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. 6. If Corporate Environmental confirms a fish kill above

Action Trigger	Procedural Steps
	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.