological Monitoring Program at the LaSalle County Nuclear Station (2010 to 2014)

b. Monthly and annual total precipitation data are presented each year in the LSCS Meteorological Monitoring Program annual report, Table 12. The mean monthly and annual total precipitation amounts during 2010 through 2014 are summarized in Table 2 below. Copies of the annual reports for 2010 through 2014 are being provided as Attachments 1 through 5, respectively, to this RAI response.

Table 2
LaSalle County Station Monthly and Annual Precipitation Totals and Averages (inches)*
2010 - 2014

	2010	2011	2012	2013	2014	Average (for month)
January	0.40	0.10	0.37	2.40	1.36	0.93
February	0.05	0.96	0.87	1.08	1.34	0.86
March	1.70	1.55	1.83	0.86	0.85	1.36
April	2.06	4.15	1.15	6.29	3.08	3.35
May	4.08	4.40	5.92	6.56	3.75	4.94
June	7.85	5.88	2.23	5.44	8.04	5.89
July	1.95	0.90	0.58	1.15	2.21	1.36
August	1.31	1.69	4.14	3.43	8.25	3.76
September	2.84	3.20	2.88	0.57	3.54	2.61
October	1.33	0.91	3.72	3.67	2.40	2.41
November	1.37	3.40	0.86	2.00	1.38	1.80
December	1.45	2.04	0.75	0.61	1.03	1.18
Annual Total	26.39	29.18	25.3	34.06	37.23	

* Some data were missing – actual precipitation may be underreported.
SOURCE: Table 12, LSCS Meteorological Monitoring Program annual reports (2010 to 2014)

c. Seasonal and annual summary wind statistics in the form of wind direction and speed frequency distribution tables and wind roses are provided by season and for the year in each LSCS Meteorological Monitoring Program annual report, Tables 7 through 11. Copies of the annual reports for the years 2010 through 2014 are being provided as Attachments 1 through 5, respectively, to this RAI response.

Table 3 below presents the predominant quarterly and annual wind speeds and directions at the 375-foot level for years 2010 through 2014. The predominant wind direction at the LSCS site was west-northwest (WNW) during three of the five years from 2010 through 2014 and south-southwest (SSW) during the remaining two years. Wind speed at the 375-foot level was between 7.6 and 24.5 mph approximately 73 % of the time during 2010 through 2014, and was greater than 12.5 mph approximately 70% of the time.

Each LSCS Meteorological Monitoring Program monthly report contains the mean and maximum recorded wind speeds for the month. Table 4 (below) summarizes these data at the meteorological tower 33-ft elevation and indicates the average of the monthly mean wind speeds at that elevation for each year from 2010 through 2014. Table 4 also shows the maximum wind speed recorded at the meteorological tower 33-ft elevation during each year from 2010 through 2014. At that elevation, the highest recorded wind speed during that period occurred in February 2011 and was 37.2 mph.

Table 3
LaSalle County Station Quarterly and Annual
Wind Speed and Direction at 375 feet
2010 - 2014

	2010			
	Speed (mph)	**%**	**Direction**	**%**
1st Qtr	12.6 to 18.5	33.6	NW	14.00
2nd Qtr	12.6 to 18.5	28.48	SSW	8.76
3rd Qtr	12.6 to 18.5	32.07	SSW	14.23
4th Qtr	12.6 to 18.5	28.48	WNW	11.15
Annual	12.6 to 18.5	30.61	WNW	9.40

	2011				2012			
	Speed (mph)	**%**		**%**	**Speed (mph)**	**%**	**Direction**	**%**
1st Qtr	12.6 to 18.5	30.1	NW	12.58	> 24.5	28.07	WNW	13.16
2nd Qtr	12.6 to 18.5	28.17	SSW	8.99	12.6 to 18.5	33.27	SSW	11.69
3rd Qtr	7.6 to 12.5	31.2	SW	8.07	12.6 to 18.5	34.99	SSW	9.32
4th Qtr	12.6 to 18.5	29.95	SSW	16.22	12.6 to 18.5	30.49	SSW	13.98
Annual	12.6 to 18.5	29.27	SSW	9.63	12.6 to 18.5	31.01	SSW	11.26

	2013				2014			
	Speed (mph)	**%**	**Direction**	**%**	**Speed (mph)**	**%**	**Direction**	**%**
1st Qtr	12.6 to 18.5	27.21	WNW	16.64	12.6 to 18.5	27.91	WNW	14.09
2nd Qtr	12.6 to 18.5	31.99	SSW	10.34	12.6 to 18.5	32.37	S	9.80
3rd Qtr	12.6 to 18.5	35.85	SW	13.49	12.6 to 18.5	31.60	SSW	9.73
4th Qtr	12.6 to 18.5	35.58	WNW	12.18	12.6 to 18.5	29.63	WNW	15.66
Annual	12.6 to 18.5	32.72	WNW	9.84	12.6 to 18.5	30.39	WNW	11.06

SOURCE: LSCS Meteorological Monitoring Program annual reports (2010 to 2014)

Table 4
LaSalle County Station
Monthly Maximum and Mean Wind Speeds (mph) at 33 feet
2010 - 2014

	2010		2011		2012		2013		2014	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean
January	25.9	11.4	25.0	10.8	34.0	12.7	30.9	12.9	35.1	14.9
February	24.4	9.9	37.2	12.4	29.8	11.5	30.5	12.8	35.4	15.4
March	21.9	9.4	26.4	11.3	33.2	13.0	29.8	11.6	31.7	11.9
April	32.4	12.1	34.5	13.8	32.5	12.6	29.6	12.7	30.1	12.9
May	29.9	10.6	28.6	10.7	32.4	10.7	26.2	10.5	28.2	11.0
June	24.3	8.5	23.6	10.0	20.3	9.4	21.5	8.8	28.9	9.6
July	22.8	7.5	21.8	7.3	18.0	7.9	17.0	7.4	24.0	8.1
August	17.6	7.0	20.4	7.0	17.2	7.1	17.0	6.9	17.2	7.2
September	26.6	9.9	26.2	8.7	22.1	8.7	17.9	8.1	20.7	7.5
October	35.4	10.6	26.3	9.4	35.2	11.6	20.7	9.3	28.6	9.7
November	29.6	11.8	33.1	13.1	31.2	9.1	33.0	12.2	29.0	13.0
December	30.2	11.2	28.7	10.6	35.5	11.3	22.9	11.1	22.9	10.0
Average Mean Wind Speed (mph) (for year)		10.0		10.4		10.5		10.4		10.9
Max Recorded Wind Speed (mph) (for year)	35.4		37.2		35.5		33.0		35.4	

Source: Monthly Reports on Meteorological Monitoring Program at the LaSalle County Nuclear Station (2010 to 2014)

List of Attachments:

1. 2010 Annual Report on the Meteorological Monitoring Program at the LaSalle County Nuclear Power Station
2. 2011 Annual Report on the Meteorological Monitoring Program at the LaSalle County Nuclear Power Station
3. 2012 Annual Report on the Meteorological Monitoring Program at the LaSalle County Nuclear Power Station
4. 2013 Annual Report on the Meteorological Monitoring Program at the LaSalle County Nuclear Power Station
5. 2014 Annual Report on the Meteorological Monitoring Program at the LaSalle County Nuclear Power Station

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 002; RAI #: MA-02 **Category:** Meteorology, Air Quality, & Noise

Statement of Question:
The Environmental Report (ER) identifies that LSCS is subject to the emission standards for hazardous air pollutants for reciprocating internal combustion engines, 40 CFR Part 63, Subpart ZZZZ.

a. Clarify if the gasoline dispensing facility and fuel storage tank are subject to National Emission Standards for Hazardous Air Pollutants: Gasoline Dispensing Facilities (40 CFR Part 63, Subpart CCCCCC);
b. Provide annual hazardous air pollutants (HAP) emissions from LSCS emission sources for the most recent 5 years for which data is available.

Response:
40 CFR Part 63 Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants from Source Category: Gasoline Dispensing Facilities, applies to the LSCS gasoline dispensing facility. In 2014, LSCS dispensed approximately 1,580 gallons of gasoline per month.

40 CFR 63.11116 establishes the regulatory requirements for gasoline dispensing facilities with a throughput of less than 10,000 gallons of per month. LSCS is in compliance with the applicable requirements.

As the ER Section 3.3 states, the total annual quantity of hazardous air pollutants from LSCS sources is well below the hazardous air pollutant significance level of 10 tons per year. Hence, hazardous air pollutants are not reported. Table 1 contains the calculated hazardous air pollutant emissions for large engines at LSCS for 2009 through 2014. Table 2 contains the calculated hazardous air pollutant emissions for small engines at LSCS for 2009 through 2014.

List of Attachments:
None.

Table 1
Hazardous Air Pollutant Emissions for Large Engines (600 HP or greater)*

Year	Fuel Use (gal, #2 Diesel)	MMBTU	HAP	Emission Factor	Units	Emission	Units
2009	32703	0.139486	Benzene	7.76E-04	Pounds/MMBTU	1.77E-03	Tons/Year
	32703	0.139486	Toluene	2.81E-04	Pounds/MMBTU	6.41E-04	Tons/Year
	32703	0.139486	Formaldehyde	7.89E-05	Pounds/MMBTU	1.80E-04	Tons/Year
	32703	0.139486	Acetaldehyde	2.52E-05	Pounds/MMBTU	5.75E-05	Tons/Year
	32703	0.139486	Acrolein	7.88E-06	Pounds/MMBTU	1.80E-05	Tons/Year
	32703	0.139486	Xylenes	1.93E-04	Pounds/MMBTU	4.40E-04	Tons/Year
	32703	0.139486	Naphthalene	1.30E-04	Pounds/MMBTU	2.97E-04	Tons/Year
				2009 TOTAL HAP EMISSIONS		**3.40E-03**	Tons/Year
2010	30802	0.139001	Benzene	7.76E-04	Pounds/MMBTU	1.66E-03	Tons/Year
	30802	0.139001	Toluene	2.81E-04	Pounds/MMBTU	6.02E-04	Tons/Year
	30802	0.139001	Formaldehyde	7.89E-05	Pounds/MMBTU	1.69E-04	Tons/Year
	30802	0.139001	Acetaldehyde	2.52E-05	Pounds/MMBTU	5.39E-05	Tons/Year
	30802	0.139001	Acrolein	7.88E-06	Pounds/MMBTU	1.69E-05	Tons/Year
	30802	0.139001	Xylenes	1.93E-04	Pounds/MMBTU	4.13E-04	Tons/Year
	30802	0.139001	Naphthalene	1.30E-04	Pounds/MMBTU	2.78E-04	Tons/Year
				2010 TOTAL HAP EMISSIONS		**3.19E-03**	

Table 1 (continued)
Hazardous Air Pollutant Emissions for Large Engines (600 HP or greater)

Year	Fuel Use (gal, #2 Diesel)	MMBTU	HAP	Emission Factor	Units	Emission	Units
2011	30408	0.129628	Benzene	7.76E-04	Pounds/MMBTU	1.53E-03	Tons/Year
	30408	0.129628	Toluene	2.81E-04	Pounds/MMBTU	5.54E-04	Tons/Year
	30408	0.129628	Formaldehyde	7.89E-05	Pounds/MMBTU	1.56E-04	Tons/Year
	30408	0.129628	Acetaldehyde	2.52E-05	Pounds/MMBTU	4.97E-05	Tons/Year
	30408	0.129628	Acrolein	7.88E-06	Pounds/MMBTU	1.55E-05	Tons/Year
	30408	0.129628	Xylenes	1.93E-04	Pounds/MMBTU	3.80E-04	Tons/Year
	30408	0.129628	Naphthalene	1.30E-04	Pounds/MMBTU	2.56E-04	Tons/Year
				2011 TOTAL HAP EMISSIONS		**2.94E-03**	Tons/Year
2012	37684	0.138391	Benzene	7.76E-04	Pounds/MMBTU	2.02E-03	Tons/Year
	37684	0.138391	Toluene	2.81E-04	Pounds/MMBTU	7.33E-04	Tons/Year
	37684	0.138391	Formaldehyde	7.89E-05	Pounds/MMBTU	2.06E-04	Tons/Year
	37684	0.138391	Acetaldehyde	2.52E-05	Pounds/MMBTU	6.57E-05	Tons/Year
	37684	0.138391	Acrolein	7.88E-06	Pounds/MMBTU	2.05E-05	Tons/Year
	37684	0.138391	Xylenes	1.93E-04	Pounds/MMBTU	5.03E-04	Tons/Year
	37684	0.138391	Naphthalene	1.30E-04	Pounds/MMBTU	3.39E-04	Tons/Year
				2012 TOTAL HAP EMISSIONS		**3.89E-03**	Tons/Year

Table 1 (continued)
Hazardous Air Pollutant Emissions for Large Engines (600 HP or greater)

Year	Fuel Use (gal, #2 Diesel)	MMBTU	HAP	Emission Factor	Units	Emission	Units
2013	29641	0.139034	Benzene	7.76E-04	Pounds/MMBTU	1.60E-03	Tons/Year
	29641	0.139034	Toluene	2.81E-04	Pounds/MMBTU	5.79E-04	Tons/Year
	29641	0.139034	Formaldehyde	7.89E-05	Pounds/MMBTU	1.63E-04	Tons/Year
	29641	0.139034	Acetaldehyde	2.52E-05	Pounds/MMBTU	5.19E-05	Tons/Year
	29641	0.139034	Acrolein	7.88E-06	Pounds/MMBTU	1.62E-05	Tons/Year
	29641	0.139034	Xylenes	1.93E-04	Pounds/MMBTU	3.98E-04	Tons/Year
	29641	0.139034	Naphthalene	1.30E-04	Pounds/MMBTU	2.68E-04	Tons/Year
				2013 TOTAL HAP EMISSIONS		**3.07E-03**	Tons/Year
2014	42076	0.138743	Benzene	7.76E-04	Pounds/MMBTU	2.27E-03	Tons/Year
	42076	0.138743	Toluene	2.81E-04	Pounds/MMBTU	8.20E-04	Tons/Year
	42076	0.138743	Formaldehyde	7.89E-05	Pounds/MMBTU	2.30E-04	Tons/Year
	42076	0.138743	Acetaldehyde	2.52E-05	Pounds/MMBTU	7.36E-05	Tons/Year
	42076	0.138743	Acrolein	7.88E-06	Pounds/MMBTU	2.30E-05	Tons/Year
	42076	0.138743	Xylenes	1.93E-04	Pounds/MMBTU	5.63E-04	Tons/Year
	42076	0.138743	Naphthalene	1.30E-04	Pounds/MMBTU	3.79E-04	Tons/Year
				2014 TOTAL HAP EMISSIONS		**4.35E-03**	Tons/Year

