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RA19-031

10 CFR 50 Appendix I

May 14, 2019

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

LaSalle County Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Subject: 2018 Annual Radiological Environmental Operating Report

Enclosed is the Exelon Generation Company, LLC, 2018 Annual Radiological Environmental Operating Report for LaSalle County Station, submitted in accordance with Technical Specifications 5.6.2, "Annual Radiological Environmental Operating Report." The enclosed report contains the results of groundwater monitoring conducted in accordance with Exelon's Radiological Groundwater Protection Program, which is a voluntary program implemented in 2006. This information is being reported in accordance with a nuclear industry initiative.

There are no regulatory commitments in this letter. Should you have any questions concerning this report, please contact Mr. Daniel Mearhoff, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,

John Washko
Site Vice President
LaSalle County Station

Enclosure: LaSalle County Station Units 1 and 2 Annual Radiological Environmental Operating Report 1 January through 31 December 2018

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector - LaSalle County Station

Docket No: 50-373
50-374

LASALLE COUNTY STATION
UNITS 1 and 2

Annual Radiological
Environmental Operating Report

1 January through 31 December 2018

Prepared By
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Environmental Services

Exelon Generation.

LaSalle County Station
Marseilles, IL 61341

May 2019

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the LaSalle County Station (LSCS) by Exelon covers the period 1 January 2018 through 31 December 2018. During that time period, 1,339 analyses were performed on 1,243 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of LSCS had no adverse radiological impact on the environment.

Surface water samples were analyzed for concentrations of gross beta, tritium and gamma-emitting nuclides. Ground/well water samples were analyzed for concentrations of tritium and gamma-emitting nuclides. No fission or activation products were detected. Gross beta and tritium activities detected were consistent with those detected in previous years.

Commercially and recreationally important fish species were sampled and analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected in fish.

Sediment samples were analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected.

Air particulate samples were analyzed for concentrations of gross beta and gamma-emitting nuclides. No fission or activation products were detected.

High sensitivity Iodine-131 (I-131) analyses were performed on weekly air samples. All results were less than the minimum detectable activity for I-131.

Cow milk samples were analyzed for concentrations of I-131 and gamma-emitting nuclides. All I-131 results were below the minimum detectable activity. Concentrations of naturally-occurring Potassium-40 (K-40) were consistent with those detected in previous years. No fission or activation products were found. Two grass samples were substituted for milk samples due to the farmer resting his cows. All nuclides were below the minimum detectable activity.

Food product samples were analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected.

Vegetation samples were analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected.

Environmental gamma radiation measurements were performed quarterly using Optically Stimulated Luminescence Dosimeters (OSLD) for the Radiological Environmental Monitoring Program (REMP). The results from the environmental gamma radiation monitoring program were consistent with those detected in previous years.

II. Introduction

The LaSalle County Station (LSCS), consists of two boiling water reactors, each rated for 3,546 MWt. Both units are owned and operated by Exelon Corporation and are located in LaSalle County, Illinois. Unit 1 went critical on 16 March 1982. Unit 2 went critical on 02 December 1983. The site is located in northern Illinois, approximately 75 miles southwest of Chicago, Illinois.

A Radiological Environmental Monitoring Program (REMP) for LSCS was initiated in 1982 (the preoperational period for most media covers the periods 1 January 1979 through 26 December 1981 and was summarized in a separate report.). This report covers those analyses performed by Teledyne Brown Engineering (TBE) and Landauer on samples collected during the period 1 January 2018 through 31 December 2018.

A. Objectives of the REMP

The objectives of the REMP are to:

1. Provide data on measurable levels of radiation and radioactive materials in the site environs.

2. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.

B. Implementation of the Objectives

The implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.

2. Establishing baseline radiological data of media within those pathways.

3. Continuously monitoring those media before and during Station operation to assess Station radiological effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Samples for the LSCS REMP were collected for Exelon Nuclear by Environmental Inc. (Midwest Labs). This section describes the general collection methods used by Environmental Inc. (Midwest Labs) to obtain

environmental samples for the LSCS REMP in 2018. Sample locations and descriptions can be found in Tables B–1 and B–2, and Figures B–1 through B–3, Appendix B.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, ground/well water, fish, and sediment. Two gallon water samples were collected weekly from two surface water locations (L-21 and L-40) and composited for monthly and quarterly required analyses. Control location was L-21. Two ground/well water locations (L-27 and L-28) were also grab sampled quarterly. All samples were collected via grab sample. The samples were then transferred to new unused plastic containers. Both the grab container and the sample containers were rinsed with source water prior to actual sample collection. Fish samples were collected semiannually at three locations, L-34, L-35 and L-36 (Control). Sediment samples composed of recently deposited substrate were collected at three locations semiannually, L-21 (Control), L-40 and L-41.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of airborne particulate and iodine. Airborne particulate and iodine samples were collected and analyzed weekly at nine locations (L-01, L-03, L-04, L-05, L-06, L-07, L-08, L-10, and L-11A). The control location was L-10. Airborne particulate and iodine samples were obtained at each location, using a vacuum pump to pull air through a glass fiber particulate filter and iodine cartridge. The pumps were run continuously and sampled air at the rate of approximately one cubic foot per minute. The particulate filters and iodine cartridges were replaced weekly and sent to the laboratory for analysis.

Terrestrial Environment

The terrestrial environment was evaluated by performing radiological analyses on samples of milk and food product. Samples are typically collected biweekly at one milk location (L-42) from May through October, and monthly from November through April. The control location was L-42. All samples, when available, were collected in new unused two gallon plastic bottles from the bulk tank at each location, preserved with sodium bisulfite, and shipped promptly to the laboratory.

Food products were collected during the growing season at five locations (L-Quad Control, L-Quad 1, L-Quad 2, L-Quad 3 and L-Quad 4). The control location was L-Quad Control. Various types of samples were

collected and placed in new unused plastic bags, and sent to the laboratory for analysis.

Vegetation samples were collected monthly during the growing season from May through October at three locations (L-Veg C, L-ESE1, and L-ESE2). The control location was L-Veg C and was located in the lowest deposition sector (ENE sector) surrounding LaSalle. Various vegetation samples were also collected in the highest deposition sector (ESE sector) surrounding LaSalle. The samples were collected and placed in new unused plastic bags and sent to the laboratory for analysis.

Ambient Gamma Radiation

Beginning in the first quarter of 2012, Exelon changed the type of dosimetry used for the Radiological Environmental Monitoring Program (REMP). Optically Stimulated Luminescent Dosimetry (OSLD) were deployed and Thermo-luminescent Dosimetry (TLD) were discontinued. This change may cause step changes in readings, up or down, depending on site characteristics. However, the relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct radiation).

Each location consisted of 2 OSLD sets. The OSLDs were exchanged quarterly and sent to Landauer for analysis. The OSLD locations were placed on and around the LSCS site as follows:

An inner ring consisting of 16 locations (L-101, L-102, L-103, L-104, L-105, L-106, L-107, L-108, L-109, L-110, L-111B, L-112, L-113A, L-114, L-115 and L-116) near and within the site perimeter representing fence post doses (i.e., at locations where the doses will be potentially greater than maximum annual off–site doses from LSCS releases).