*** HAP Emissions are calculated based on AP-42 Table 3.4-3 and 3.4-4 Emission Factors.**

Table 2
Hazardous Air Pollutant Emissions for Small Engines (less than 600 HP)*

Year	Fuel Use (gal, #2 Diesel)	MMBTU	HAP	Emission Factor	Units	Emission	Units
2009	11673	0.139486	Benzene	9.33E-04	Pounds/MMBTU	7.60E-04	Tons/Year
	11673	0.139486	Toluene	4.09E-04	Pounds/MMBTU	3.33E-04	Tons/Year
	11673	0.139486	Formaldehyde	1.18E-03	Pounds/MMBTU	9.61E-04	Tons/Year
	11673	0.139486	Acetaldehyde	7.67E-04	Pounds/MMBTU	6.24E-04	Tons/Year
	11673	0.139486	Acrolein	9.25E-05	Pounds/MMBTU	7.53E-05	Tons/Year
	11673	0.139486	Xylenes	2.85E-04	Pounds/MMBTU	2.32E-04	Tons/Year
	11673	0.139486	Naphthalene	8.45E-05	Pounds/MMBTU	6.88E-05	Tons/Year
				2009 TOTAL HAP EMISSIONS		**3.05E-03**	Tons/Year
2010	10165	0.139001	Benzene	9.33E-04	Pounds/MMBTU	6.59E-04	Tons/Year
	10165	0.139001	Toluene	4.09E-04	Pounds/MMBTU	2.89E-04	Tons/Year
	10165	0.139001	Formaldehyde	1.18E-03	Pounds/MMBTU	8.34E-04	Tons/Year
	10165	0.139001	Acetaldehyde	7.67E-04	Pounds/MMBTU	5.42E-04	Tons/Year
	10165	0.139001	Acrolein	9.25E-05	Pounds/MMBTU	6.53E-05	Tons/Year
	10165	0.139001	Xylenes	2.85E-04	Pounds/MMBTU	2.01E-04	Tons/Year
	10165	0.139001	Naphthalene	8.45E-05	Pounds/MMBTU	5.97E-05	Tons/Year
				2010 TOTAL HAP EMISSIONS		**2.65E-03**	

Table 2 (continued)
Hazardous Air Pollutant Emissions for Small Engines (less than 600 HP)*

Year	Fuel Use (gal, #2 Diesel)	MMBTU	HAP	Emission Factor	Units	Emission	Units
2011	10035	0.129628	Benzene	9.33E-04	Pounds/MMBTU	6.07E-04	Tons/Year
	10035	0.129628	Toluene	4.09E-04	Pounds/MMBTU	2.66E-04	Tons/Year
	10035	0.129628	Formaldehyde	1.18E-03	Pounds/MMBTU	7.67E-04	Tons/Year
	10035	0.129628	Acetaldehyde	7.67E-04	Pounds/MMBTU	4.99E-04	Tons/Year
	10035	0.129628	Acrolein	9.25E-05	Pounds/MMBTU	6.02E-05	Tons/Year
	10035	0.129628	Xylenes	2.85E-04	Pounds/MMBTU	1.85E-04	Tons/Year
	10035	0.129628	Naphthalene	8.45E-05	Pounds/MMBTU	5.50E-05	Tons/Year
				2011 TOTAL HAP EMISSIONS		**2.44E-03**	Tons/Year
2012	8043	0.138391	Benzene	9.33E-04	Pounds/MMBTU	5.19E-04	Tons/Year
	8043	0.138391	Toluene	4.09E-04	Pounds/MMBTU	2.28E-04	Tons/Year
	8043	0.138391	Formaldehyde	1.18E-03	Pounds/MMBTU	6.57E-04	Tons/Year
	8043	0.138391	Acetaldehyde	7.67E-04	Pounds/MMBTU	4.27E-04	Tons/Year
	8043	0.138391	Acrolein	9.25E-05	Pounds/MMBTU	5.15E-05	Tons/Year
	8043	0.138391	Xylenes	2.85E-04	Pounds/MMBTU	1.59E-04	Tons/Year
	8043	0.138391	Naphthalene	8.45E-05	Pounds/MMBTU	4.70E-05	Tons/Year
				2012 TOTAL HAP EMISSIONS		**2.09E-03**	Tons/Year

Table 2 (continued)
Hazardous Air Pollutant Emissions for Small Engines (less than 600 HP)*

Year	Fuel Use (gal, #2 Diesel)	MMBTU	HAP	Emission Factor	Units	Emission	Units
2013	10957	0.139034	Benzene	9.33E-04	Pounds/MMBTU	7.11E-04	Tons/Year
	10957	0.139034	Toluene	4.09E-04	Pounds/MMBTU	3.12E-04	Tons/Year
	10957	0.139034	Formaldehyde	1.18E-03	Pounds/MMBTU	8.99E-04	Tons/Year
	10957	0.139034	Acetaldehyde	7.67E-04	Pounds/MMBTU	5.84E-04	Tons/Year
	10957	0.139034	Acrolein	9.25E-05	Pounds/MMBTU	7.05E-05	Tons/Year
	10957	0.139034	Xylenes	2.85E-04	Pounds/MMBTU	2.17E-04	Tons/Year
	10957	0.139034	Naphthalene	8.45E-05	Pounds/MMBTU	6.44E-05	Tons/Year
				2013 TOTAL HAP EMISSIONS		**2.86E-03**	Tons/Year
2014	17138	0.138743	Benzene	9.33E-04	Pounds/MMBTU	1.11E-03	Tons/Year
	17138	0.138743	Toluene	4.09E-04	Pounds/MMBTU	4.86E-04	Tons/Year
	17138	0.138743	Formaldehyde	1.18E-03	Pounds/MMBTU	1.40E-03	Tons/Year
	17138	0.138743	Acetaldehyde	7.67E-04	Pounds/MMBTU	9.12E-04	Tons/Year
	17138	0.138743	Acrolein	9.25E-05	Pounds/MMBTU	1.10E-04	Tons/Year
	17138	0.138743	Xylenes	2.85E-04	Pounds/MMBTU	3.39E-04	Tons/Year
	17138	0.138743	Naphthalene	8.45E-05	Pounds/MMBTU	1.00E-04	Tons/Year
				2014 TOTAL HAP EMISSIONS		**4.46E-03**	Tons/Year

*** HAP Emissions are calculated based on Emission Factors given in AP-42 Table 3.3-2. Exelon Nuclear began gathering fuel use data for small engines in 2012. Small Engine fuel consumption for 2012 through 2014 is approximately 30% of the Large Engine fuel consumption. On this basis the Small Engine fuel consumption is calculated as 33% of the Large Engine fuel consumption for 2009, 2010 and 2011.**

LaSalle Environmental Audit – Audit Needs Question

Index #: **003;** **RAI #: MA-03** **Category:** Meteorology, Air Quality, & Noise

Statement of Question:
Describe and identify the small engines (less than 600 horsepower) included in the HAP emission calculations and that are exempt from air permitting requirements. Provide a description of the frequency of use of these small engines.

Response:
Table 1, below, lists the small engines (less than 600 horsepower) included in HAP emission calculations for LSCS. All of the listed small engines provide power for generators or pumps during emergency circumstances. Unless an emergency arises, they are operated only for short periods during routine surveillance and testing, which occurs at a frequency (e.g., quarterly, semi-annually) established by plant procedures for each engine. Exelon Nuclear began tracking fuel use data (i.e., amount purchased) for small engines in 2012. These data are used for calculating HAP emissions.

Table 1
LSCS Stationary Small Engines

Diesel Fire Pump “A”
Diesel Fire Pump “B”
Technical Support Center Diesel Generator
Security Diesel Generator
B.5.b Emergency Diesel Pump
FLEX Emergency Diesel Hale Pump (0FF30A)
FLEX Emergency Diesel Hale Pump (0FF30B)
FLEX Emergency Diesel Pump #2 (HL130)
FLEX Emergency Diesel Pump #3 (HL130)
South Service Building Emergency Diesel Generator

List of Attachments:
None.

LaSalle Environmental Audit – Audit Needs Question

Index #: **004;** **RAI #:** **MA-04** **Category:** Meteorology, Air Quality & Noise

Statement of Question:
Are there expected upgrade/replacement activities for equipment/operation that could increase or decrease air emissions over the license renewal period? If so, describe those upgrade/replacement activities.

Response:
No currently known equipment or operational upgrade/replacement activities would increase or decrease air emissions during the license renewal term.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 005; RAI #: MA-05 **Category:** Meteorology, Air Quality & Noise

Statement of Question:
Describe the compliance history associated with LSCS Federally Enforceable State Operating Permit (FESOP) permit No. 75040086. Provide the five most recent annual emission reports submitted to the Illinois Environmental Protection Agency (IEPA) associated with LSCS FESOP permit No. 75040086. Has LSCS received any Notice of Violations (NOVs) from the IEPA regarding the FESOP? If so, provide copies of such NOVs.

Response:
The LaSalle annual emissions reports for the most recent 5 years for which reports have been submitted are attached.

LaSalle has received no notices of violation (NOVs) related to compliance with the FESOP.

List of Attachments
1. 2010 Annual Emissions Report
2. 2011 Annual Emissions Report
3. 2012 Annual Emissions Report
4. 2013 Annual Emissions Report
5. 2014 Annual Emissions Report

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 006; RAI #: MA-06 **Category:** Meteorology, Air Quality & Noise

Statement of Question:
Section 4.2 of the ER states that "[a]ir quality effects of transmission lines were not evaluated because, as is explained in Section 2.2.6 of the ER, no LSCS transmission lines are within the scope of the LSCS license renewal environmental review." Section 2.2.6 of the ER discusses that the offsite transmission lines are not in scope in accordance with footnote 4 of Table B–1 of 10 CFR Part 51, Subpart A. However, Section 2.2.6 does not identify the in-scope transmission lines, which as defined in footnote 4 of Table B–1 are "transmission lines that connect the nuclear power plant to the substation where electricity is fed into the regional power distribution." Section 2.2.6 of the ER identifies electrical connections between the main plant and the LSCS switchyard. Therefore, the Category 1 issue, "Air Quality effects of transmission lines" is applicable to LSCS. Provide an evaluation of any new and significant information that pertains to the Category 1 issue, "Air Quality effects of transmission lines" for those inscope transmission lines that connect the nuclear power plant to the on-site LSCS switchyard.

Response:
In the Generic Environmental Impact Statement (GEIS; NUREG-1437, Revision 1) for renewal of nuclear power plant licenses, the NRC concluded that ozone concentrations generated by transmission lines are too low to cause any significant effects, and that the minute amounts of oxides of nitrogen produced by transmission lines are similarly insignificant. Exelon Generation identified no operational or design features of the electrical connections between the main plant and the LSCS onsite switchyard that are different from those assumed by the NRC for purposes of its evaluation in the GEIS. Accordingly, Exelon Generation concluded that no new and significant information that would alter the conclusions of the GEIS with respect to air quality impacts from transmission lines exists for LSCS.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 007; RAI #: MA-07 **Category:** Meteorology, Air Quality & Noise

Statement of Question:
Table 3.3-2 of the ER provided a greenhouse gas (GHG) emission inventory for the year 2013.

a. Provide annual GHG emission inventory of LSCS for the most recent 5 years.
b. Does Exelon compile LSCS site-specific data for mobile GHG emission sources (e.g. employee vehicles, delivery vehicles)? If so, provide GHG emissions from mobile sources in the annual GHG emission inventory.
c. As provided during the environmental audit, provide a description as to how GHG emissions were calculated for each source (direct stationary combustion, direct CO2 fugitive, HFC/PFC refrigerants, purchased electricity, and ozone depleting refrigerants).
d. Clarify if Exelon maintains a program to manage stationary refrigeration appliances at LSCS to recycle, recapture, or reduce emissions of ozone depleting substances and is in compliance with Section 608 of the CAA, under Title VI of the CAA.

Response:

a. Table 1 contains GHG emissions summary data for LSCS from 2010 through 2014.

Table 1
LaSalle County Station GHG Emissions Summary (2010 through 2014)
[GHG CO_2 Equivalents (metric tons)]

	2010	2011	2012	2013	2014
Direct - Scope 1					
Direct Stationary Combustion	1,022.41	321.55	346.96	245.07	605.26
Direct CO_2 Fugitive	1,354.50	2,978.47	1,792.04	2,508	2,187.36
SF_6 Fugitive (started tracking at site level in 2014)	0.0	0.0	0.0	0.0	2,378.64
HFC / PFC Refrigerants	0.00	0.00	0.00	2.95	0.00
Indirect - Scope 2					
Purchased Electricity	34,260.47	33,493.08	36,066.36	30,519.93	32,977.97
Supplemental					
Ozone Depleting Refrigerants	1,103.86	629.36	360.61	952.14	474.23

b. Exelon Corporation does not compile or report GHG data for mobile sources, except those under corporate control (fleet vehicles). Within Exelon Generation, GHG emissions from fleet vehicles are tracked through fleet fuel usage. The data are tracked for the Exelon Generation fleet rather than individual facilities. Therefore, no information on emissions from vehicles specific to LaSalle County Station is readily available.

c. Direct Stationary Combustion emissions reported in Table 1, above, include emissions from 5 large diesel engines (600 HP or more) as well as small diesel engines (less than 600 HP). Fuel use data and EPA emission factors (AP 42, *Compilation of Air Pollutant Emission Factors*, Chapter 3) are employed for calculating emissions from these engines Please note that Exelon Nuclear began gathering fuel use data for small engines in 2012. Small engine fuel consumption for 2012 through 2014 was approximately 30% of the large engine fuel consumption. On this basis the small engine fuel consumption was calculated as 33% of the large diesel fuel consumption for 2010 and 2011.

   Direct CO_2 Fugitive emissions reported in Table 1, above, are primarily from the CO_2 injection system used to adjust pH in the cooling pond and the CO_2 fire protection system. This is tracked solely by the amount of CO_2 purchased. When purchased, the amount purchased is assumed to be released.

   SF_6 is used to locate leaks in the condensers. The direct SF_6 Fugitive CO_2 equivalent emissions reported in Table 1, above, were calculated using the applicable EPA conversion factor and assuming that all purchased SF_6 was released at the time of purchase.

   The direct HFC / PFC Refrigerants and supplemental Ozone Depleting Refrigerants CO_2 equivalent emissions reported in Table 1, above, were calculated using the applicable EPA conversion factors and assuming that all purchased refrigerants were released at the time of purchase.

   The indirect Purchased Electricity CO_2 emissions reported in Table 1, above, were calculated using EPA eGrid emission factors (http://epa.gov/cleanenergy/energy-resources/egrid/index.html) and monthly billings from the offsite electricity supplier for LSCS.

d. Exelon Nuclear has corporate procedures that provide direction to the nuclear stations, including LSCS, regarding compliance with Section 608 of the Clean Air Act (CAA) and 40 CFR Part 80, Subpart F. Sites perform annual Self-Assessments to demonstrate conformance. LaSalle most recently completed a Self-Assessment for this program in September 2014.

List of Attachments:

None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 008; RAI #: MA-08 **Category:** Meteorology, Air Quality & Noise

Statement of Question:
In support of NRC's greenhouse gas, climate change, and cumulative impacts analysis, address the following:

a. Has a river warming trend been observed in the Illinois River during the period of plant operations? Please provide any study(s), relevant information, or historical and current data that covers the last 20 years that support the conclusions reached (e.g., mean annual, seasonal, and/or or monthly water temperature trend for the period of record).
b. Has a warming trend been observed in the cooling pond during the period of plant operations? Please provide any study(s), relevant information, or historical and current data that covers the last 20 years that support the conclusions reached (e.g., maximum observed water temperature values and date of occurrence, mean annual, seasonal, and/or or monthly water temperature trend for the period of record).

Response:

a. LSCS Units 1 and 2 began operating in January and October, 1984, respectively. LSCS has not maintained a long-term computer database of river water temperatures. The nearest downstream U.S. Geological Survey (USGS) gaging station (05543500) on the Illinois River with temperature data is at Marseilles, Illinois, approximately 4.5 km (3 mi) downstream of the LaSalle discharge (blowdown). The following table identifies the temperature data collected by the USGS at that gaging station. Given that only field measurements of temperature are available, and given that these measurements have been taken irregularly as part of monthly grab samples over the 44-year period of record, the available USGS river temperature data set does not lend itself to any temperature trend analysis.