An outer ring consisting of 16 locations (L-201, L-202, L-203, L-204, L-205, L-206, L-207, L-208, L-209, L-210, L-211, L-212, L-213, L-214, L-215 and L-216) extending to approximately 5 miles from the site designed to measure possible exposures to nearby population.

An other set consisting of eight locations (L-01, L-03, L-04, L-05, L-06, L-07, L-08, and L-11A).

The balance of one location (L-10) representing the control area.

The specific OSLD locations were determined by the following criteria:

1. The presence of relatively dense population;
2. Site meteorological data taking into account distance and elevation

for each of the sixteen 22 ½ degree sectors around the site, where estimated annual dose from LSCS, if any, would be most significant;

3. On hills free from local obstructions and within sight of the vents (where practical);

4. And near the closest dwelling to the vents in the prevailing downwind direction.

(Two OSLDs were placed at each location approximately six feet above ground level.)

B. Sample Analysis

This section describes the general analytical methodologies used by Environmental Inc. (Midwest Labs) and TBE to collect and analyze, respectively, the environmental samples for radioactivity for the LSCS REMP in 2018. The analytical procedures used by the laboratory are listed in Table B-2.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of beta emitters in surface water and air particulates

2. Concentrations of gamma emitters in ground/well and surface water, air particulates, milk, fish, sediment and vegetation

3. Concentrations of tritium in ground/well and surface water

4. Concentrations of I-131 in air and milk

5. Ambient gamma radiation levels at various site environs

C. Data Interpretation

The radiological and direct radiation data collected prior to LaSalle County Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, LaSalle County Station was considered operational at initial criticality. In addition, data were compared to previous years' operational data for consistency and trending. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is defined as the smallest concentration of radioactive material in a sample that would yield a net count (above background) that would be detected with only a 5% probability of falsely concluding that a blank observation represents a "real" signal. The LLD is intended as a before the fact (a priori) estimate of a system (including instrumentation, procedure and sample type) and not as an after the fact (a posteriori) criteria for the presence of activity. All analyses were designed to achieve the required LSCS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is defined above with the exception that the measurement is an after the fact estimate of the presence of activity.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample was calculated by subtracting background activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations may result in sample activity being lower than the background activity effecting a negative number. An MDC was reported in all cases where positive activity was not detected.

Gamma spectroscopy results for each type of sample were grouped as follows:

For surface water, food products, and vegetation: 12 nuclides including Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, I-131, Cs-134, Cs-137, Ba-140, and La-140 were reported.

For ground/well water, fish, sediment, air particulate and milk: 11 nuclides including Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, Cs-134, Cs-137, Ba-140, and La-140 were reported.

Means and standard deviations of the results were calculated. The standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty.

D. Program Exceptions

For 2018, the LSCS REMP had a sample recovery rate of 99.9%. Sample anomalies and missed samples are listed in the tables below:

Table D-1 LISTING OF SAMPLE ANOMALIES

Sample Type	Location Code	Collection Date	Reason
WW	L-27	01/10/18	No access; collector will collect sample when access is attained. NOTE: Sample collected 01/25/18
SW	L-21	02/22/18	Area flooded; sample taken 300 yards from usual location
SW	L-40	02/22/18	Area flooded; sample taken 200 yards from usual location
AP/AI	L-07	06/21/18	Low reading of 127.7 hours possibly due to power outage from storms
AP/AI	L-03	07/11/18	No reason given for low reading of 139.2 hours (storms/possible lightening)
AP/AI	L-03	07/19/18	No reason given for low reading of 184.4 hours (storms/possible lightening); 8-day run
AP/AI	L-03	07/26/18	No reason given for low reading of 161.0 hours (storms/possible lightening)
AP/AI	L-03	08/01/18	No reason given for low reading of 125.9 hours (storms/possible lightening); 6-day run

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
SW	L-21 L-40	01/04/18 01/10/18 01/18/18 02/07/18	No sample; water frozen
OSLD	L-215-3	02/22/18	Collector noticed OSLD missing; placed Spare #1 Ex00018705T
MI	L-42	05/02/18 05/17/18 06/27/18	No sample; farmer resting cows
OSLD	L-208-1	08/01/18	OSLD found missing during monthly check; collector placed Spare #1 Ex00062827H
OSLD	L-208	09/05/18	Cage with OSLDs found missing during monthly check; collector placed Spare #2 Ex000082352 and Spare #3 Ex000543502

Each program exception has been reviewed to understand the causes of the program exception. Occasional equipment breakdowns and power outages were unavoidable.

The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

E. Program Changes

There were no program changes in 2018.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken weekly and composited monthly at two locations (L-21 and L-40). Of these locations only L-40 located downstream, could be affected by LaSalle's effluent releases. The following analyses were performed:

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Table C–I.1, Appendix C). Gross beta was detected in 24 out of 24 samples with a range of 4.6 to 11.0 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C–1, Appendix C). The required LLD was met for all samples.

Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C–I.2, Appendix C). Tritium was detected in 2 of 8 samples. The concentrations ranged from 27 to 486 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C–2, Appendix C).

Gamma Spectrometry

Samples from both locations were analyzed for gamma-emitting nuclides (Table C–I.3, Appendix C). No nuclides were detected, and all required LLDs were met.

2. Ground/Well Water

Quarterly grab samples were collected at two locations (L-27 and L-28). Wells 4, 5 and 6 are associated with L-28. L-27 and L-28 Well 6 could be affected by LaSalle's effluent releases. The following analyses were performed:

Tritium

Quarterly grab samples from the locations were analyzed for tritium activity (Table C–II.1, Appendix C). No tritium was detected and the contractually-required 200 pCi/L LLDs were met.

Gamma Spectrometry

Samples from all locations were analyzed for gamma-emitting nuclides (Table C–II.2, Appendix C). No nuclides were detected, and all required LLDs were met.

3. Fish

Fish samples were collected at three locations (L-34, L-35 and L-36) semiannually. Locations L-34 and L-35 could be affected by LaSalle's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma-emitting nuclides (Table C–III.1, Appendix C). Naturally-occurring K-40* was found at all stations and ranged from 2,224 to 4,294 pCi/kg wet. No fission or activation products were found.

4. Sediment

Aquatic sediment samples were collected at three locations (L-21, L-40 and L-41) semiannually. Location L-21 is located upstream and is not affected by LaSalle's liquid effluent releases. Locations L-40 and L-41, located downstream, could be affected by LaSalle's effluent releases. The following analysis was performed:

**Naturally occurring gamma-emitting radionuclides are not included in the Appendix C Tables.*

Gamma Spectrometry

Sediment samples from the three locations were analyzed for gamma-emitting nuclides (Table C–IV.1, Appendix C). Naturally-occurring Be-7* was found at one station with concentrations ranging from 1,657 to 2,274 pCi/L. Naturally- occurring K-40* was found at all stations and ranged from 7,835 to 20,340 pCi/kg dry. No fission or activation products were found.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from nine locations on a weekly basis. The nine locations were separated into four groups: Group I (onsite) represents locations within the LSCS site boundary (L-03 and L-05), Group II (near-site) represents the locations near the LSCS site (L-01 and L-06), Group III (far-field) represents the locations at an intermediate distance from LSCS (L-04, L-07, L-08, and L-11A) and Group IV (control) represents the control location at a remote distance (L-10). The following analyses were performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C–V.1 and C–V.2, Appendix C). Detectable gross beta activity was observed at all locations. Comparison of results among the four groups aid in determining the effects, if any, resulting from the operation of LSCS. The results from the onsite locations (Group I) ranged from 8 to 38E–3 pCi/m^3 with a mean of 17E–3 pCi/m^3. The results from the near-site location (Group II) ranged from 9 to 37E–3 pCi/m^3 with a mean of 17E–3 pCi/m^3. The results from the far-field locations (Group III) ranged from 6 to 40E-3 pCi/m^3 with a mean of 17E–3 pCi/m^3. The results from the control location (Group IV) ranged from 10 to 36E–3 pCi/m^3 with a mean of 17E–3 pCi/m^3. Comparison of the 2018 air particulate data with previous year's data indicate no effects from the operation of

**Naturally occurring gamma-emitting radionuclides are not included in the Appendix C Tables.*

LSCS (Figures C–3 through C-8, Appendix C). In addition, comparisons of the weekly mean values for 2018 indicate no notable differences among the four groups.

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma-emitting nuclides (Table C–V.3, Appendix C). Naturally-occurring Be-7*, due to cosmic ray activity, was detected in 36 of 36 samples. Naturally- occurring K-40* was found at one station with a result of 33E-3 pCi/m^3. These values ranged from 83 to 182 E–3 pCi/m^3. All other nuclides were less than the MDC.

b. Airborne Iodine

Continuous air samples were collected from ten locations (L-01, L-03, L-04, L-05, L-06, L-07, L-08, L-10, and L-11A) and analyzed weekly for I-131 (Table C–VI.1, Appendix C). No I-131 was detected.

2. Terrestrial

a. Milk

Samples were collected from one location (L-42) biweekly May through October and monthly November through April. Two grass samples were substituted for milk due to the farmer resting cows at time of collection. The following analyses were performed:

Iodine-131

Milk samples from the location were analyzed for concentrations of I-131 (Table C–VII.1, Appendix C). I-131 was not detected, and the required LLDs were met.

Gamma Spectrometry

Milk samples (and the 2 grass substitute samples) were analyzed for concentrations of gamma-emitting nuclides (Table C–VII.2, Appendix C).

**Naturally occurring gamma-emitting radionuclides are not included in the Appendix C Tables.*

Naturally-occurring K-40* activity was found in all milk samples and ranged from 831 to 1,344 pCi/l. No other nuclides were detected, and all required LLDs were met. Naturally-occurring Be-7* activity was found in both grass samples and ranged from 708 to 1,194 pCi/kg wet. Naturally-occurring K-40* activity was found in both grass samples and ranged from 7,786 to 9,132 pCi/kg wet.

b. Food Products

Food product samples were collected at four locations (L-Quad 1, L-Quad 2, L-Quad 3 and L-Quad 4) when available. All locations could be affected by LaSalle's effluent releases. The following analysis was performed:

Gamma Spectrometry

Samples from all available locations were analyzed for gamma-emitting nuclides (Table C–VIII.1, Appendix C). No nuclides were detected, and all required LLDs were met.

c. Vegetation

Vegetation samples were collected monthly during the growing season from May through October at three locations (L-Veg C, L-ESE1, and L-ESE2). The control location was L-Veg C and was located in the lowest deposition sector (ENE sector) surrounding LaSalle. Various vegetation samples were also collected in the highest deposition sector (ESE sector) surrounding LaSalle. The following analyses were performed:

Gamma Spectrometry

Samples from all available locations were analyzed for gamma-emitting nuclides (Table C-VIII.2, Appendix C). No nuclides were detected, and all required LLDs were met.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Optically Stimulated Luminescence Dosimeters (OSLD). Forty-one OSLD locations were established around the site. Results of OSLD measurements are listed in Tables C–IX.1 to C–IX.3, Appendix C.

**Naturally occurring gamma-emitting radionuclides are not included in the Appendix C Tables.*

All OSLD measurements were at or below 26 mrem/quarter, with a range of 7.4 to 25.3 mrem/quarter. A comparison of the Inner Ring, Outer Ring, and Other data to the Control Location data, indicate that the ambient gamma radiation levels from the Control Location L-10 were comparable.

D. Land Use Survey

A Land Use Survey conducted September 14, 2018, around the LaSalle County Station (LSCS) was performed by Environmental Inc. (Midwest Labs) for Exelon Nuclear to comply with Radiological Effluent Control 12.5.2 of the LaSalle's Offsite Dose Calculation Manual. The purpose of the survey was to document the nearest resident, milk producing animal and garden of greater than 500 ft^2 in each of the sixteen 22 ½ degree sectors around the site. The distance and direction of all locations from the LSCS reactor buildings were positioned using Global Positioning System (GPS) technology. There were no changes required to the LSCS REMP as a result of this survey. The results of this survey are summarized below:

Distance in Miles from the LSCS Reactor Buildings			
Sector	Residence Miles	Livestock Miles	Milk Farm Miles
A N	3.9	4.0	-
B NNE	1.6	1.7	-
C NE	2.1	3.5	-
D ENE	3.3	4.6	-
E E	3.2	-	14.2
F ESE	1.4	-	-
G SE	1.7	5.1	-
H SSE	1.8	4.7	-
J S	1.5	-	-
K SSW	0.7	-	-
L SW	1.0	5.8	-
M WSW	1.5	-	-
N W	1.7	3.0	-
P WNW	0.9	3.0	-
Q NW	1.7	3.3	-
R NNW	1.7	4.5	-

E. Errata Data

There is no errata data for 2018.

F. Summary of Results – Inter-Laboratory Comparison Program

The TBE Laboratory analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation, and water matrices for

various analytes. The PE samples supplied by Analytics Inc., Environmental Resource Associates (ERA) and Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

   Analytics' evaluation report provides a ratio of TBE's result and Analytics' known value. Since flag values are not assigned by Analytics, TBE evaluates the reported ratios based on internal QC requirements based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

   ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, National Environmental Laboratory Accreditation Conference (NELAC), state-specific Performance Testing (PT) program requirements or ERA's SOP for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

   MAPEP's evaluation report provides an acceptance range with associated flag values. MAPEP defines three levels of performance:

   - Acceptable (flag = "A") - result within ± 20% of the reference value
   - Acceptable with Warning (flag = "W") - result falls in the ± 20% to ± 30% of the reference value
   - Not Acceptable (flag = "N") - bias is greater than 30% of the reference value

   Note: The Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP) samples are created to mimic conditions found at DOE sites which do not resemble typical environmental samples obtained at commercial nuclear power facilities.

For the TBE laboratory, 166 out of 172 analyses performed met the specified acceptance criteria. Six analyses did not meet the specified acceptance criteria for the following reasons and were addressed through

the TBE Corrective Action Program.