Description of Illinois River Temperature Data
Available from USGS Gaging Station 05543500 (Marseilles, Illinois)

Type of data	Time period	Notes
Single (presumably surface) temperature; recorded monthly, at a minimum	1970 - present	Measured in the field in association with monthly grab samples In total, 1153 water temperature measurements have been taken since October 1970, approximately 26 per year.
"water temperature"	water years 1975 -1981	USGS 2013 water-data report for station 05543500 (Illinois River at Marseilles) lists "WATER TEMPERATURE: water years 1975-1981" under Surface Water Records, however, the historic data available at the USGS website do not include water temperature.

b. LSCS circulating water inlet temperatures are logged in the plant operating data system. However, maintenance of the data in a computerized database did not begin until 1998. Attachment 1 to this RAI response provides a graph of the daily circulating water temperatures collected at 00:00 each day. No increasing trend in these temperatures is visually apparent.

List of Attachments:

1. Graph of LaSalle Circulating Water Inlet Temperature Data from Oct 1998 to Dec 2014.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 009; RAI #: MA-09 **Category:** Meteorology, Air Quality and Noise

Statement of Question:
Describe the LSCS off-site noise environment and primary noise sources in the vicinity of LSCS.

Response:
As indicated in Section 3.2 of the LSCS license renewal ER, land use within a 10-km (6-mi) radius is primarily agricultural, with cropland or pastures bordering the facility to the east, south, and west. A few residences are scattered throughout this vicinity. Three areas managed by the IDNR for public use and recreation are within 10 km (6 mi) of LSCS: LaSalle Lake State Fish & Wildlife Area, Marseilles State Fish & Wildlife Area, and Illini State Park. There are no major industrial facilities in the vicinity, but since 2008, more than 100 wind turbines have been installed within a 10-km (6-mi) radius.

The 1977 LSCS operating license stage ER (Table 5.6-3, p. 5.6-6) indicates that ambient noise levels in the vicinity prior to plant operation did not exceed 45 dBA and were projected to remain below 55 dBA at the site boundary after plant operation began, which is within U.S. Environmental Protection Agency guidelines for noise in residential, recreational and agricultural areas. No record of an offsite noise level survey since plant operation began has been found. Exelon Generation believes that the addition of more than 100 wind turbines within a 10-km (6-mi) radius since 2008 has likely increased the offsite ambient noise level in the vicinity of LSCS, but the increase seems nearly imperceptible, and no data have been collected by the company to verify the increase or to support an assessment of its significance.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 010; RAI #: MA-10 **Category:** Meteorology, Air Quality & Noise

Statement of Question:
The ER states that Illinois does not have regulations or guidelines for environmental noise. However, Illinois has a noise regulation with allowable octave band sound levels according to emitting and receiving land-use classification and time of day (IAC, Title 35: Environmental Protection, Subtitle H: Noise). Please clarify if LSCS is subject to Illinois' noise regulation and if LSCS is in compliance with these regulations.

Response:
Section 5.6 in the 1977 LSCS operating license stage ER confirms the applicability of Illinois Noise Pollution Control Regulations (Title 35, Subtitle H, of the Illinois Code) to LSCS and discusses compliance. It concludes as follows:

Although predictions indicate that existing ambient noise levels near the [LSCS] plant boundary will be increased because of plant operation, the predicted levels are well within the federal guidelines and the applicable environmental regulations of the State of Illinois.

Since 1977, no equipment changes have occurred at LSCS that would change this conclusion. An excerpt of Section 5.6 in the 1977 LSCS operating license stage ER is attached.

List of Attachments
1. Excerpt of Section 5.6, Other Effects, from Commonwealth Edison Company (1977). LaSalle County Station Environmental Report - Operating License Stage. Volume 2. May 10, 1977.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 011; RAI #: AQ-01 **Category:** Aquatic Ecology

Statement of Question:
Section 3.7.5.1 of the ER (page 3-59) states that since 2001, LSCS has had four reportable fish kills (in July 2001, June 2005, June 2009, and August 2010) in the cooling pond, and one small, unreported (approximately 100 shad) event in 2002. The NRC staff is aware of the fish kill events that occurred in 2001 (ML012330070, ML021330421), 2005 (Event Report Number: 41805), 2009 (ML092040381) and 2010 (ML102371289, ML12285A200).

a. Provide the date of the unreported fish kill in 2002. In addition, summarize the species of fish that were affected by the fish kill.
b. Provide the temperature in the cooling pond during the 2005 fish kill event (June 27 28, 2005). In addition, summarize the species of fish that were affected by the fish kill.
c. Provide a summary of the temperature in the cooling pond (intake at the lake screen house) since 2001. In addition, provide the daily maximum cooling pond blowdown temperatures from the monthly NPDES Discharge Monitoring Reports during July 2001, June 2005, June 2009, and August 2010.
d. Provide the daily maximum cooling pond blowdown temperatures from the monthly NPDES Discharge Monitoring Reports from the past 5 years (2010 through 2014)
e. As documented in NPDES Discharge Monitoring Report submittals, during March, July, and August 2012, IEPA granted Exelon provisional variances from its NPDES permitted discharge temperature limits (under Special Condition 3 of the permit). During the variance period(s), Exelon was required in part to continuously monitor both the discharge and receiving water temperatures and visually inspect all discharge areas at least three times each day to assess the impact on aquatic life. Exelon was also required to notify IEPA and the Illinois Department of Natural Resources (IDNR) if aquatic life was shown to be affected. Describe the circumstances surrounding the need for these variances and also whether Exelon observed any affected aquatic life, and if so, please describe any interactions with IEPA or IDNR and actions that were taken to mitigate the impacts on aquatic life.
f. Describe any mitigation Exelon has implemented to reduce the number of fish kills in the cooling pond.

Response:

a. The 2002 unreported fish kill mentioned in the ER was recorded in Exelon's Action Tracking system on July 5, 2002. The record indicates that approximately 100 fish were found dead near the shad nets in the vicinity of the Lake Screen House. The species of the dead fish were not described.

b. Temperature monitoring in the cooling pond occurs in the intake to the Lake Screen House. Data from this location for June 27 to 28, 2005, which is the time period over which the 2005 fish kill event occurred, is provided as Attachment 1 to this RAI response.

   As was reported to the NRC in a letter dated July 28, 2005 (NRC ADAMS Accession # ML052200481), on June 28, 2005 at 1245 CST, a fish kill above normal mortality was identified on the station cooling pond. The initial estimate was reported as approximately 300 fish, mostly Striped Bass hybrids. The Illinois Department of Natural Resources

(IDNR) was notified and an ENS notification was made pursuant to 10 CFR 50.72 (b)(2)(xi). The IDNR District Biologist arrived onsite and began an official fish count. The final count was 1,515 dead fish, distributed among the various species as follows:

Species Common Name	Count
Striped Bass hybrids	1,439
Smallmouth Bass	36
Walleye	20
Channel Catfish	11
Blue Catfish	4
Yellow Bass	3
Sauger	2
Total	1,515

c. Attachment 2 to this RAI response contains a summary graph of the LSCS circulating water intake temperatures as measured at the lake screen house. Attachment 3 to this response contains daily maximum cooling pond blowdown temperatures as reported in the monthly NPDES Discharge Monitoring Reports for July 2001, June 2005, June 2009, and August 2010.

d. Attachment 4 to this RAI response contains daily maximum cooling pond blowdown temperatures as reported in the monthly NPDES Discharge Monitoring Reports for the past 5 years (2010 through 2014).

e. The circumstances surrounding the need for provisional variances from the LSCS NPDES permitted discharge temperature limits during March, July, and August 2012 are described for each event in the provisional variance order issued by IEPA. Attachment 5 to this RAI response contains copies of the three provisional variance orders. No effects on aquatic life were observed during the provisional variance effective periods.

f. Measures taken that would have the effect of reducing the frequency of fish kills in the LSCS cooling pond result from implementation of the Extreme Heat Implementation Plan. Such measures are initiated in response to a predicted peak average condenser inlet temperature of greater than 95°F, as forecast by the Lake Thermal Model, and consist of maximizing cooling pond makeup pumping to raise pond level to near 700.0 feet because this action will:
   - Provide maximum cooling capability in the event of a cooling pond makeup or blowdown line rupture.
   - Provide increased cooling pond depth for fish to hide and protect themselves from the sun.
   - Increase the total mass of the cooling pond, making it more resistant to potential temperature swings and thermal transients.

List of Attachments

1. Circulating Water Intake Temperature Data - 6/27-28/2005
2. Circulating Water Intake Temperature Summary Graph – 01/01/2001 to 12/31/2014
3. Daily Maximum Cooling Pond Blowdown Temperatures – July 2001, June 2005, June 2009, and August 2010
4. Daily Maximum Cooling Pond Blowdown Temperatures – 2010 through 2014
5. IEPA Provisional Variance Orders 12-15 (3/21/2012), 12-24 (7/19/2012), and 12-24 Extension (8/01/2012)

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

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 013; RAI #: AQ-03 **Category:** Aquatic Ecology

Statement of Question:
Section 3.7.1.7 of the ER describes some State-listed species that could occur at or near LSCS.

a. Discuss whether aquatic State-listed species have ever been observed on LSCS or within 6 miles of the river screen house or could potentially occur on LSCS or within 6 miles of the river screen house. Further, describe whether LSCS's operation has ever been known to impinge or entrain a State-listed species. Please consider all aquatic species that IDNR lists as potentially occurring within La Salle County, which include the following:
    1. Alasmidonta viridis, slippershell
    2. Elliptio dilatata, spike
    3. Fundulus diaphanous, banded killifish
    4. Moxostoma carinatum, river redhorse
    5. Moxostoma valenciennesi, greater redhorse
    6. Notropis heterolepis, blacknose shiner
    7. Notropis texanus, weed shiner

b. If State-listed species have been affected by operation of LSCS, provide a summary or documentation of any applicable coordination with IDNR.

Response:

a. The LaSalle County Station river screen house is located at Illinois River Mile (RM) 249.5. No state-listed aquatic species were collected during the Commonwealth Edison/Exelon sponsored 1974-78 preoperational studies (usually five locations/four sampling events for five years/electrofishing and seining) or operational studies in 1999 (three locations/five sampling events/ electrofishing) and in 2013 (three locations/one sampling event/ electrofishing and seining). The river sampling locations for these sponsored studies were all in the same area, approximately RM 249.0 to 249.5.

   The Long-term Illinois River Fish Population Monitoring Program conducted by the Illinois Natural History Survey (INHS) has sampling locations in all the pools of the Illinois River. In the Starved Rock Pool sampling locations are at RM 240.8 and 241.5 and in the Marseilles Pool at RMs 248, 249.6, and 260.8. The Marseilles Pool is impounded by the Marseilles Dam at RM 247.0 and the Marseilles Lock, which is at the end of a navigation channel at approximately RM 244.5. The area below the Marseilles Dam is marked as rapids on the Illinois River navigation maps. The INHS 2007 electrofishing fish survey (McClelland and Sass, 2008) in the Starved Rock and Marseilles Pools did not collect any aquatic state-listed species. Also, INHS electrofishing data in the Marseilles Pool for the years 1993 through 2012 show no collection of state-listed aquatic species (Fritts 2013).

   Freshwater mussel surveys were conducted in 1994, 1995, and 1999 in the Illinois River from RM 232.0 to 271.2, which includes the Starved Rock and Marseilles Pools. None of the 18 species collected were state-listed species (Sietman et al, 2001). In April 2013 after an incident when seven barges broke free from a tow and damaged the Marseilles

Dam, the rapids behind the Dam were dewatered to allow repairs. In early May, during a two day period a mussel survey and relocation was conducted. The effort yielded 14,850 live mussels of 23 species (Kanter, 2013). Neither of the two state-listed mussels for LaSalle County were collected. During an ongoing (late 2013 to early 2015) impingement study at the LSCS river screen house, 41 fish taxa, 3 crayfish taxa and 1 mussel taxa have been collected none of which were state-listed.

During 2014, an entrainment/ichthyoplankton study was conducted in parallel with the impingement study at the LSCS river screen house. Seventeen (17) taxa were collected including Moxostoma (redhorse sp). The genus Moxostoma in Illinois is represented by six redhorse species; shorthead, golden, silver, black, river and greater. The state-listed species, river and greater redhorse, have not been collected in any of the impingement or electrofishing studies in the Illinois River mentioned above, whereas shorthead, golden, silver, and black redhorse, which are not listed, have been. Accordingly, it is unlikely that the Moxostoma specimens collected during 2014 in the entrainment/ichthyoplankton sample at LSCS are state-listed species.

One juvenile specimen of the state-listed banded killifish was collected in the net during the 2014 LSCS entrainment/ichthyoplankton study. With the exception of this single specimen, no other state-listed aquatic species has been collected during reported historical or current studies near the LSCS river screen house.

Habitat requirements of the seven state-listed species potentially occurring in LaSalle County also indicate that likelihood of impact to such species by LSCS operations is low. This is further discussed below for each species.

The Slippershell is a mussel found in small to medium size streams and headwaters of large rivers where it is usually buried in sandy substrates in shallow water. Region-wide increased siltation and channelization has most likely been the cause of reduction in Slippershell numbers (Herkert 1992), which is unrelated to LSCS operation.

The Spike mussel exists in a wide range of habitat from small to large streams with low gradients in mud or gravel and can be associated with riffles (Nyboer, et al. 2006). Increased region-wide siltation and pollution not related to LSCS operation has impacted this species. The upper part of the Illinois River from the confluence to Hennepin, Illinois, which includes the Marseilles Pool, has a relatively high gradient.

In Illinois, the banded killifish occurs in clear glacial lakes, usually over sand or mud, often near vegetation. It is usually found in small schools near the surface of weedy lakes. Reasons for the decline of this species are not well understood but are probably related to destruction and general deterioration of natural lakes and streams in northern Illinois (Herkert 1992), which are unrelated to LSCS operation.

The river redhorse inhabits deep, swift, gravelly riffles of small and medium sized rivers. The greater redhorse occurs in sandy to rocky pools and runs of medium to large rivers and lakes. Both the river and greater redhorse have a limited distribution within Illinois and are threatened throughout the region by siltation, increased turbidity and pollution (Herkert 1992) that is unrelated to LSCS operation.

The blacknose shiner occurs in clear vegetated lakes, and pools and runs of clear streams. It usually occurs over sand and mud substrates. Increased turbidity of lake and pool waters and the disappearance of aquatic vegetation in the region, which are unrelated to LSCS operation, have probably been the major factors causing its decline (Herkert 1992).

In Illinois, the weed shiner occupies clear sand-bottom creeks with some submerged vegetation. In other parts of its range it also occupies sloughs and large rivers. Reason for Status: The weed shiner occurs in very few locations in Illinois and its habitat is threatened due to region-wide pollution and siltation (Herkert 1992), which is unrelated to LSCS operation.

REFERENCES:

(Fritts 2013) Fritts, M. W. 2013. RE. Request: Illinois River Reports. Illinois River Biological Station and Illinois Natural History Survey. Havana, Illinois. June 24, 2013.

(Herkert 1992) Herkert, J.R., editor. 1992. Endangered and Threatened Species of Illinois: Status and Distribution, Volume 2-Animals. Illinois Endangered Species Protection Board, Springfield, Illinois 142 pp.

(Kanter 2013) Kanter R.; Environmental Almanac: Rare mussel found in Illinois River. News Gazette. Sunday 07/07/2013.

(McClelland and Sass 2008) McClelland, M.A., and G.G. Sass,. 2008. The Long-Term Illinois River Fish Population Monitoring Program. Annual Report. Project F-101-R-19. Illinois Natural History Survey. Illinois River Biological Station. Havana, IL. March 2008

(Nyboer, et al. 2006) Nyboer, R.W., J.R. Herkert, and J.E. Ebinger editors. 2006. Endangered and Threatened Species of Illinois: Status and Distribution, Volume 2-Animals. Illinois Endangered Species Protection Board, Springfield, Illinois 181 pp.

(Sietman et al, 2001) Sietman B.E., S. D Whitney., D. E Kelner., D.K Blodgett.; and H.L Dunn. Post-Extirpation Recovery of the Freshwater Mussel (Bivalve: Unionidea) Fauna in the Upper Illinois River. Journal of Freshwater Ecology, 16(2):273-281

b. As indicated in the response to item a, above, the only collection of a state-listed species reported during historical or current studies near the LSCS river screen house consisted of one juvenile specimen of the state-listed banded killifish, which was collected in the net during the 2014 entrainment/ichthyoplankton study conducted at LSCS. This collection will be reported by EA Engineering to IDNR in August 2015 in a scientific collector's permit report covering collections of this type that occurred during 2014.

List of Attachments:

None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **014;** **RAI #:** **AQ-04** **Category:** Aquatic Ecology

Statement of Question:
Section 4.6 of the ER considers the effects of impingement and entrainment on aquatic biota in the Illinois River. In its analysis, the NRC staff will consider the effects of impingement and entrainment on aquatic biota in both the Illinois River and the cooling pond. To support this analysis, please describe any impingement and entrainment studies that have been conducted on the cooling pond or in the Illinois River.

a. Docket the following reference:
   EA Engineering. 2015. Draft Impingement and Entrainment Characterization Study La Salle County Station. May 2015.

b. Provide a summary of the results and assessment of the impacts to fish in the Illinois River based on the information collected in EA Engineering (2015). Within this discussion, compare the impingement and entrainment rates at LSCS relative to other nearby energy facilities that withdraw river water.

c. Docket the final report of EA Engineering (2015) when available.

Response:

a. The requested reference document is being provided as Attachment 1 to this response.

b. The volume of water drawn through the river intake structure at LSCS, which has a closed cycle cooling system, and associated rates of impingement and entrainment are substantially less than for open cycle generating stations that withdraw their entire cooling volume from a lake or river. In order to provide additional perspective, LSCS impingement and entrainment rates were compared to two open cycle stations and one dual mode station within the Upper Illinois Waterway and Illinois River Basin. The three stations include two NRG/Midwest Generation facilities, Will County and Joliet 29 Stations, as well as Exelon's Dresden Nuclear Station.

Station	Intake and Discharge Waterbody	River Mile
Will County	Chicago Sanitary and Ship Canal	295.4
Joliet 29	Des Plaines River	284.6
Dresden	Kankakee and Illinois Rivers	272.3
LaSalle	Illinois River	249.5

Table 1 summarizes impingement and entrainment results from each of the four stations. The Joliet 29 and Dresden studies were each conducted over two years while the Will County study, like LSCS, was a one year study. Will County and Joliet 29 are open cycle cooling stations, whereas Dresden operates under one of two modes of cooling depending on the time of year. From 15 June to 30 September (3.5 months), Dresden operates in an indirect-open cycle mode, where water is drawn in through the circulating

water intake structure on the Kankakee River, conveyed to the condensers, and cycled through the Dresden cooling pond before being discharged into the Illinois River. The remainder of the year (8.5 months), Dresden operates its cooling pond in a closed cycle, similar to LSCS.

In terms of water use, makeup water for LSCS (86 to 88 mgd) represents six to 10 percent of the daily cooling water volume at the two open cycle stations (Table 1). This is also true for Dresden Nuclear Station during the limited time that it operates in indirect-open cycle each year. Similarly, LSCS 12-month impingement estimates ranged from one to 25 percent and entrainment estimates represented 14 to 43 percent of the total impingement and entrainment observed at the two upstream open cycle stations and Dresden during its 3.5 month indirect-open cycle operating time. In other words, entrainment at the closed cycle LSCS was 57 to 86 percent lower than entrainment during open cycle operation at the other Illinois plants in this comparison. Also, impingement at LSCS was 75 to 99 percent lower than impingement during open cycle operation at the three upstream facilities. Those differences are consistent with U.S. EPA's projections that closed cycle cooling would reduce impingement and entrainment losses by up to 95 percent.

Table 1.
Comparison of impingement and entrainment estimates between LSCS and generating stations within the Illinois River watershed

Station	Year	Mode of Cooling	Typical CW Flow (mgd)[1]	Estimated Impingement	Estimated Entrainment
Will County Station	2004-2005	Open Cycle	864	41,884	278,025,810
Joliet 29 Station	2004-2005	Open Cycle	1,018 - 1,023	355, 844	122,123,878
	2005-2006		860 - 1,007	487,786	183,196,758
Dresden Nuclear Station[2]	2005-2006	Indirect-Open Cycle	1,330 - 1,400	1,016,975	88,289,628
	2006-2007		1,285 - 1,402	181,274	137,264,687
LaSalle County Nuclear Station	2014-2015	Closed Cycle	86 - 88[3]	10,673	38,078,968

NOTES:

1 Depending on availability of data, "typical" circulating water (CW) flow among the various studies may represent mean or median flow in millions of gallons per day (mgd) over the course of the study.

2 Dresden Nuclear Station operates as indirect-open cycle during 15 June to 30 September and closed cycle the remainder of the year. Data provided are based on collections only during the 3.5 months of indirect-open cycle operation each year.

3 LSCS flows represent make-up water pumping rates.

SOURCES:

EA Engineering, Science, and Technology, Inc. (EA). 2007a. Impingement Mortality and Entrainment Characterization Study, Will County Station. Prepared for Midwest Generation EME, LLC, Chicago IL.

EA Engineering, Science, and Technology, Inc. (EA). 2007b. Impingement Mortality Characterization Study, Joliet Station 29 (Units 7 and 8). Prepared for Midwest Generation EME, LLC, Chicago IL.

EA Engineering, Science, and Technology, Inc. (EA). 2007c. Entrainment Characterization Study, Joliet Station 29 (Units 7 and 8). Prepared for Midwest Generation EME, LLC, Chicago IL.

EA Engineering, Science, and Technology, Inc. (EA). 2007d. Impingement Mortality Characterization Study, 2005 – 2007, Dresden Station. Prepared for Exelon Nuclear, Warrenville, IL.

EA Engineering, Science, and Technology, Inc. (EA). 2007e. Entrainment Characterization Study, 2005 – 2007, Dresden Station. Prepared for Exelon Nuclear, Warrenville, IL.

c. Exelon Generation needs additional time to respond to this RAI. The requested final report by EA Engineering, Science, and Technology, Inc. concerning the impingement and entrainment characterization studies at the LSCS river intake is expected to be available in August 2015. The final report will be provided to the NRC staff as a supplement to this RAI response when it becomes available.

List of Attachments:

1. EA Engineering. 2015. Draft Impingement Mortality and Entrainment Characterization Study La Salle County Station. Prepared for Exelon Generation Company, LLC. May 2015.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 015; RAI #: AQ-05 Category: Aquatic Ecology

Statement of Question:
Section 4.6 of the ER considers the effects of heat shock on aquatic biota in the Illinois River.

a. Section 4.6.3.2 of the ER (page 4-34) states that in its Final Environmental Statement (FES) for LSCS operation, NRC staff predicted that under worst-case conditions (highest blowdown temperature) the thermal plume area (defined by the 3°C/5°F isotherm) would be 2,500 m^2 (0.6 ac) and would encompass approximately 9 percent of the river's cross section. Describe any field studies or modeling studies that have occurred during operations that describe the temperature and size of the thermal plume in the Illinois River, such as ComEd's Mixing Zone Thermal Studies from 1989 through 1995.
b. In its analysis, the NRC staff will consider the effects of heat shock on aquatic biota in both the Illinois River and the cooling pond. To support this analysis, please provide any thermal studies that have been conducted on the cooling pond.

Response:

a. Field data were collected during 1989, 1990, 1993 and 1995 to verify the size of the LSCS thermal plume in the Illinois River. Documentation of these internal studies is being provided as Attachment 1 to this RAI response. In addition, an analysis was prepared in 2009 of expected changes to LSCS environmental effects, including effects from blowdown discharge to the Illinois River, resulting from a Measurement Uncertainty Recapture (MUR) Power Uprate (PU) and a possible future Extended Power Uprate (EPU). The LSCS MUR PU has now been implemented and represents the current licensing basis for the LSCS unit power levels reported in the ER. However, on June 11, 2013, Exelon Generation announced the cancellation of the EPU project due to economic considerations. The analysis was documented in Exelon Nuclear Evaluation No. 2009-08466, Rev. 0, which contains Task Report 47 – Environmental Impact prepared by Sargent & Lundy LLC (September 10, 2009).

b. LSCS utilizes a predictive thermal model for the cooling pond during the summer to facilitate station and pond operations during extreme heat conditions. The model is not typically used to predict cooling pond temperatures other than in the Ultimate Heat Sink, from which cooling pond blowdown water is discharged. Exelon Generation provided information to the NRC Staff about the model's capabilities and validation in letters dated October 4, 2013 regarding Response to Request for Additional Information Related to License Amendment Request to Technical Specification 3.7.3, "Ultimate Heat Sink (UHS)," (ML13282A345) and December 4, 2014 regarding Response to Request for Additional Information Regarding License Amendment Request to Revise Ultimate Heat Sink Temperature Limits (ML14352A319).

   In addition, an analysis of expected changes to the design duty, operating conditions, and performance parameters resulting from revised plant conditions associated with an MUR PU and a possible future EPU for LSCS was prepared in 2009. The LSCS MUR PU has now been implemented and represents the current licensing basis for the LSCS unit power levels reported in the ER. However, on June 11, 2013, Exelon Generation

announced the cancellation of the EPU project due to economic considerations. The analysis, which predicts changes in lake blowdown temperature under MUR PU and EPU conditions, was documented in a report prepared by Sargent & Lundy LLC (S&L) on behalf of Exelon Nuclear (Evaluation No. 2009-07279, Rev. 0, Final Issue), Task Report 17 – Cooling Lake).

In August 2010, Exelon Generation documented Calculation No. L-002456, Rev. 1A, LaSalle County Station Cooling Lake Performance (August 14, 2010). This calculation utilized the Sargent & Lundy computer code LAKET-PC to determine expected change in peak summertime cooling pond temperatures under the new MUR PU operating conditions.

List of Attachments:

1. ComEd 1995. Collection of Documents Describing Mixing Zone Thermal Studies from 1989 through 1995.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 016; RAI #: MH-01 **Category:** Microbiological Hazards

Statement of Question:
Section 4.5.2.3 of the ER states that water treatment additives are utilized for scale inhibition, silt dispersion, corrosion inhibition, and micro- and macro-biological control. Please provide a summary of Exelon's chlorination procedures for the circulating water and service water systems that includes the chlorine compounds used to treat each system as well as the concentrations and frequency of injection.

Response:
LSCS utilizes a 15 percent by weight Sodium Hypochlorite, NaOCl, solution to provide biocide to the Circulating Water (CW) and Service Water/Emergency Service Water systems.

CW biocide injection is performed twice daily per unit. Injections times are limited to 120 minutes per day per unit as outlined in the NPDES permit. The biocide is injected into the discharge piping of the operating CW pumps. Free Available Chlorine (FAC) is monitored 3 times per week at the outlet, (via Amertap system) of each unit's main condenser. The goal for FAC is to achieve a value between 0.05 and 0.2 ppm. Sampling is performed during the midpoint of the injection period.

Service Water/Emergency Service Water, biocide injection occurs in the Service Water "tunnel" located in the lower elevation of the Lake Screen House (LSH). The injection quills are installed in the six 36-inch lines that convey lake water from the fore-bay area of the LSH into the tunnel. Biocide injection for the tunnel is continuous, which allows for treatment of intermittently operated systems. Similar to CW, Service Water FAC is monitored 3 times per week with a goal value of 0.05 to 0.2 ppm.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 017; RAI #: LU-01 **Category:** Land Use and Visual Resources

Statement of Question:
The ER (Section 3.2, p. 3-5 and 3-6) states that the LSCS site is 1,568 hectares (ha; 3,875 acres (ac)) in size. Of that area, the cooling pond occupies 833 ha (2,058 ac); industrial or developed areas account for 60 ha (150 ac); undeveloped areas account for 101 ha (250 ac); and the LaSalle Fish Hatchery occupies 18 ha (45 ac). Describe the land use(s) for the remaining 556 ha (1,372 ac).

Response:
The on-site land use acreages provided in Section 3.2 of the License Renewal ER were based on land use acreages and property boundaries as reported and depicted in source documents that relied on the 1977 Operating License Stage Environmental Report (OL-ER). During its preparations for the NRC Environmental Audit for License Renewal in June 2015, Exelon realized that the 1977 OL-ER and subsequent documentation inaccurately depicted actual property ownership boundaries for the makeup and blowdown pipeline right-of-way near the Illinois River in the vicinity of the river screen house and blowdown discharge flume. Accordingly, to reflect actual conditions, the 2011 National Land Cover Database (NLCD 2011) (see table below) was used to re-estimate the on-site land use acreages.

Under separate correspondence to the NRC, Exelon is providing revised versions of all text, tables and figures in the LSCS License Renewal ER that were erroneous because of the inaccurate depiction in the 1977 OL-ER of ownership boundaries for the makeup and blowdown pipelines right-of-way corridor. That submission is planned to occur during July 2015.

List of Attachments:
None.

Land Cover Within LSCS Property Boundaries

NLCD Classification	Acreage	Percent of Total
Open Water	1,976 *	52.33%
Developed, Open Space	120	3.18%
Developed, Low Intensity	218	5.77%
Developed, Medium Intensity	73	1.93%
Developed, High Intensity	90	2.38%
Barren Land	5	0.13%
Deciduous Forest	386	10.22%
Shrub/Scrub	17	0.45%
Grassland / Herbaceous	473	12.53%
Pasture / Hay	11	0.29%
Cultivated Crops	346	9.16%
Woody Wetlands	58	1.54%
Emergent Herbaceous Wetlands	2	0.05%
TOTAL	3,776	99.97%

Source: 2011 National Land Cover Database (NLCD), http://www.mrlc.gov/nlcd2011.php (accessed 4/10/2015)

* Based on updated information, the total acreage of the LSCS owner-controlled property is estimated using the NLCD 2011 to be approximately 3,776 ac. Of that, the NLCD 2011 identified 1,976 acres as “open water”, largely the cooling pond. This number of acres for the cooling pond is inconsistent with the 2,058 acres reported in the 1977 OL-ER. However, because the methodologies used to estimate land use acreages are different between the 1977 OL-ER and this response, and because both methodologies are inherently uncertain, the discrepancy between the cooling pond acreage estimates could not be resolved. It is possible that, in the 1977 OL-ER, features such as dikes, screen house, discharge canals, and storm water ponds were included in the cooling pond acreage estimate. Hence, all estimates should be considered as approximate.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 018; RAI #: LU-02 **Category:** Land Use and Visual Resources

Statement of Question:
The NRC's supplemental environmental impact statement (SEIS) for LSCS license renewal will include a description of fuel at the LSCS site that mirrors Section 3.1.6.1 in the NRC's 2013 GEIS (ML13107A023). To facilitate the staff's preparation of this section, provide the following information:

a. How much nuclear fuel does each LSCS unit contain in pounds or metric tons? The approximate or average weight is sufficient.
b. On average, what percentage of reactor fuel does Exelon replace during each outage?
c. Describe the use and storage capacity of all onsite fuel storage tanks, including diesel, gasoline, and natural gas.
d. How does LSCS power its heating, ventilating, and air conditioning systems?
e. Does LSCS have an onsite waste oil incinerator(s)? If so, please describe the incinerator(s).