1. TBE was unable to report the February 2018 DOE MAPEP vegetation Sr-90 result due to QC failure and limited sample amount. (NCR 18-09)
2. The Analytics September 2018 milk Fe-59 result was evaluated as Not Acceptable (Ratio of TBE to known result at 132%). The reported value was 158 ± 17.6 pCi/L and the known value was 119 ± 19.9 pCi/L. No cause for the failure could be determined. TBE has passed 24 of the previous 27 milk cross-check results since 2012. This sample was run in duplicate on a different detector with comparable results (162 +/- 16 pCi/L). NOTE: TBE's 4th Qtr result passed at 105% (NCR 18-20)
3. The Analytics September milk I-131 result was evaluated as Not Acceptable (Ratio of TBE to known result at 143%). Due to a personnel change in the gamma prep lab, the sample was not prepped/counted in a timely manner such as to accommodate the I-131 8-day half-life. Analysts have been made aware of the urgency for this analysis and it will be monitored more closely by QA. NOTE: TBE's 4th Qtr result passed at 101% (NCR 18-24)
4. The Analytics September soil Cr-51 result was evaluated as Not Acceptable (Ratio of TBE to known result at 131%). As with #3 above, the sample was not prepped/counted in a timely manner such as to accommodate the Cr-51 27-day half-life. The same corrective action applies here as in #3. (NCR 18-21)
5. The MAPEP November vegetation Sr-90 result of 0.338 Bq/sample was evaluated as Not Acceptable (Lower acceptable range was 0.554 Bq/sample). It appears that there has been incomplete dissolution of Sr-90 due to the composition of the MAPEP vegetation "matrix". To resolve this issue, the TBE-2018 procedure has been modified to add H2O2 to assist in breaking down the organic material that comprises this "matrix". This corrective action will be monitored closely by QA. (NCR 18-25).
6. The ERA October 2018 water Sr-90 sample was evaluated as Not Acceptable. TBE's initial reported result of 36.8 pCi/L exceeded the upper acceptance range (22.9 – 36.4 pCi/L). After reviewing the data for this sample, it was discovered that there was a typographical error at the time the results were entered at the ERA website. The correct result in LIMS of 36.2 should have been submitted instead. This result is within ERA's acceptance limits. In addition to the typo error, ERA's very stringent upper acceptance limit of 116% is not a reflection of TBE's ability to successfully perform this analysis. (NCR 18-23)

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT ANNUAL SUMMARY

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2018

NAME OF FACILITY:	LASALLE COUNTY STATION			DOCKET NUMBER:		50-373 & 50-374		
LOCATION OF FACILITY:	MARSEILLES, IL			REPORTING PERIOD:		2018		
				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED *(UNIT OF MEASUREMENT)*	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	LOCATIONS MEAN (M) (F) *RANGE*	LOCATION MEAN (M) (F) *RANGE*	MEAN (M) (F) *RANGE*	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER	**GR-B**	24	**4**	7.1	6.1	7.1	L-40 INDICATOR	0
(PCI/LITER)				(12/12)	(12/12)	(12/12)	ILLINOIS RIVER - DOWNSTREAM	
				(4.6/11)	*(4/7.9)*	*(4.6/11)*	5.2 MILES NNW OF SITE	
	H-3	8	**200**	287	388	388	L-21 CONTROL	0
				(3/4)	(3/4)	(3/4)	ILLINOIS RIVER AT SENECA - UPSTREAM	
				(249/310)	*(277/486)*	*(277/486)*	4.0 MILES NE OF SITE	
	GAMMA	24						
	MN-54		**15**	<LLD	<LLD	-		0
	CO-58		**15**	<LLD	<LLD	-		0
	FE-59		**30**	<LLD	<LLD	-		0
	CO-60		**15**	<LLD	<LLD	-		0
	ZN-65		**30**	<LLD	<LLD	-		0
	NB-95		**15**	<LLD	<LLD	-		0
	ZR-95		**30**	<LLD	<LLD	-		0
	I-131		**15**	<LLD	<LLD	-		0
	CS-134		**15**	<LLD	<LLD	-		0
	CS-137		**18**	<LLD	<LLD	-		0
	BA-140		**60**	<LLD	<LLD	-		0
	LA-140		**15**	<LLD	<LLD	-		0
GROUND WATER	**H-3**	12	**200**	<LLD	<LLD	-		0
(PCI/LITER)								
	GAMMA	12						
	MN-54		**15**	<LLD	<LLD	-		0
	CO-58		**15**	<LLD	<LLD	-		0
	FE-59		**30**	<LLD	<LLD	-		0
	CO-60		**15**	<LLD	<LLD	-		0
	ZN-65		**30**	<LLD	<LLD	-		0
	NB-95		**15**	<LLD	<LLD	-		0
	ZR-95		**30**	<LLD	<LLD	-		0
	CS-134		**15**	<LLD	<LLD	-		0
	CS-137		**18**	<LLD	<LLD	-		0
	BA-140		**60**	<LLD	<LLD	-		0
	LA-140		**15**	<LLD	<LLD	-		0

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2018

NAME OF FACILITY:	LASALLE COUNTY STATION			DOCKET NUMBER:	50-373 & 50-374			
LOCATION OF FACILITY:	MARSEILLES, IL			REPORTING PERIOD:	2018			
				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED *(UNIT OF MEASUREMENT)*	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	LOCATIONS MEAN (M) (F) *RANGE*	LOCATION MEAN (M) (F) *RANGE*	MEAN (M) (F) *RANGE*	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FISH	**GAMMA**	12						
(PCI/KG WET)	*MN-54*		**130**	<LLD	<LLD	-		0
	CO-58		**130**	<LLD	<LLD	-		0
	FE-59		**260**	<LLD	<LLD	-		0
	CO-60		**130**	<LLD	<LLD	-		0
	ZN-65		**260**	<LLD	<LLD	-		0
	NB-95		*NA*	<LLD	<LLD	-		0
	ZR-95		*NA*	<LLD	<LLD	-		0
	CS-134		**130**	<LLD	<LLD	-		0
	CS-137		**150**	<LLD	<LLD	-		0
	BA-140		*NA*	<LLD	<LLD	-		0
	LA-140		*NA*	<LLD	<LLD	-		0
SEDIMENT	**GAMMA**	6						
(PCI/KG DRY)	*MN-54*		*NA*	<LLD	<LLD	-		0
	CO-58		*NA*	<LLD	<LLD	-		0
	FE-59		*NA*	<LLD	<LLD	-		0
	CO-60		*NA*	<LLD	<LLD	-		0
	ZN-65		*NA*	<LLD	<LLD	-		0
	NB-95		*NA*	<LLD	<LLD	-		0
	ZR-95		*NA*	<LLD	<LLD	-		0
	CS-134		**150**	<LLD	<LLD	-		0
	CS-137		**180**	<LLD	<LLD	-		0
	BA-140		*NA*	<LLD	<LLD	-		0
	LA-140		*NA*	<LLD	<LLD	-		0
AIR PARTICULATE	**GR-B**	468	**10**	17.1	17.7	17.7	L-10 CONTROL	0
(E-3 PCI/CU.METER)				(416/416)	(52/52)	(52/52)	STREATOR	
				(6.3/39.7)	*(10.2/35.7)*	*(10.2/35.7)*	13.5 MILES SW OF SITE	
AIR PARTICULATE	**GAMMA**	36						
(E-3 PCI/CU.METER)	*MN-54*		*NA*	<LLD	<LLD	-		0