Response:

a. Each LSCS unit contains approximately 140.0 metric tons uranium (MTU)

b. At each refueling outage, approximately 36 percent of the reactor fuel is replaced in the refueled unit.

c. A description of the use and storage capacity for onsite fuel storage tanks is provided in the table below. [Source: Exelon Generation LaSalle Generating Station Spill Prevention Control and Countermeasures Plan, Rev. 19, April 2015.]

Container Name (type of use)	Contents	Nominal Capacity (gallons)
Unit 1 Diesel Fuel Storage Tank (Emergency Diesel Generators)	Diesel	40,000
Unit 2 Diesel Fuel Storage Tank (Emergency Diesel Generators)	Diesel	40,000
Common Diesel Fuel Storage Tank (Emergency Diesel Generators)	Diesel	40,000
Unit 1 Diesel Fuel Day Tank (Initial fuel source to Unit 1 Emergency Diesel Generator)	Diesel	750
Unit 2 Diesel Fuel Day Tank (Initial fuel source to Unit 2 Emergency Diesel Generator)	Diesel	750
Common Diesel Fuel Day Tank (Initial fuel source to Common Emergency Diesel Generator)	Diesel	750

Container Name (type of use)	Contents	Nominal Capacity (gallons)
Unit 1 HPCS Diesel Fuel Storage Tank (HPCS Pump Motor Diesel Generator)	Diesel	33,950
Unit 2 HPCS Diesel Fuel Storage Tank (HPCS Pump Motor Diesel Generator)	Diesel	33,950
Unit 1 HPCS Diesel Fuel Day Tank (Initial fuel source to Unit 1 HPCS Pump Motor Diesel Generator)	Diesel	1,700
Unit 2 HPCS Diesel Fuel Day Tank (Initial fuel source to Unit 2 HPCS Pump Motor Diesel Generator)	Diesel	1,700
Diesel Fire Pump Day Tank “A” (“A” Diesel Fire Pump)	Diesel	550
Diesel Fire Pump Day Tank “B” (“B” Diesel Fire Pump)	Diesel	550
Gasoline Aboveground Storage Tank (Fueling of plant vehicles)	Gasoline	2,000
Diesel Fuel Aboveground Storage Tank (Fueling of Plant Vehicles)	Diesel	2,000
Technical Support Center (TSC) / Security Diesel Fuel Storage Tank (Underground Storage Tank) (Emergency generators for TSC and Security buildings)	Diesel	2,000
TSC Diesel Generator Day Tank (Initial fuel to TSC Diesel Generator)	Diesel	275
Security Diesel Generator Day Tank (Initial fuel to Security Diesel Generator)	Diesel	275
IDNS Diesel Fuel Oil Storage Tank (UST) (Emergency backup)	Diesel	550
FLEX F750 Truck with Refueling Tanks (Mobile Emergency Refueling)	Diesel	250
B.5.b Emergency Diesel Pump (Trailer-mounted tank for portable emergency pump)	Diesel	200
FLEX Emergency Diesel Pump #2 (HL130) (Trailer-mounted tank for portable emergency pump)	Diesel	250
FLEX Emergency Diesel Pump #3 (HL130) (Trailer-mounted tank for portable emergency pump)	Diesel	250
FLEX Emergency Diesel Hale Pump (0FF30A)	Diesel	420
FLEX Emergency Diesel Hale Pump (0FF30B)	Diesel	420
FLEX Mobile Fuel Tank	Diesel	390
South Service Building Emergency Diesel Generator	Diesel	150

Container Name (type of use)	Contents	Nominal Capacity (gallons)
(Emergency backup)		

d. In general, LSCS heating, ventilating, and air conditioning systems that are classified as engineered safety features are powered from on-site redundant essential power sources and remain operable during loss of offsite power. Non-safety related heating, ventilating and air conditioning systems in the power block are powered from an onsite power distribution system and would shut down on loss of offsite electric power. Non-safety related heating, ventilating and air conditioning systems in outlying structures are powered from an offsite power distribution system and would shut down on loss of offsite electric power.

e. LSCS has no onsite waste oil incinerator.

List of Attachments:

None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 019; RAI #: LU-03 **Category:** Land Use and Visual Resources

Statement of Question:
Section 3.1 (p. 3-2) of the ER states the following: "The Chicago, Rock Island & Pacific Railroad, in this area parallel to and slightly north of the Illinois River, is the closest railroad line. A 10 km (6 mi) rail spur connects LSCS to the Atchison, Topeka, and Santa Fe Railroad south of the site (ComEd 1977)."

a. Are these railways operational today?
b. Does the onsite rail spur remain active?
c. If these railways are not active, what are the closest operational railways to the LSCS site?

Response:

a. The Atchison, Topeka, and Santa Fe Railroad is now owned by BNSF Railway, and the rails located south of LSCS remain operational. (http://www.bnsf.com/customers/pdf/maps/div_ch.pdf [Map dated January 10, 2013; accessed 3/19/2015]).

   The Chicago, Rock Island & Pacific Railroad (also known as the Rock Island Railroad) ceased operation March 31, 1980, and its assets were liquidated. The rails parallel to and slightly north of the Illinois River remain operational but are now part of the CSX rail system. (http://www.csx.com/index.cfm/customers/maps/csx-system-map/ [accessed 3/19/2015]).

b. A section of the onsite rail spur is used to transfer spent fuel casks to the onsite storage area. However, the rail spur has not been used for delivery of equipment or material to the site from external sources for many years.

c. Not applicable.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 020; RAI #: LU-04 **Category:** Land Use and Visual Resources

Statement of Question:
Does Exelon maintain a barge slip for LSCS or otherwise receive or ship equipment for LSCS by barge?

Response:
Exelon Generation does not own or maintain a barge slip for LSCS and does not otherwise receive or ship equipment for LSCS by barge.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 021; RAI #: LU-05 **Category:** Land Use and Visual Resources

Statement of Question:
Regarding the transmission lines and onsite switchyard, please provide the following information.

a. Who owns and operates the onsite switchyards?
b. The Final Environmental Statement for Operation of LaSalle (FES-O; ML14353A388) states that of the four 345-kV lines that connect to the onsite switchyard, two lines connect to the Plano substation and two lines connect to the East Frankfort substation. However, the ER (Section 2.2.6, p. 2-13) states that two lines connect to Braidwood Station, and the East Frankfort substation is not mentioned. Clarify these seemingly contradictory descriptions.
c. The FES-O describes the 138-kilovolt line connections to Mazon, Illinois and Streator, Illinois as "temporary." Do these lines remain active?
d. While the NRC staff understands that Exelon considers the transmission lines connected to the LSCS switchyard to not be in-scope for license renewal (as stated in Section 2.2.6, p. 2-13 of the ER), the NRC staff assumes that ties exist that connect the turbine buildings to the switchyard and that these ties would be in-scope for license renewal. Describe any transmission lines that connect the nuclear power plant to the substation where electricity is fed into the regional power distribution system. Also describe any transmission lines that supply power to the nuclear plant from the grid in accordance with Footnote 4 of Table B–1 of 10 CFR Part 51, Subpart A.

Response:

a. Commonwealth Edison Company (ComEd) owns the LSCS Switchyard and all associated transmission lines. The LSCS Switchyard is operated and maintained in accordance with an interface agreement among ComEd as the transmission owner, Exelon Generation Company, LLC – Exelon Nuclear (Exelon Nuclear) as the nuclear plant generation operator, and PJM Interconnection, LLC (PJM) as the regional transmission organization (RTO) that coordinates the movement of wholesale electricity.

b. The operating licenses for LSCS Units 1 and 2 were issued in 1982 and 1983, respectively, before the Braidwood switchyard was operational. The original transmission lines from LSCS to East Frankfort substation were later connected to the new Braidwood switchyard. The operating licenses for Braidwood Units 1 and 2 were issued in 1986 and 1987, respectively.

c. Yes, the 138-kilovolt line connections to Mazon, Illinois and Streator, Illinois remain active.

d. The electrical connections between the main plant and the LSCS switchyard traverse approximately 1,300 feet of onsite property used for industrial purposes. The route for all four lines is flat and crosses primarily gravel laydown areas and paved roads.

As the ER Section 2.2.6, (p. 2-13) explains, redundant offsite power is provided to LSCS through the LSCS substation. Therefore, there are no offsite transmission lines for which the only purpose is to supply power to the nuclear plant from the grid.

List of Attachments:

None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 022; **RAI #:** LU-06 **Category:** Land Use and Visual Resources

Statement of Question:
Clarify whether the ER's offsite land use information (Section 3.2, p.3-5) is based on the 2006 or the 2011 Multi-Resolution Land Characteristics Consortium (MRLC) National Land Cover Database. If this section is based on 2006 data, provide any applicable updates to the section resulting from the 2011 data.

Response:

Offsite land use information in the ER was based on 2006 National Land Cover Database (NLCD). Table 3.2-1 in the ER is updated below using the 2011 NLCD and the revised LSCS property boundary (see the response to Audit Needs Question LU-01 regarding corrections to the property boundary of the pipeline right-of-way near the Illinois River). Differences are small, as shown in the table below.

Table 3.2-1 Land Use in the 10-km (6-mi) Radius of LSCS

Land Cover Class	Hectares (acres) 2006	Hectares (acres) 2011	Percent of 10-km (6-mi) Radius 2006	Percent of 10-km (6-mi) Radius 2011
Open Water	1,178 (2,912)	1,180 (2,915)	4	4
Developed, Open Space	1,397 (3,453)	1,264 (3,124)	5	4
Developed, Low Intensity	1,111 (2,745)	1,083(2,676)	4	4
Developed, Medium Intensity	152 (376)	183 (451)	1	1
Developed, High Intensity	77 (191)	104 (256)	<1	<1
Barren Land	44 (109)	34 (84)	<1	<1
Deciduous Forest	3,410 (8,427)	3,431 (8,479)	12	12
Evergreen Forest	2 (4)	2 (4)	<1	<1
Shrub/Scrub	1 (3)	17 (43)	<1	<1
Grassland/Herbaceous	866 (2,190)	876 (2,165)	3	3
Pasture/Hay	392 (968)	391 (966)	1	1
Cultivated Crops	20,450 (50,534)	20,540 (50,755)	70	71
Woody Wetlands	176 (434)	172 (425)	1	<1
Emergent Herbaceous Wetlands	2 (4)	3 (8)	<1	<1
Total	29,258 (72,350)	29,279 (72,351)	100	100

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 023; RAI #: TE-01 **Category:** Terrestrial Resources

Statement of Question:
List and describe all terrestrial wildlife or habitat surveys that have been completed on the LSCS site, including preoperational studies. Include ongoing monitoring associated with LSCS's "Wildlife at Work" program, if any.

Response:
All preoperational terrestrial wildlife and habitat surveys are identified and described in the 1977 LSCS operating license stage ER (see Attachment 1 under Index # 058).

After the preoperational studies were performed, an initial inventory of the plants and animals present at the site was conducted in September 2009 by a Wildlife Habitat Council biologist as a baseline for the "Wildlife at Work" program, and subsequent occasional follow-up inventories have been conducted by plant personnel. The results of these surveys are documented in the 2013 LSCS Wildlife Management Plan (see Attachment 2 under Index # 058).

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 024; RAI #: TE-02 **Category:** Terrestrial Resources

Statement of Question:
Regarding the LSCS Wildlife at Work program, provide the following information.

a. When did Exelon first receive Wildlife Habitat Council certification for its "Wildlife at Work" program?
b. Does Exelon intend to maintain Wildlife Habitat Council certification during the proposed license renewal term?

Response:

a. LSCS first received Wildlife Habitat Council certification for its "Wildlife at Work" program on November 15, 2011.

b. Exelon Corporation is committed to continually improving its environmental performance. Accordingly, it is Exelon's policy that its facilities comply with applicable environmental laws, regulations, and other commitments with the objective of moving beyond compliance. Exelon has been a member of the Wildlife Habitat Council (WHC) since 2005, and obtaining the WHC Wildlife at Work certification is a voluntary activity that exceeds regulatory requirements. During the license renewal term, LSCS will continue its adherence to company policy through regular evaluation and implementation of available options that move beyond compliance, which may include maintaining the Wildlife at Work certification.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 025; RAI #: TE-03 **Category:** Terrestrial Resources

Statement of Question:
The correspondence between Exelon and the Illinois Department of Natural Resources (IDNR) in Appendix D of the ER indicates that the Marseilles Hill Prairie Illinois Natural Areas Inventory (INAI) is in the vicinity of the LSCS site. Where is this INAI site in relation to the LSCS site?

Response:
The Marseilles Hill Prairie Natural Area is an area approximately 40 acres in size within the much larger Marseilles State Fish and Wildlife Area (MSFWA). This Natural Area is protected and managed to conserve native prairie habitat. It is located in the northeast portion of the MSFWA approximately 3 miles north of the LSCS main site boundary.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 026; RAI #: TE-04 **Category:** Terrestrial Resources

Statement of Question:
Provide a description of Exelon's landscape maintenance procedures for the LSCS site.

Response:
Although LSCS has no written procedures applicable to landscape maintenance, a description of the landscape maintenance guidelines used by the LSCS Facilities Maintenance Department to achieve consistency for this activity is provided below:

- Regular – Weekly – Mow grassy areas inside and outside of the Protected Area (PA) to maintain a height of 5 inches or less. (Training Building, SSB, facility entrance roadway, and areas around the parking lots.)
- Secondary – Bi Weekly – Mow shooting range, Waste Water Treatment Facility, fields around the shooting range, North/West lake area.
- Outlying – Monthly – Mow areas that are of less significance, such as Meteorological Tower, cooling lake roads, sample well access roads, river screen house, blow down house.
- Blowdown line – Yearly – Mow the blowdown pipeline right-of-way to the River Screen House (RSH) and the cooling pond dike areas. Typically the areas around blowdown valve stations and sample wells are also done once a year, or as requested to support maintenance.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 027; RAI #: TE-05 **Category:** Terrestrial Resources

Statement of Question:
Describe any site procedures that Exelon maintains for assessing and mitigating the environmental effects of new ground-disturbing activities or other new site activities.

Response:
A short description of each Exelon Generation procedure pertinent to assessing environmental effect of land-disturbing and other new site activities is provided below, and copies are being provided.

1. EN-AA-103, Environmental Review
   This procedure provides a process for screening proposed activities to determine if an activity requires further evaluation for environmental impacts and risk. Activities to be screened include, but are not limited to:
   - Engineering Configuration Changes
   - Initiatives
   - Maintenance Activities
   - Operational Changes
   - Procedure / T&RM Changes
   - Other Site / Non-Generating Facility Activities.

   Activities are reviewed against a list of activities known to require further evaluation for environmental impacts and risk. If an activity is on the list, further evaluation is initiated.

2. EN-AA-103-0001, Environmental Evaluations
   This procedure provides guidance on performing further environmental evaluations to identify the environmental and regulatory impacts, if any, of proposed activities. If an environmental evaluation concludes that implementation of a proposed activity would result in an unacceptable environmental condition or risk, then the proposed activity will not be implemented until the environmental impact(s) is / are addressed.