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2018

NAME OF FACILITY:	LASALLE COUNTY STATION			DOCKET NUMBER:		50-373 & 50-374		
LOCATION OF FACILITY:	MARSEILLES, IL			REPORTING PERIOD:		2018		
				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED *(UNIT OF MEASUREMENT)*	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	LOCATIONS MEAN (M) (F) *RANGE*	LOCATION MEAN (M) (F) *RANGE*	MEAN (M) (F) *RANGE*	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	CO-58		*NA*	<LLD	<LLD	-		0
	FE-59		*NA*	<LLD	<LLD	-		0
	CO-60		*NA*	<LLD	<LLD	-		0
	ZN-65		*NA*	<LLD	<LLD	-		0
	NB-95		*NA*	<LLD	<LLD	-		0
	ZR-95		*NA*	<LLD	<LLD	-		0
	CS-134		**50**	<LLD	<LLD	-		0
	CS-137		**60**	<LLD	<LLD	-		0
	BA-140		*NA*	<LLD	<LLD	-		0
	LA-140		*NA*	<LLD	<LLD	-		0
AIR IODINE	**GAMMA**	468						
(E-3 PCI/CU.METER)	*I-131*		**70**	<LLD	<LLD	-		0
MILK	**I-131**	16	**1**	NA	<LLD	-		0
(PCI/LITER)								
	GAMMA	18						
	MN-54		*NA*	NA	<LLD	-		0
	CO-58		*NA*	NA	<LLD	-		0
	FE-59		*NA*	NA	<LLD	-		0
	CO-60		*NA*	NA	<LLD	-		0
	ZN-65		*NA*	NA	<LLD	-		0
	NB-95		*NA*	NA	<LLD	-		0
	ZR-95		*NA*	NA	<LLD	-		0
	CS-134		**15**	NA	<LLD	-		0
	CS-137		**18**	NA	<LLD	-		0
	BA-140		**60**	NA	<LLD	-		0
	LA-140		**15**	NA	<LLD	-		0
FOOD PRODUCTS	**GAMMA**	19						
(PCI/KG WET)	*MN-54*		*NA*	<LLD	<LLD	-		0

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2018

NAME OF FACILITY:	LASALLE COUNTY STATION			DOCKET NUMBER:		50-373 & 50-374		
LOCATION OF FACILITY:	MARSEILLES, IL			REPORTING PERIOD:		2018		
				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED *(UNIT OF MEASUREMENT)*	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	LOCATIONS MEAN (M) (F) *RANGE*	LOCATION MEAN (M) (F) *RANGE*	MEAN (M) (F) *RANGE*	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	CO-58		*NA*	<LLD	<LLD	-		0
	FE-59		*NA*	<LLD	<LLD	-		0
	CO-60		*NA*	<LLD	<LLD	-		0
	ZN-65		*NA*	<LLD	<LLD	-		0
	NB-95		*NA*	<LLD	<LLD	-		0
	ZR-95		*NA*	<LLD	<LLD	-		0
	I-131		60	<LLD	<LLD	-		0
	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
	BA-140		*NA*	<LLD	<LLD	-		0
	LA-140		*NA*	<LLD	<LLD	-		0
VEGETATION	**GAMMA**	69						
(PCI/KG WET)	*MN-54*		*NA*	<LLD	<LLD	-		0
	CO-58		*NA*	<LLD	<LLD	-		0
	FE-59		*NA*	<LLD	<LLD	-		0
	CO-60		*NA*	<LLD	<LLD	-		0
	ZN-65		*NA*	<LLD	<LLD	-		0
	NB-95		*NA*	<LLD	<LLD	-		0
	ZR-95		*NA*	<LLD	<LLD	-		0
	I-131		60	<LLD	<LLD	-		0
	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
	BA-140		*NA*	<LLD	<LLD	-		0
	LA-140		*NA*	<LLD	<LLD	-		0
DIRECT RADIATION	**OSLD-QUARTERLY**	167	*NA*	14.6	12.3	17	L-102 INDICATOR	0
(MILLI-ROENTGEN/QTR.)				(163/163)	(4/4)	(4/4)		
				(7.4/25.3)	*(8.7/19.7)*	*(12.3/25.1)*	0.6 MILES NNE	

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

APPENDIX B

LOCATION DESIGNATION, DISTANCE & DIRECTION, AND SAMPLE COLLECTION & ANALYTICAL METHODS

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TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, LaSalle County Station, 2018

Location	Location Description	Distance & Direction From Site
A. Surface Water		
L-21	Illinois River at Seneca, Upstream (control)	4.0 miles NE
L-40	Illinois River, Downstream (indicator)	5.2 miles NNW
B. Ground/Well Water		
L-27	LSCS Onsite Well (indicator)	0 miles at station
L-28-W4	Marseilles Well (control)	7.0 miles NNW
L-28-W5	Marseilles Well (control)	6.7 miles NNW
L-28-W6	Marseilles Well (indicator)	4.1 miles N
C. Milk - bi-weekly / monthly		
L-42	Biros Farm (control)	14.2 miles E
D. Air Particulates / Air Iodine		
L-01	Nearsite 1 (indicator)	1.5 miles NNW
L-03	Onsite 3 (indicator)	1.0 miles ENE
L-04	Rte. 170 (indicator)	3.2 miles E
L-05	Onsite 5 (indicator)	0.3 miles ESE
L-06	Nearsite 6 (indicator)	0.4 miles W
L-07	Seneca (indicator)	5.2 miles NNE
L-08	Marseilles (indicator)	6.0 miles NNW
L-10	Streator (control)	13.5 miles SW
L-11A	Ransom (indicator)	6.0 miles S
E. Fish		
L-34	LaSalle Cooling Lake (indicator)	2.0 miles E
L-35	Marseilles Pool of Illinois River, Downstream (indicator)	6.5 miles NNW
L-36	Illinois River, Upstream of Discharge (control)	4.3 miles NE
F. Sediment		
L-21	Illinois River at Seneca, Upstream (control)	4.0 miles NE
L-40	Illinois River, Downstream (indicator)	5.2 miles NNW
L-41	Illinois River, Downstream (indicator)	4.6 miles N
G. Food Products		
Quadrant 1	171 Valley View, Seneca IL	5.2 miles NE
Quadrant 1	281 E. Lincoln, Seneca IL	5.1 miles NE
Quadrant 2	106 W. Thomas, Ransom, IL	6.0 miles S
Quadrant 2	205 W. Plumb, Ransom IL	5.3 miles S
Quadrant 3	1814 E. 25th Rd., Ransom IL	3.5 miles SW
Quadrant 4	2507 N. 2553 Rd., Marseilles IL	4.3 miles NNW
Control	Biros Farm	14.2 miles E
H. Vegetation		
L-Veg C	Control	9.5 miles ENE
L-ESE 1	Indicator	1.5 miles ESE
L-ESE 2	Indicator	6.0 miles ESE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, LaSalle County Station, 2018

Location	Location Description	Distance & Direction From Site
I. Environmental Dosimetry - OSLD		
Inner Ring		
L-101-1 and -2		0.5 miles N
L-102-1 and -2		0.6 miles NNE
L-103-1 and -2		0.7 miles NE
L-104-1 and -2		0.8 miles ENE
L-105-1 and -2		0.7 miles E
L-106-1 and -2		1.4 miles ESE
L-107-1 and -2		0.8 miles SE
L-108-1 and -2		0.5 miles SSE
L-109-1 and -2		0.6 miles S
L-110-1 and -2		0.6 miles SSW
L-111b-1 and -2		0.8 miles SW
L-112-1 and -2		0.9 miles WSW
L-113a-1 and -2		0.8 miles W
L-114-1 and -2		0.9 miles WNW
L-115-1 and -2		0.7 miles NW
L-116-1 and -2		0.6 miles NNW
Outer Ring		
L-201-3 and -4		4.0 miles N
L-202-3 and -4		3.6 miles NNE
L-203-1 and -2		4.0 miles NE
L-204-1 and -2		3.2 miles ENE
L-205-1 and -2		3.2 miles ESE
L-205-3 and -4		5.1 miles E
L-206-1 and -2		4.3 miles SE
L-207-1 and -2		4.5 miles SSE
L-208-1 and -2		4.5 miles S
L-209-1 and -2		4.0 miles SSW
L-210-1 and -2		3.3 miles SW
L-211-1 and -2		4.5 miles WSW
L-212-1 and -2		4.0 miles W
L-213-3 and -4		4.9 miles W
L-214-3 and -4		5.1 miles WNW
L-215-3 and -4		5.0 miles NW
L-216-3 and -4		5.0 miles NNW
Other		
L-01-1 and -2	Nearsite 1 (indicator)	1.5 miles NNW
L-03-1 and -2	Onsite 3 (indicator)	1.0 miles ENE
L-04-1 and -2	Rte. 170 (indicator)	3.2 miles E
L-05-1 and -2	Onsite 5 (indicator)	0.3 miles ESE
L-06-1 and -2	Nearsite 6 (indicator)	0.4 miles W
L-07-1 and -2	Seneca (indicator)	5.2 miles NNE
L-08-1 and -2	Marseilles (indicator)	6.0 miles NNW
L-11A-1 and -2	Ransom (indicator)	6.0 miles S
Control and Special Interest		
L-10-1 and -2	Streator	13.5 miles SW

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, LaSalle County Station, 2018

Sample Medium	Analysis	Sampling Method	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite from weekly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Surface Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Surface Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Ground/Well Water	Gamma Spectroscopy	Quarterly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Ground/Well Water	Tritium	Quarterly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	TBE-2007 Gamma emitting radioisotope analysis
Sediment	Gamma Spectroscopy	Semi-annual grab samples	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Iodine	Gamma Spectroscopy	Bi-weekly composite of continuous air sampling through charcoal filter	TBE, TBE-2007 Gamma emitting radioisotope analysis
Milk	I-131	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2012 Radioiodine in various matrices
Milk	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2007 Gamma emitting radioisotope analysis
Food Products	Gamma Spectroscopy	Annual grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Vegetation	Gamma Spectroscopy	Monthly grab samples during growing season	TBE, TBE-2007 Gamma emitting radioisotope analysis
OSLD	Optically Stimulated Luminescence Dosimetry	Quarterly OSLDs comprised of two Al_2O_3:C Landauer Incorporated elements.	Landauer Incorporated