3. SA-AA-117, Excavation, Trenching, and Shoring
   This procedure provides instructions on safe work practices for excavating, trenching, and shoring, including instructions on actions to be taken if cultural, historic, or paleontological resources are uncovered during an activity involving excavation or trenching.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 028; RAI #: Spec-01 Category: Federally Protected Species and Habitats

Statement of Question:
Provide any information on potential or suitable habitat for Indiana bat or northern longear bat that may occur on the site, particularly summer roosting habitat. Also, because FWS recently expressed concern regarding "tree-clearing" activities that might affect the Federally-listed northern long-eared bat in relation to the Exelon's Braidwood license renewal application in Will County (letter from L. Nelson, FWS to D Wrona, NRC; May 8, 2015; ML15131A004) and because that species can also occur in LaSalle County, provide a statement identifying any "tree-clearing" activities that may occur at the LaSalle site as a consequence of the proposed license renewal.

Response:
Indiana bats (Myotis sodalis) winter (hibernate) in caves and abandoned mines and use a variety of habitats in summer, from pasturelands to forests. Summer roosts are typically in mature forests where dead trees, hollow trees, snags and live trees with peeling bark may be found. They feed on flying insects near rivers and lakes and in uplands. Northern long-eared bats over-winter (hibernate) in large caves and mines and are often found in forested areas in summer, where they forage along ridges and hillsides, and, less often, over forest clearings and forest roads. In summer, long-eared bats roost singly or in small colonies under bark and in cavities of both dead and living trees. Long-eared bats are also known to roost in buildings, barns, sheds, cabins, and bat houses (artificial roosts).

There is little, if any, suitable habitat for the Indiana and northern long-eared bats on the approximately 3,000-acre LaSalle County Station main site (which includes a cooling pond occupying around 2,000 acres). There are no caves, mines, forests, or woodlands, just the cooling pond and scattered trees. The LaSalle wildlife team has taken measures to provide summer roosting opportunities for bats, where none would otherwise exist, by erecting a few roost boxes near the cooling pond and monitoring them for bat use (none as of 2013). These efforts are described in the 2013 LaSalle County Station Wildlife Management Plan.

There appears to be some potential summer roosting habitat (hardwood trees) for bats on the approximately 800 acre makeup/blowdown pipeline corridor, but no specific areas that would attract bats are known. Exelon Generation has not surveyed this pipeline corridor for such bat usage or taken action to evaluate its potential as bat habitat.

No "tree-clearing" activities at the LSCS site will occur as a consequence of the proposed license renewal.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 029; RAI #: SW-01 **Category:** Water Resources

Statement of Question:
Provide Illinois Water Inventory Program reports and associated transmittal correspondence (surface water and groundwater portions) for years 2010 through 2014.

Response:
Illinois Water Inventory Program reports, which are filed each year before October 31, are being provided as Attachment 1 to this RAI response for years 2010 through 2013. Exelon needs additional time to provide the report for 2014, which is not yet available. It will be provided as a supplement to this RAI response after it becomes available.

List of Attachments:
1. Exelon Generation Company, LLC. Annual Reports to the Illinois Water Inventory Program for Years 2010 through 2013.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **030;** **RAI #: SW-02** **Category:** Water Resources

Statement of Question:
Provide a narrative description and illustration, if necessary, to clarify the spacing between the bar grills at the River Screen House.

Response:
Water drawn into in the LSCS river screen house passes through bar grills equipped with a trash rake, then through traveling screens, before entering the pumps. The bar grills are made of galvanized steel bars measuring ⅜ inch thick and 4 inches wide. The narrow dimension of each bar is oriented perpendicular to the incoming water flow, and the centerlines of the narrow dimension of adjacent bars are spaced 3 inches apart.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **031;** **RAI #: SW-03** **Category:** Water Resources

Statement of Question:
Section 4.6.3.1 of the ER references the 1978 Final Environmental Statement, where it is stated that the intake velocity at the face of the travelling screens in the river screen house is 0.2 m/second (0.5 ft/second) during one pump operation and 0.3 m/second (0.9 ft/second) during "occasional" operation. Provide a narrative summary describing any field studies or modeling studies that have occurred during operations that describe the flow through velocity at the traveling screens at the river screen house and at the lake screen house.

Response:
Studies have not been performed during operations to further describe the flow velocities through the traveling screens at the river and cooling pond intakes.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 032; RAI #: SW-04 **Category:** Water Resources

Statement of Question:
Docket the text of the LSCS Stormwater Pollution Prevention Plan, June 2013, or latest version.

Response:
Text of the current revision of the LaSalle Storm Water Pollution Prevention Plan is being provided as Attachment 1 to this RAI response.

List of Attachments
1. Exelon Nuclear LaSalle County Station Storm Water Pollution Prevention Plan, June 2013 [without figures]

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 033; RAI #: SW-05 **Category**: Water Resources

Statement of Question:
As referenced in ER Section 2.2.3, please clarify how often during the year, on average, more than one river makeup pump needs to be operated to supply the cooling pond. Please indicate in what months two-pump operation occurs and for how long. If possible, provide information for the last 5 years of pump operations.

Response:
Two lake makeup pumps are operated year-round, unless one is out of service for maintenance or has tripped. During the summer, the two pumps provide approximately 60,000 GPM of makeup flow. During the winter, the pump discharge ball valves are closed to 30° (from 90° full open) to reduce makeup flow as allowed by reduced evaporation. Operating two makeup pumps at all times gives better redundancy and reduces the stress on the makeup pipeline if one pump trips.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **034;** **RAI #: SW-06** **Category:** Water Resources

Statement of Question:
As referenced in ER Section 2.2.3 relative to the circulating water pumps, clarify and provide the rated capacity of the six circulating water pumps located in the lake screen house.

Response:
Each circulating water pump is rated to provide 205,500 GPM at 31 ft of head.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **035;** **RAI #: SW-07** **Category:** Water Resources

Statement of Question:
As referenced in ER Section 2.2.3 relative to the screen backwash systems for the lake screen house and river screen house, respectively, clarify and briefly describe whether the backwash systems actuate automatically at some set frequency and/or via differential pressure preset, or if operator intervention is required to activate the backwash systems.

Response:
The River Screen House (RSH) traveling screens can be placed in Auto or Manual (Slow or Fast speed) mode. They are left in Auto unless unusually high debris intake requires cleaning by hand. In Auto, the screens activate in Slow speed when differential water level across the screens reaches 4 in. If differential level continues to rise to 6 in., the screens shift into Fast speed. If differential level exceeds 16 in. for at least 15 seconds, the associated makeup pumps will trip to prevent cavitation damage. When differential level is reduced to 3 in., a timer continues to rotate the screens for one full revolution, and then brings them to a stop. During periods of high debris intake, the screens may be left in Manual mode in either Slow or Fast speed as needed to prevent high differential level.

The Circulating Water (CW) traveling screens located at the Lake Screen House can be placed in Auto or Manual mode, but they are usually left in Auto. In this mode, when differential level is between 0 and 6 in., a timer initiates a 3-minute wash cycle every 12 to 14 hours. If differential level increases to between 6 and 10 in., the screens start washing continuously at their Slow speed. If differential level continues to increase to between 10 and 12 in., the screens shift into Fast speed. During fish runs or other periods of high debris intake, the screens may be left in Manual mode in either Slow or Fast speed as needed to prevent high differential level.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 036; RAI #: SW-08 Category: Water Resources

Statement of Question:
As referenced in Sections 4.5.1 and 4.6.3.2 of the ER, provide a summary of the Extreme Heat Implementation Plan specific to LSCS, including summaries of appendices I and M. As part of the summary, include description(s) of the individual processes and procedural steps under the plan used to manage the cooling pond during extreme summer temperatures in order meet thermal discharge limits and to manage low-flow conditions on the Illinois River. Also, summarize the types of activities that occur once the temperature is predicted to reach 90 °F or above, or if a fish kill occurs.

Response:
The Extreme Heat Implementation Plan (EHIP) specific to LSCS contains guidance for accomplishing the following

- Monitoring and reporting of environmental conditions, such as high ambient air temperature and drought effects, that could result in challenges to compliance with NPDES permit limits, and thereby lead to unit derates.
- Implementation of action plans and protocols for communicating and reporting compliance challenges to external entities.
- Action to mitigate adverse effects of summer conditions on power production capability.

Table 1 below summarizes processes and procedural steps indicated by the EHIP for managing the cooling pond makeup and blowdown flows such that cooling pond temperature in the Ultimate Heat Sink will comply with Technical Specification Limits on condenser inlet temperature and NPDES permit thermal limits on blowdown discharge will also be met.

Table 2 below summarizes processes and procedural steps indicated by the EHIP for managing the cooling pond blowdown during extreme summer temperatures in order to meet NPDES permit thermal limits on discharge to the Illinois River. Calculations to determine the mixing zone temperature account for the Illinois River flow and temperature. Low river flows and high ambient river temperature conditions are therefore addressed by the calculation.

Table 3 below lists the NPDES permit thermal limits.

List of Attachments:
None.

Table 1
EHIP Processes and Procedural Steps for Compliance With Technical Specification Limit on Condenser Inlet Temperature (≤ 104°F)

Action Trigger	Procedural Steps
Cooling pond thermal model predicts peak average condenser inlet temperature ≥ 95°F	1. Make courtesy notification to IDNR Hatchery to allow them to cease water withdrawals from the cooling pond before hatchlings would be harmed. 2. Notify Station Communications Director of potential for fish kill in the cooling pond. 3. Raise cooling pond water level to approximately 700.0 ft. 4. Run cooling pond thermal model twice/wk to predict peak average condenser inlet temperatures 3 days ahead.
Actual peak average condenser inlet temperature ≥ 95°F	1. Control blowdown flow using valve adjustments to maintain river mixing zone temperatures within NPDES permit thermal limits. 2. Perform daily fish kill inspections and log results. 3. Notify Station and Corporate Environmental If dead fish are observed. 4. Determine cause of fish kill. 5. If Corporate Environmental confirms a fish kill above normal mortality, notify NRC and IDNR.
Actual peak average condenser inlet temperature ≥ 97.5°F	1. Run cooling pond thermal model frequently to predict peak average condenser inlet temperatures 3 days ahead.
Predicted peak average condenser inlet temperature ≥ 99°F	1. Review staffing level, and if needed conduct callouts to deal with potential fish kill in the Ultimate Heat Sink. 2. Prepare to implement procedure for service water strainer backwash. 3. Verify vendor availability for fish removal from Lake Screen House trash basket. 4. If Corporate Environmental confirms a fish kill above normal mortality, notify NRC and IDNR.
Actual peak average condenser inlet temperature ≥ 99.0 °F	1. Monitor in-plant equipment for proper operation according to procedure for abnormal circulating water system conditions. 2. Control blowdown flow using valve adjustments to maintain river mixing zone temperatures within NPDES permit thermal limits. [NOTE: If river flow is ≤ 1,592 cfs, river mixing zone temperature must be calculated before changing blowdown flow.] 3. Prepare to operate standby service water pumps. 4. Monitor the Lake Screen House traveling screen backwash trash basket twice/hour and other equipment for indications of a fish kill. 5. Verify vendor availability for fish removal from Lake Screen House trash basket.

Action Trigger	Procedural Steps
	6. If Corporate Environmental confirms a fish kill above normal mortality, notify NRC and IDNR. 7. Initiate Exelon Issues Management procedure to evaluate potential courses of action on the basis of peak average condenser inlet temperature forecasts.
Predicted peak average condenser inlet temperature ≥ 101.25 °F	1. Monitor in-plant equipment for proper operation according to procedure for abnormal circulating water system conditions. 2. Follow derate plan if one has been developed under the Exelon Issues Management procedure. 3. Run cooling pond thermal model as often as needed to predict peak average condenser inlet temperature. 4. Calculate river mixing zone temperatures to verify that NPDES permit thermal limits have not been exceeded.
Actual peak average condenser inlet temperature ≥ 101.25 °F	Commence shutdown of both units because Technical Specification limits on condenser inlet temperature will be exceeded.

SOURCE: EN-LA-402-0005, Attachments I, M, and R

Table 2
EHIP Processes and Procedural Steps for Meeting Blowdown Thermal Discharge Limits During Periods of High River Temperature

Action Trigger	Procedural Steps
River thermal model predicts peak river intake water temperature ≥ 88.5°F	1. Raise cooling pond water level. 2. Run thermal model twice/wk to predict peak river intake water temperatures 3 days ahead.
Actual peak river intake water temperature ≥ 88.5°F (Apr – Nov) or ≥ 58.5°F (Dec – Nov)	1. Calculate river mixing zone temperatures. 2. Control blowdown flow using valve adjustments to maintain river mixing zone temperatures within NPDES permit thermal limits.
Mixing zone temperature > 90°F (Apr – Nov) or > 60°F (Dec – Mar)	1. Track hours of excursion 2. Continue blowdown flow controls using valve adjustments.
Actual peak river intake water temperature > 90°F (Apr – Nov) or > 60°F (Dec – Nov)	1. Track hours of excursion 2. Control blowdown flow using valve adjustments to maintain river mixing zone temperature within NPDES permit thermal limits.
Mixing zone temperature = 93°F (Apr – Nov) or = 63°F (Dec – Mar)	1. Close Blowdown Flow Control Valve and isolate Blowdown Line at Valve House (zero blowdown flow) 2. Minimize cooling pond makeup.

SOURCE: EN-LA-402-0005, Attachment R

Table 3
NPDES Permit Thermal Limits

Parameter	Permit Limit
Mixing Zone[1] Temperature (No Excursion Hours[2])	90°F (Apr to Nov) 60°F (Dec to Mar)
Mixing Zone Temperature (Excursion Hours)	93°F (Apr to Nov) 63°F (Dec to Mar)
Mixing Zone Maximum Differential Temperature[3]	5°F
Maximum Heat Rejection Rate	0.5 Billion BTU/hour

NOTES:

1 Allowable Mixing Zone size = 26 acres; Actual Mixing Zone size = 1 acre.

2 Excursion Hours are available as a result of regulatory discretion. LSCS currently has 87.6 available Excursion Hours in each 12 month period.

3 Mixing zone temperature and differential temperature are measured at the edge of the allowable mixing zone.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 037; RAI #: SW-09 **Category:** Water Resources

Statement of Question:
Identify when the most recent blowdown pipeline and intake pipeline breaks have occurred, respectively. For the most recent blowdown line break, summarize the environmental effects of the break (i.e., volume of effluent released, area affected, results of any analyses conducted of the release); the impact on plant operations if any, and corrective action taken. Also, provide copies of release reports/correspondence associated with breaks that were submitted to regulatory agencies.

Response:
The most recent break in the blowdown pipeline occurred on July 13, 2012. The notice of this break sent to the IEPA and U.S. EPA Region V is being provided as Attachment 1 to this response. The notice contains information concerning impacts of the break.

The most recent break in the makeup pipeline occurred on January 23, 2014. The notice of this break sent to the IEPA and U.S. EPA Region V is being provided as Attachment 2 to this response. The notice contains information concerning impacts of the break.

To date, no makeup or blowdown pipeline breaks have affected reactor operation. Pipeline repairs typically involve establishing a temporary roadway to the location of the break, excavating to expose the broken pipe, removal and replacement of the broken pipe section, backfill of the excavation site, grading to return the surface to approximate original contour, and stabilization of the excavation site and temporary roadway to prevent erosion pending revegetation.

As Section 2.2.3 of the license renewal ER indicates, Exelon Generation is implementing the following actions to reduce the frequency of breaks and impacts when breaks occur:

- A long-term plan to replace existing relief valves in both pipelines with new valves that allow controlled venting, which can mitigate some effects of pressure surges.
- The frequency of makeup pipeline pressure transients has been reduced by raising the traveling screen differential pressure setpoint and by installing traveling screen digital recorders. The digital recorders provide data on travelling screen parameters that are monitored by operators to identify abnormal trends that suggest when screen maintenance would be appropriate to prevent makeup pump trips.
- Parts are kept on hand for replacement of one section of pipe.
- A plan is maintained for rapid repairs to the pipeline.
- If deemed necessary, backfill is applied in critically eroded areas.
- Procedures dictate conservative control of the blowdown valve and the makeup pumps.

- In accordance with applicable plant procedures, operator field rounds have been modified to include semi-annual verification of pipeline integrity as well as pipeline integrity verification after filling the makeup and/or blowdown pipes.

List of Attachments:

1. Letter from Exelon Generation (P. Karaba) to Illinois Environmental Protection Agency regarding LaSalle County Station – Blowdown Line Failure, August 6, 2012.
2. Letter from Exelon Generation (H. Vinyard) to U.S. Environmental Protection Agency and Illinois Environmental Protection Agency regarding LaSalle County Station – Make-up Line Failure, February 21, 2014.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **038;** **RAI #: SW-10** **Category:** Water Resources

Statement of Question:
Provide a water balance/ flow diagram (showing flow rates) for LSCS.

Response:
The requested flow diagram is provided as Attachment 1 to this response.

List of Attachments:
1. Exelon Generation LaSalle County Station Water Flow Schematic, 12/29/2011 (as updated 7/05/2013)

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 039; RAI #: SW-11 **Category:** Water Resources

Statement of Question:
Provide copies of any Notices of Violation (NOVs), nonconformance notifications, or related infractions received from regulatory agencies associated with NPDES permitted discharges, sanitary sewage systems, groundwater or soil contamination, including spills, leaks, and other inadvertent releases of fuel solvents, chemicals, or radionuclides (covering past 5 years inclusive of 2014). Include correspondence of self-reported violations to responsible agencies.

Response:
During the most recent 5 years (2010 through 2014), LSCS has not been cited by any regulatory agency for violation of or noncompliance with a permit, regulation, or law. Other events that were reported with DMRs to the Illinois EPA during the most recent 5 years include the following:

- Makeup line failure on January 29, 2010
- Blowdown line failure on July 13, 2012.
- Makeup line failure on January 25, 2013.
- Blowdown line air release valve failure on February 8, 2013.
- Makeup line failure on May 21, 2013.
- Makeup line failure on January 23, 2014.

No spills, leaks, and other inadvertent releases of fuel solvents or chemicals occurred in the most recent 5 years.

In June 2010, LSCS determined that the Unit 1 Cycled Condensate Storage Tank was leaking, which resulted in a release of tritium that was confined to plant property. A 10 CFR 50.75(g) Entry was recorded for this event.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 040; RAI #: SW-12 **Category:** Water Resources

Statement of Question:
Identify when maintenance dredging was last performed at the river screen house and identify the volume of spoils removed and where disposed of. Indicate if any chemical analysis was performed on the spoils and provide a summary of the results. Provide a copy of any activity report(s) submitted to regulatory agencies associated with the dredging event, if applicable.

In addition, does Exelon anticipate conducting any additional dredge and fill activities during the license renewal period? If so, indicate the nature of such anticipated activities and the expected frequency.

Response:
Maintenance dredging was last performed at the LSCS river screen house during October 22 to 24, 2013. Less than 100 cubic yards of sediment was removed. The dewatered material was placed out of the floodplain at a location near the river screen house. No chemical analysis of the dredged material is required by the applicable Department Of The Army Permit, and no reports to the permitting agency are required.

No fill activities are expected at LSCS during the license renewal term. However, as the LSCS ER section 3.6.5.3 explains, the need for maintenance dredging at the LSCS river screen house forebay is periodically evaluated under an Exelon procedure (EN-AA-403, “Dredging”), which addresses the decision-making process for initiation of dredging and prompts the responsible employees to perform dredging operations, when needed, in accordance with dredging permit requirements. Necessary dredging at the river screen house is currently performed under U.S. Army Corps of Engineers Permit Number CEMVR-OD-P-2006-185 issued pursuant to Rivers and Harbors Act of 1899 (33 USC 403), Section 10. Future renewals of this permit, or new permits, will be obtained during the license renewal term to allow maintenance dredging on an as needed basis.

Based on past operating experience, Exelon Generation does not expect maintenance dredging to be needed in the vicinity of the river discharge canal during the license renewal term.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 041; RAI #: SW-13 **Category:** Water Resources

Statement of Question:
Provide for review copies of all current Clean Water Act Section 404 permits, and state equivalent permits, issued to Exelon for LSCS activities including the following: Department of Army Permit CEMVR-OD-P-2006-185.

Response:
LSCS has no Clean Water Act Section 404 permits for the discharge of dredge or fill material into wetlands. Currently, maintenance dredging in the Illinois River at the LSCS is performed on an as-needed basis under Department of the Army, Rivers and Harbors Act Section 10 permit CEMVR OD-P-2006-185, a copy of which is being provided as Attachment 1 to this RAI response.

List Attachments Provided:
1. Department of the Army Rivers and Harbors Act Section 10 permit CEMVR OD-P-2006-185

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **042;** **RAI #: SW-14** **Category:** Water Resources

Statement of Question:
Provide a description of any planned operational and maintenance activities (or projects) anticipated to be undertaken during the license renewal term (as possible, identify expected timeframe, location(s) affected, acres disturbed, and activity/project duration).

Response:
Exelon Generation has no plans for land-disturbing operational or maintenance construction activities in previously undisturbed areas at LSCS during the license renewal term.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 043; RAI #: GW-01 **Category:** Water Resources

Statement of Question:
Submit into ADAMS Conestoga-Rovers & Associates. May 2011. NEI 07-07 Update Investigation Report, LaSalle Generating Station, Marseilles, IL, with appendices (oversize maps do not need to be included).

Response:
Exelon Generation needs additional time to respond to this RAI and will work with the NRC staff to identify and make specific information contained in the report available for viewing during the delay. A supplement to this RAI response will be filed during August 2015.

List of Attachments
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **044;** **RAI #: GW-02** **Category:** Water Resources

Statement of Question:
Provide currently available 2015 tritium concentration data from monitor wells, used to monitor the cleanup of the spill from the Unit 1 Cycled Condensate Tank.

Response:
Currently available 2015 results for the Unit 1 Cycled Condensate Storage Tank remediation monitoring are being provided as Attachment 1 to this RAI response.

List of Attachments

1. Unit 1 Cycled Condensate Storage Tank Tritium Remediation Monitoring

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **045;** **RAI #:** **SE-01** **Category:** Socioeconomics

Statement of Question:
Provide updated permanent workforce data, preferably a residential distribution of permanent workforce by county in table format.

Response:
The table below provides the residential distribution of permanent LSCS employees by county. All counties are located in Illinois.

County Name	Number of Permanent LSCS Employees
Bay	1
Bureau	12
Carroll	1
Champaign	1
Cook	10
DeKalb	1
Dupage	5
Ford	1
Fulton	1
Grundy	161
Hamilton	1
Kane	7
Kankakee	6
Kendall	38
Kitsap	1
Lake	1
LaSalle	490
Livingston	40
Marshall	5
McLean	7
Ogle	2
Peoria	1
Putnam	7
Rock Island	1
Tazewell	2
Will	86

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **046;** **RAI #:** **SE-02** **Category:** Socioeconomics

Statement of Question:
Provide updated property tax information, similar to the data provided in Tables 3.9-2 and 3.9-3 of the ER. Include data for the years 2013 and 2014, if available.

Response:
The tables for tax year 2013 are being provided as Attachments 1 and 2 to this response. However, because detailed tax bills for the 2014 tax year have not yet been issued, information about the 2014 tax year payments is not yet available and could not be provided in Attachment 1 or 2. Nevertheless, the property tax assessment for 2014 is known and is included in Attachment 1.

List of Attachments:
1. Supplement to LSCS License Renewal ER, Table 3.9-2, LaSalle County Station Power Block Tax Payments and Valuations
2. Supplement to LSCS License Renewal ER, Table 3.9-3 LaSalle County Station Tax Payments to Taxing Entities as a Percentage of Total Levy

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **047;** **RAI #:** **SE-03** **Category:** Socioeconomics

Statement of Question:
The latest settlement agreement was signed in July 2013 and covers the next 7 tax years starting with the 2013 tax year. What is the expectation for future tax years beyond the next 7 years during the license renewal term? Provide any relevant information.

Response:
Exelon Generation intends to work with the local taxing bodies to enter into tax settlement agreements for future years for the power block, as it helps both the company and the local taxing bodies to have consistency in order to plan for income and expenditures. Given current information, the company is confident that future long-term property tax settlement agreements will be possible throughout the license renewal term. However, if negotiations are not successful, Exelon Generation would appeal any property tax assessment it believes does not accurately reflect valuation of the plant.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **048;** **RAI #:** **SE-04** **Category:** Socioeconomics

Statement of Question:
In addition to property tax payment information presented in Section 3.9 of the ER, describe any other major annual support payments (e.g., emergency preparedness fees), one-time payments, and other forms of non-tax compensation (if any) provided to local organizations, communities, and jurisdictions (e.g., county, municipality, townships, villages, incorporated places, and school districts) on behalf of LSCS.

Response:
Exelon Generation pays significant statutory fees each year to the Illinois Emergency Preparedness Agency related to the LaSalle nuclear reactors. Smaller amounts are paid on an intermittent and voluntary basis to local emergency management agencies and other government agencies that participate in emergency management activities. There are a number of additional donations to local charities and governmental agencies as part of Exelon Generation's corporate good will participation in the local community. All of these payments are listed by year in Attachment 1 to this response.

List of Attachments:
1. Table 3.9-4, LaSalle County Station Annual Support Payments and Donations

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **049;** **RAI #:** **SE-05** **Category:** Socioeconomics

Statement of Question:
Provide information about any anticipated changes in state and local tax laws, rates, and assessed property value or any other recent or anticipated tax payment adjustments that could result in notable future increases or decreases in property taxes or other payments.

Response:
Exelon Generation anticipates no change in state or local tax laws, rates or assessments that would result in notable future increases or decreases in property taxes or other payments to state or local government with respect to LSCS during the license renewal term. Even so, future failed negotiations for a new property tax settlement agreement could result in a property tax assessment significantly higher than what Exelon Generation believes reflects an accurate valuation for the plant. Should this occur, LSCS would incur correspondingly higher property tax payments.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **050;** **RAI #:** **HC-01** **Category:** Historic & Cultural Resources

Statement of Question:
Provide a discussion of the discrepancy between site boundaries shown on USGS topographic maps versus site boundaries discussed in the license renewal environmental report. Clarify the number and location of historic and cultural sites within the site boundaries. Specifically, state whether sites LS00252, LS00514, and LS00533 are located within Exelon controlled property.

Response:
During its preparation for the May 2015 LSCS License Renewal Environmental Audit, Exelon discovered that the 1977 Operating License Environmental Report (OL-ER) and subsequent documentation, which were the bases for the LSCS License Renewal ER, inaccurately depicted ownership boundaries for the makeup and blowdown pipeline right-of-way near the Illinois River in the vicinity of the river screen house and blowdown discharge flume. Because of this, the ownership boundaries for the makeup and blowdown pipeline right-of-way were also inaccurately depicted in the License Renewal ER. Accordingly, on the USGS topographic maps provided to the NRC during the Audit (in response to Audit Needs Question HCR-02), Exelon depicted the correct property pipeline right-of-way boundaries rather than the boundaries that were shown on figures in the License Renewal ER.

As a result of the property boundary inaccuracies, two of the isolated archaeological finds identified during the 1972 archaeological survey (LS00252 and LS00533) were incorrectly reported in the License Renewal ER as being located on LSCS property, when in fact, they are outside the LSCS property boundary. LS00514 was reported in the License Renewal ER as being located on LSCS property, which remains correct.

Under separate correspondence to the NRC, Exelon is providing revised versions of all text, tables and figures in the LSCS License Renewal ER that were erroneous because of the inaccurate depiction in the Operating License ER of ownership boundaries for the makeup and blowdown pipelines right-of-way corridor.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **051;** **RAI #:** **HC-02** **Category:** Historic & Cultural Resources

Statement of Question:
The NRC staff's independent review of historic and cultural resources has revealed three additional sites of note: LS00504, LS00527, and LS00540. Are these sites located within Exelon controlled property? If so, please discuss.

Response:
Exelon could not ascertain from available information the exact locations of the three sites designated as LS00504, LS00527, and LS00540. However, using maps of the Exelon property, recent maps of the Marseilles Training Area (found at http://www.il.ngb.army.mil/MilitaryAffairs/MTA/Maps/AreaMap25.aspx) and maps found in *Cultural Resources of the Marseilles Training Area, North-Central Illinois* (Ferguson et al. 1995), Exelon has approximated the locations of the three sites and concluded that LS00504 and LS00540 are not within the LSCS property boundaries. It should be noted that the maps in Ferguson et al. (1995) designate two site locations as "504." The location of only one would be in question in relation to the LSCS property boundaries. That is the one Exelon investigated.

The third site, LS00527, which is an historic site approximately 100 by 50 m in size, is described in Ferguson et al. (1995) as being situated near a concrete foundation and barn roof which, in turn, are located in a nearby field that is under a power line. Based on this description, Exelon concluded that LS00527 is located in the narrowest part of the LSCS makeup and blowdown pipelines right-of-way corridor, slightly west of the ComEd transmission line that shares the corridor with the pipelines in that location, and just north of the transmission line's jog to the west. According to Ferguson et al. (1995), the survey of LS00527 yielded a number of artifacts that identify it as a farmstead dating predominantly to the twentieth century and, therefore, not potentially significant.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **052;** **RAI #:** **HC-03** **Category:** Historic & Cultural Resources

Statement of Question:
Provide information regarding management of the land leased by Exelon to third parties. Is Exelon managing this land, or is its management left to the lessee with oversight by Exelon? Discuss the responsibility for managing inadvertent historic or cultural discoveries on leased land.

Response:
Regarding control of land within the LaSalle site that is leased or licensed, Exelon Generation generally retains an unrestricted right to enter, use, and dispose of the property for its business purposes and in the event of emergencies. Also, neither subleases nor license assignments are allowed, and the lease or license typically restricts use of the property solely to a designated purpose, such as for recreational purposes, for farming and agricultural purposes, for cultivating crops, and/or for pastureland. In addition, some leases or licenses may prohibit certain specific activities on the property, such as removing top soil, changing the original ground grade level, altering the natural water drainage pattern, and installing irrigation systems. Some leases or licenses may require Exelon Generation's prior review and approval for construction or installation of any improvements on the property.

Leaseholders and licensees are responsible for compliance with all laws and regulations applicable to the property, and must notify Exelon Generation in writing of any potential or known violations of such legal requirements. Hence, if historic or cultural resources are inadvertently discovered on leased or licensed property, the leaseholder or licensee must comply with applicable legal requirements, and if violations become known, the leaseholder or licensee must undertake to notify Exelon Generation in accordance with the lease.