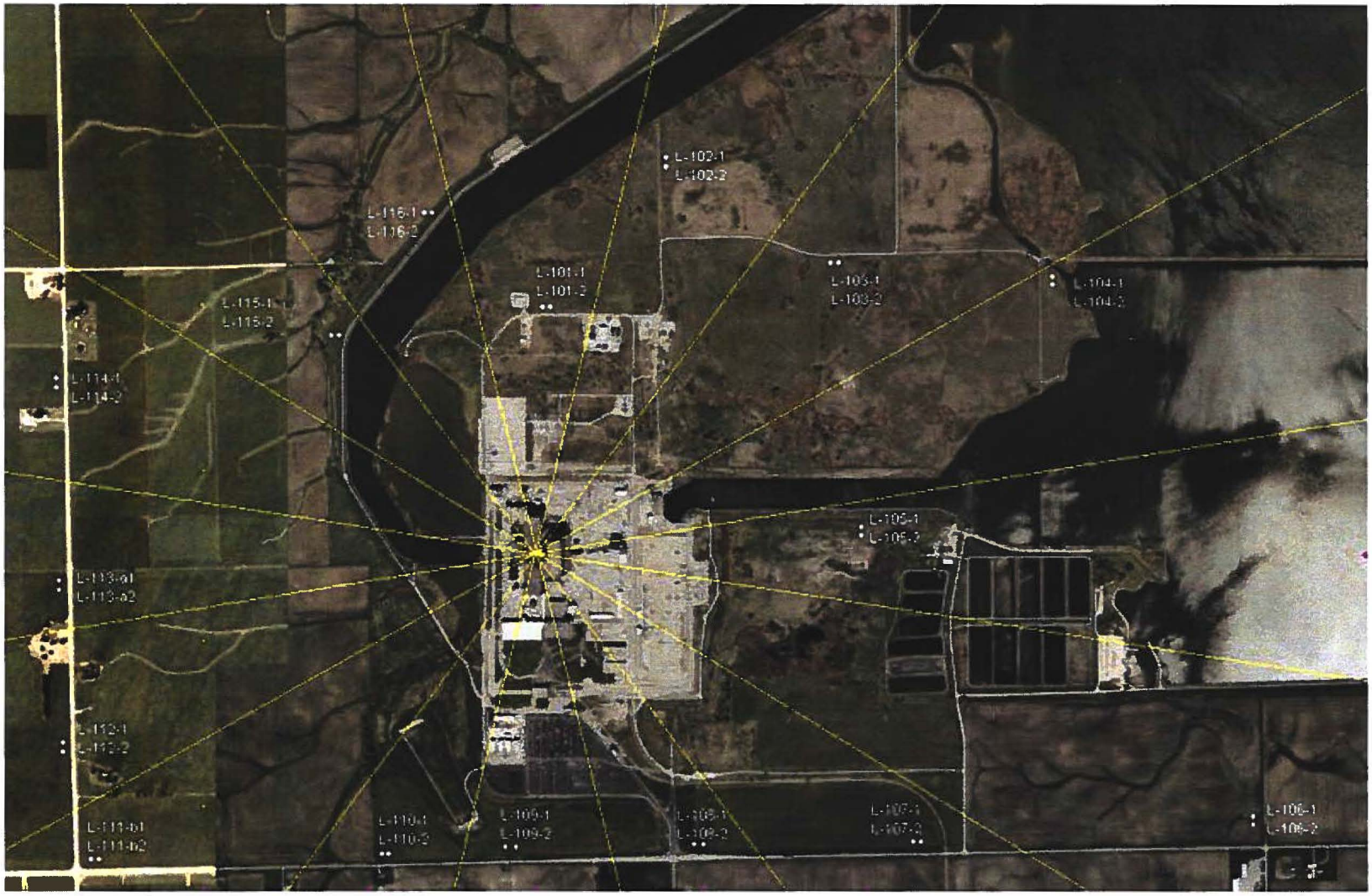

Figure B-1
Inner Ring OSLD Locations
of the LaSalle County Station, 2018

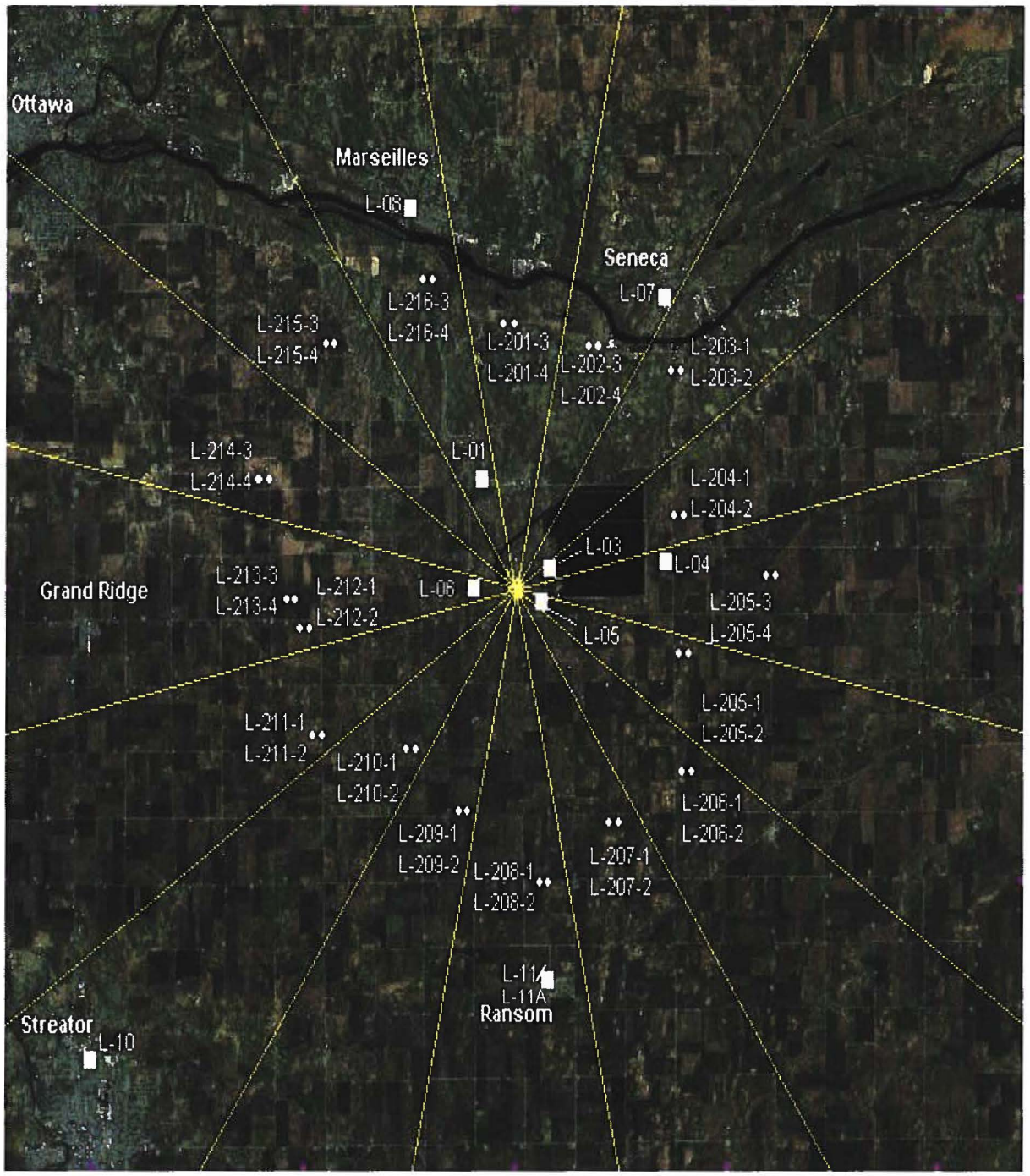

Figure B-2
Outer Ring OSLD Locations and Fixed Air Sampling Locations
of the LaSalle County Station, 2018

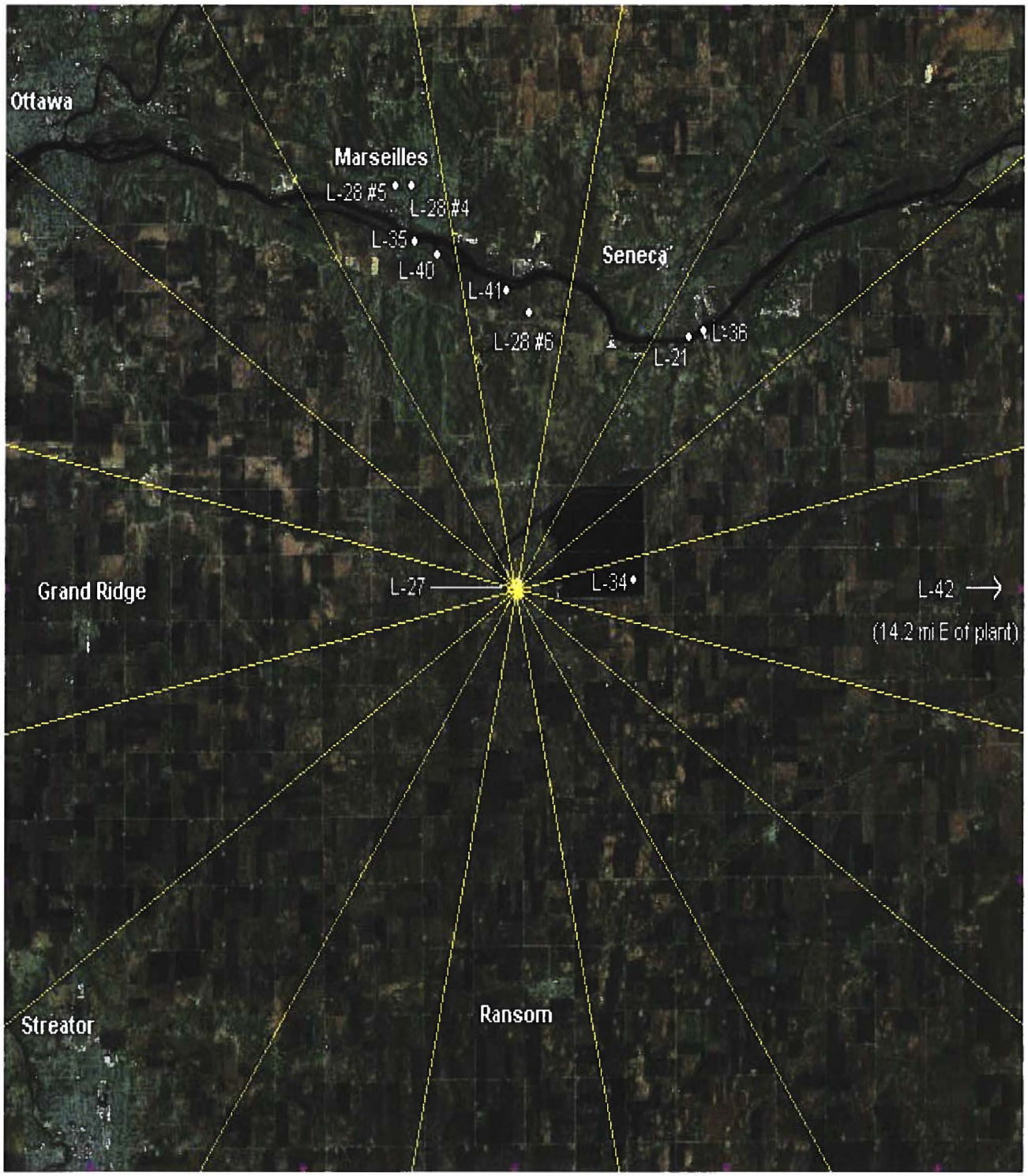

Figure B-3
Ingestion and Waterborne Exposure Pathway Sample Locations
of the LaSalle County Station, 2018