If historic or cultural resources are inadvertently discovered on leased or licensed property as a result of activities carried out by Exelon Generation or its contractors in accordance with Exelon Generation's right to enter and use the property, the discovery would be managed in accordance with applicable company procedures, which are described in response to RAI # HC-05.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **053;** **RAI #:** **HC-04** **Category:** Historic & Cultural Resources

Statement of Question:
Discuss the applicability of surveys related to historic or cultural resources performed by Exelon lessees to Exelon property (e.g., a survey done by the Illinois National Guard for the training facility that is immediately west of the Exelon property containing the transmission lines and the makeup/blowdown pipelines).

Response:
Using maps of the Exelon Generation property boundaries along with maps and text found in *Cultural Resources of the Marseilles Training Area, North-Central Illinois* (Ferguson et al. 1995), Exelon Generation concludes that the cultural resources surveys conducted within the Marseilles Training Area during 1983, 1993 and 1994 included field surveys covering some portions of the Exelon Generation-owned makeup and blowdown pipelines right-of-way corridor. The only cultural resources site identified by Ferguson et al. (1995) that is located within the right-of-way corridor is LS00527.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 054; RAI #: HC-05 Category: Historic & Cultural Resources

Statement of Question:
Related to Exelon's environmental review procedures for land-disturbing activities, please provide:

a. A description of how inadvertent historical or cultural discoveries on the LSCS site are considered by Exelon staff.
b. A list of Exelon's environmental procedures and a short description of their purpose.
c. A description of the LSCS Cultural Resources Management Plan and its state of implementation

Response:

a. If cultural or historic resources are discovered during an ongoing excavation at LSCS, the work would be stopped, appropriate notifications would be made, a cover would be positioned to protect the exposed resources from the elements, access to the area would be controlled with barriers and/or signs, and work would not resume until authorized by Environmental personnel. Also, Environmental personnel would coordinate the salvage or disposition of any recovered resources.

b. A short description of each Exelon Generation procedure pertinent to land-disturbing activities is provided below.

1. EN-AA-103, Environmental Review
This procedure provides a process for screening proposed activities to determine if an activity requires further evaluation for environmental impacts and risk. Activities to be screened include, but are not limited to:
    - Engineering Configuration Changes
    - Initiatives
    - Maintenance Activities
    - Operational Changes
    - Procedure / T&RM Changes
    - Other Site / Non-Generating Facility Activities.

Activities are reviewed against a list of activities known to require further evaluation for environmental impacts and risk. If an activity is on the list, further evaluation under procedure EN-AA-103-0001 may be initiated.

2. EN-AA-103-0001, Environmental Evaluations
This procedure provides guidance on performing further environmental evaluations to identify the environmental and regulatory impacts (including impacts on known or potential cultural and historical resources), if any, of proposed activities. If an environmental evaluation concludes that implementation of a proposed activity would result in an unacceptable environmental condition or risk, then the proposed activity will not be implemented until the environmental impact(s) is / are addressed.

3. SA-AA-117, Excavation, Trenching, and Shoring
   This procedure provides instructions on safe work practices for excavating, trenching, and shoring, including instructions on actions to be taken if cultural, historic, or paleontological resources are uncovered during an activity involving excavation or trenching.

c. A draft Cultural Resource Management Plan (CRMP) has been developed for LSCS use and comment. Its purpose is to serve as a human performance tool to assist LSCS in completing the cultural and historic resources component of an Environmental Evaluation, as defined in EN-AA-103-0001. Presently, use of this tool by Station environmental personnel is optional. A future revision of EN-AA-103-0001 is expected to acknowledge CRMPs as appropriate guidance for use in performing Environmental Evaluations at Exelon Generation nuclear stations that have developed such plans.

   The content of the LSCS CRMP includes site-specific guidance on preparing a cultural and historic resources component, when warranted, for an Environmental Evaluation being conducted in accordance with EN-AA-103-0001. Steps are provided for:
   - Evaluating a proposed land disturbing activity in the Owner-Controlled Area (OCA); and
   - Evaluating a proposed activity in the OCA that introduces a new noise, air, or visual element which potentially could affect a culturally sensitive area outside the OCA.

   A Cultural Resource Environmental Review Form is provided to prompt an environmental evaluator of a proposed land-disturbing activity to consider whether the activity has characteristics that could impact cultural or historic resources. For example:
   - Would the activity be located in an area delineated as a recorded archaeological site or as having a moderate or high potential for the existence of archaeological sites?
   - Would the activity be within view or hearing distance of a historic structure?

   Attachments to the CRMP include maps of the OCA showing the approximate locations of known archaeological sites and indicating the potential (low, moderate, high) for existence of archeological sites throughout the OCA. Also marked are areas within the OCA that do not require evaluation because previous extensive land-disturbing activities have occurred there. A table of historic properties listed on the National Register of Historic Places and located within 10 miles of LSCS is provided. It identifies the address of each property and its distance from the Station.

List of Attachments:

None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **055;** **RAI #:** **HC-06** **Category:** Historic & Cultural Resources

Statement of Question:
Provide information on management of land-disturbing activities around less-developed areas of the plant site (e.g., mowing), especially near known historic and cultural resources or near unsurveyed areas. Specifically, provide information about responsibility for managing inadvertent discoveries on leased land.

Response:
Responsibility for managing inadvertent discoveries on leased land is discussed in the response to RAI # HC-03.

Although LSCS has no procedure documents applicable to landscape maintenance, following is a description of the landscape maintenance guidelines used by the LSCS Facilities Maintenance Department to achieve consistency for this activity.

- Regular – Weekly – Mow grassy areas inside and outside of the Protected Area (PA) to maintain a height of 5" or less. (Training Building, SSB, facility entrance roadway, and areas around the parking lots.)
- Secondary – Bi Weekly – Mow shooting range, Waste Water Treatment Facility, fields around the shooting range, North/West lake area.
- Outlying – Monthly – Mow areas that are of less significance, such as Meteorological Tower, cooling lake roads, sample well access roads, river screen house, blow down house.
- Blowdown line – Yearly – Mow the blowdown pipeline right-of-way to the River Screen House (RSH) and the cooling pond dike areas. Typically the areas around blowdown valve stations and sample wells are also done once a year, or as requested to support maintenance.

Note: The frequency of mowing activities is subject to weather conditions, emergent and scheduled work activities, plant priorities, and FMD personnel availability.

Note: Known archaeological resources on the LSCS site are not maintained in any way differently than any of the other landscape in the immediate surrounding area.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **056;** **RAI #:** **HC-07** **Category:** Historic & Cultural Resources

Statement of Question:
Discuss cultural resource training required for LSCS staff.

Response:
Training specific to cultural resources management is not currently required for LSCS staff members.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: **057;** **RAI #: ALT-01** **Category:** Alternatives

Statement of Question:
Provide the available acreage and locations on the LSCS site that would be suitable for alternative energy generation.

Response:
Assuming that the cooling pond, storm water ponds, canals, and the make-up and blowdown pipeline right-of-way are retained for their existing purposes, the area available for development of alternative generation facilities, if the LSCS Units 1 and 2 licenses are not renewed, would be limited to the area currently occupied by LSCS Units 1 and 2 (approximately 150 ac), the undeveloped area immediately surrounding the facility (250 ac), and the area of the Illinois fish hatchery (50 ac) – approximately 450 total acres. For the alternatives analysis in the ER, Exelon Generation assumed that, if the LSCS site were to be used for development of an alternative generating facility, the existing units would be decommissioned and removed, allowing alternative generation to sit atop the old plant footprint, or that generation facilities with small footprints could be placed in the 250-acre undeveloped area and the 50-acre area where the fish hatchery is now located.

List of Attachments:
None.

LaSalle Environmental Audit
Response to Request for Additional Information

Index #: 058; RAI #: None **Category:** ER References to be Docketed

Statement of Question:
ER References to be Docketed

1. (ComEd 1977) Commonwealth Edison Company. 1977. LaSalle County Station Environmental Report Operating License Stage. Volume 1. May 10, 1977. [Terrestrial resource sections including any applicable tables, figures, and appendices]
2. (Exelon Generation 2013b) Exelon Generation. 2013. LaSalle County Generating Station Wildlife Management Plan.
3. (IEPA 2000) Illinois Environmental Protection Agency. 2000. Federally Enforceable State Operating Permit for LaSalle County Generating Station No. 75040086. December 11, 2000.
4. Fritts, M. W. 2013. RE. Request: Illinois River Reports. Illinois River Biological Station and Illinois Natural History Survey. Havana, Illinois. June 24, 2013.
5. EA Engineering, Science, and Technology, Inc. 2014. LaSalle County Station 2013 Fish and Benthos Monitoring and Historical Fish and Benthos Comparisons. Deerfield, IL. March 2014.
6. EA Engineering. 2000. Final Report La Salle Station Aquatic Monitoring RM 249.7-249.8. Prepared for ComEd. Chicago, IL.
7. HDR Engineering. 2010. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2009. February 2010.
8. HDR Engineering. 2011. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2010. February 2011.
9. HDR Engineering. 2012. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2011.
10. HDR Engineering. 2013. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2012.
11. HDR Engineering. 2014. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2013.
12. Exelon Nuclear. 2009. Evaluation 2009-8466, Rev. 0, Final Issue, Task Report 47 - Environmental Impact Non- Safety Related. LaSalle County Generation Station Units 1 & 2. September 2009.
13. Illinois Department of Public Health. 2014. Marshall Email: to Ranek. RE: LaSalle County Station Units 1 and 2 -- Consultation about thermophilic organisms. February 19, 2014.
14. Illinois Environmental Protection Agency. 2014. Good Email: to Ranek. RE: LaSalle County Station Units 1 and 2 -- Consultation about thermophilic organisms. February 28, 2014.
15. (Kinzer 2013) Kinzer, L. 2013. Kinzer Email: to Connor, Tetra Tech. FW: Levels of Service. LaSalle County Highway Department. May 20, 2013.
16. (Exelon Generation 2013a) Exelon Generation Company, LLC. 2013. Email: FW: Human Resources Issue for Next Week. Email Wood to Ranek, and associated email change. May 31, 2013.
17. (Tetra Tech 2014) Tetra Tech, Inc. Connor Telecon to Selected government agencies and private social welfare organizations. Compilation of Telephone Logs Investigating

Potential Existence of Subsistence-Like Populations in LaSalle and Grundy counties, Illinois. March 13, 2014.

18. Ultimate Heat Sink Fish Mortality and Vegetation Evaluation. EC 390348, Rev. 000. October 11, 2012.

Response:
The following table indicates the manner in which each requested document is being provided.

DOCUMENT	RESPONSE
1. (ComEd 1977) Commonwealth Edison Company. 1977. LaSalle County Station Environmental Report Operating License Stage. Volume 1. May 10, 1977. [Terrestrial resource sections including any applicable tables, figures, and appendices]	The requested excerpts from both Volumes 1 and 2 of the 1977 Environmental Report Operating License Stage (ER-OL), are being provided as Attachment 1 to this RAI response. Attachment 1 includes the following: • ER-OL Table of Contents • Vol 1, Sec. 2.2.2, Terrestrial Ecology, pp. 2.2-17 through 2.2-53 • Vol. 1, Tables 2.2-24 through 2.2-71, pp. 2.2-83 through 2.2-168 • Vol. 1, Appendixes 2.2A through 2.2D • Vol. 2, Sec. 4.1.4, Monitoring Program, pp. 4.1-4 to 4.1-5 • Vol. 2, Sec. 4.1.4.1, Terrestrial Studies, pp. 4.1-5 to 4.1-6 • Vol. 2, Sec. 4.2.5, Plans for Wildlife Protection, p. 4.2-2 • Vol. 2, Sec. 4.5 Construction Impact Control Program, pp. 4.5-1 to 4.5-3 • Vol. 2, Sec. 6.1.4, Applicant's Preoperational Monitoring Program – Land, pp. 6.1-28 through 6.1-56 • Vol. 2, Tables 6.1-10 through 6.1-15, pp.6.1-74 through 6.1-79 • Vol. 2, Figures 6.1-4 through 6.1-7.
2. (Exelon Generation 2013b) Exelon Generation. 2013. LaSalle County Generating Station Wildlife Management Plan.	The requested document is being provided as Attachment 2 to this RAI response.
3. (IEPA 2000) Illinois Environmental Protection Agency. 2000. Federally Enforceable State Operating Permit for LaSalle County Generating Station No. 75040086. December 11, 2000.	The requested document is being provided as Attachment 3 to this RAI response.
4. Fritts, M. W. 2013. RE. Request: Illinois River Reports. Illinois River Biological Station and Illinois Natural History Survey. Havana, Illinois. June 24, 2013.	The requested document is being provided as Attachment 4 to this RAI response.
5. EA Engineering, Science, and Technology, Inc. 2014. LaSalle County Station 2013 Fish and Benthos Monitoring and Historical Fish and Benthos Comparisons. Deerfield, IL. March 2014.	The requested document is being provided as Attachment 5 to this RAI response.

6. EA Engineering. 2000. Final Report La Salle Station Aquatic Monitoring RM 249.7-249.8. Prepared for ComEd. Chicago, IL.	The requested document is being provided as Attachment 6 to this RAI response.
7. HDR Engineering. 2010. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2009. February 2010.	The requested document is being provided as Attachment 7 to this RAI response.
8. HDR Engineering. 2011. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2010. February 2011.	The requested document is being provided as Attachment 8 to this RAI response.
9. HDR Engineering. 2012. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2011.	The requested document is being provided as Attachment 9 to this RAI response.
10. HDR Engineering. 2013. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2012.	The requested document is being provided as Attachment 10 to this RAI response.
11. HDR Engineering. 2014. Zebra Mussel Monitoring Program at LaSalle Nuclear Station, 2013.	The requested document is being provided as Attachment 11 to this RAI response.
12. Exelon Nuclear. 2009. Evaluation 2009-8466, Rev. 0, Final Issue, Task Report 47 - Environmental Impact Non- Safety Related. LaSalle County Generation Station Units 1 & 2. September 2009.	The requested document is being provided as Attachment 12 to this RAI response.
13. Illinois Department of Public Health. 2014. Marshall Email: to Ranek. RE: LaSalle County Station Units 1 and 2 -- Consultation about thermophilic organisms. February 19, 2014.	The requested document is being provided as Attachment 13 to this RAI response.
14. Illinois Environmental Protection Agency. 2014. Good Email: to Ranek. RE: LaSalle County Station Units 1 and 2 -- Consultation about thermophilic organisms. February 28, 2014.	The requested document is being provided as Attachment 14 to this RAI response.
15. (Kinzer 2013) Kinzer, L. 2013. Kinzer Email: to Connor, Tetra Tech. FW: Levels of Service. LaSalle County Highway Department. May 20, 2013.	The requested document is being provided as Attachment 15 to this RAI response.
16. (Exelon Generation 2013a) Exelon Generation Company, LLC. 2013. Email: FW: Human Resources Issue for Next Week. Email Wood to Ranek, and associated email change. May 31, 2013.	The requested document is being provided as Attachment 16 to this RAI response.
17. (Tetra Tech 2014) Tetra Tech, Inc. Connor Telecon to Selected government agencies and private social welfare organizations. Compilation of Telephone Logs Investigating Potential Existence of Subsistence-Like Populations in LaSalle and Grundy counties, Illinois. March 13, 2014.	The requested document is being provided as Attachment 17 to this RAI response.
18. Ultimate Heat Sink Fish Mortality and Vegetation Evaluation. EC 390348, Rev. 000. October 11, 2012.	The requested document is being provided (without attachments) as Attachment 18 to this RAI response.

List of Attachments:
See above response, which lists each document and its attachment number.