APPENDIX C

DATA TABLES AND FIGURES

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Table C-I.1 CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	L-21	L-40
01/25/18 - 01/25/18	7.0 ± 2.3	5.5 ± 2.3
01/30/18 - 02/22/18	6.7 ± 2.2	6.9 ± 2.2
02/28/18 - 03/28/18	4.2 ± 1.9	6.1 ± 2.1
04/05/18 - 04/26/18	4.0 ± 2.1	5.7 ± 2.3
05/02/18 - 05/31/18	7.3 ± 2.8	11.0 ± 3.0
06/06/18 - 06/27/18	4.1 ± 2.1	7.4 ± 2.4
07/05/18 - 07/26/18	7.4 ± 2.2	7.0 ± 2.2
08/01/18 - 08/30/18	7.1 ± 2.5	8.8 ± 2.7
09/05/18 - 09/26/18	5.9 ± 2.1	6.4 ± 2.2
10/04/18 - 10/25/18	7.9 ± 2.2	9.1 ± 2.3
10/31/18 - 11/29/18	6.0 ± 2.3	4.6 ± 2.2
12/05/18 - 12/26/18	5.1 ± 2.0	6.9 ± 2.2
(1) MEAN ± 2 STD DEV	6.1 ± 2.8	7.1 ± 3.5

Table C-I.2 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	L-21	L-40
01/25/18 - 03/28/18	400 ± 135	310 ± 129
04/05/18 - 06/27/18	< 194	< 198
07/05/18 - 09/26/18	277 ± 129	301 ± 135
10/04/18 - 12/26/18	486 ± 148	249 ± 131
(1) MEAN ± 2 STD DEV	388 ± 210	287 ± 66

(1) THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES (VALUES ≥ MDC)

Table C-I.3

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
L-21	01/25/18 - 01/25/18	< 8	< 6	< 12	< 9	< 21	< 7	< 14	< 13	< 8	< 8	< 36	< 12
	01/30/18 - 02/22/18	< 3	< 3	< 6	< 3	< 5	< 3	< 6	< 13	< 3	< 3	< 27	< 9
	02/28/18 - 03/28/18	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 12	< 2	< 1	< 19	< 7
	04/05/18 - 04/26/18	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 2	< 2	< 16	< 6
	05/02/18 - 05/31/18	< 2	< 3	< 6	< 3	< 5	< 3	< 5	< 15	< 3	< 2	< 24	< 8
	06/06/18 - 06/27/18	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 2	< 1	< 13	< 5
	07/05/18 - 07/26/18	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 7	< 2	< 1	< 13	< 4
	08/01/18 - 08/30/18	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 14	< 5
	09/05/18 - 09/26/18	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 22	< 7
	10/04/18 - 10/25/18	< 2	< 2	< 6	< 2	< 4	< 2	< 5	< 15	< 2	< 2	< 24	< 8
	10/31/18 - 11/29/18	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 16	< 5
	12/05/18 - 12/26/18	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 2	< 2	< 19	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-40	01/25/18 - 01/25/18	< 7	< 7	< 15	< 6	< 16	< 8	< 13	< 13	< 8	< 7	< 38	< 12
	01/30/18 - 02/22/18	< 3	< 3	< 6	< 3	< 5	< 4	< 5	< 15	< 3	< 3	< 27	< 8
	02/28/18 - 03/28/18	< 1	< 1	< 3	< 1	< 3	< 1	< 3	< 12	< 1	< 1	< 18	< 4
	04/05/18 - 04/26/18	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 21	< 7
	05/02/18 - 05/31/18	< 2	< 3	< 6	< 2	< 5	< 3	< 4	< 14	< 2	< 3	< 23	< 8
	06/06/18 - 06/27/18	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 8	< 2	< 2	< 14	< 5
	07/05/18 - 07/26/18	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 8	< 2	< 2	< 14	< 4
	08/01/18 - 08/30/18	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 18	< 6
	09/05/18 - 09/26/18	< 2	< 3	< 7	< 2	< 5	< 3	< 5	< 15	< 2	< 3	< 26	< 9
	10/04/18 - 10/25/18	< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 15	< 2	< 2	< 25	< 8
	10/31/18 - 11/29/18	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 9	< 2	< 2	< 15	< 4
	12/05/18 - 12/26/18	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 21	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-II.1 CONCENTRATIONS OF TRITIUM IN GROUND/WELL WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	L-27	L-28-W4	L-28-W5	L-28-W6
01/10/18 - 01/25/18	< 194		< 191	< 190
04/11/18 - 04/11/18	< 195	< 198		< 194
07/11/18 - 07/11/18	< 185	< 187		< 180
10/10/18 - 10/10/18	< 185	< 183		< 187
MEAN	-	-	-	-

Table C-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUND/WELL WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
L-27	01/25/18 - 01/25/18	< 4	< 6	< 9	< 5	< 8	< 5	< 7	< 6	< 6	< 23	< 6
	04/11/18 - 04/11/18	< 6	< 5	< 9	< 5	< 10	< 6	< 9	< 6	< 5	< 23	< 6
	07/11/18 - 07/11/18	< 6	< 8	< 13	< 6	< 12	< 8	< 11	< 6	< 7	< 28	< 9
	10/10/18 - 10/10/18	< 5	< 5	< 10	< 5	< 9	< 5	< 9	< 5	< 5	< 38	< 13
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W4	04/11/18 - 04/11/18	< 6	< 6	< 14	< 7	< 14	< 7	< 8	< 6	< 6	< 28	< 12
	07/11/18 - 07/11/18	< 7	< 6	< 18	< 8	< 16	< 9	< 11	< 8	< 7	< 40	< 14
	10/10/18 - 10/10/18	< 4	< 4	< 10	< 5	< 7	< 6	< 10	< 6	< 5	< 29	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W5	01/10/18 - 01/10/18	< 4	< 3	< 10	< 6	< 9	< 6	< 9	< 5	< 5	< 25	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W6	01/10/18 - 01/10/18	< 4	< 4	< 12	< 6	< 10	< 4	< 9	< 8	< 5	< 35	< 10
	04/11/18 - 04/11/18	< 7	< 6	< 12	< 6	< 13	< 8	< 9	< 7	< 7	< 32	< 11
	07/11/18 - 07/11/18	< 8	< 9	< 15	< 7	< 16	< 8	< 10	< 8	< 6	< 31	< 13
	10/10/18 - 10/10/18	< 4	< 5	< 11	< 5	< 9	< 5	< 9	< 5	< 5	< 31	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-III.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PC/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
L-34												
Bluegill	05/08/18	< 62	< 71	< 125	< 38	< 159	< 68	< 114	< 78	< 57	< 588	< 141
Largemouth Bass	05/08/18	< 52	< 53	< 106	< 44	< 110	< 51	< 93	< 56	< 50	< 466	< 130
Bluegill	10/17/18	< 80	< 96	< 241	< 56	< 153	< 78	< 148	< 77	< 79	< 736	< 301
Channel Catfish	10/17/18	< 39	< 51	< 112	< 45	< 100	< 50	< 91	< 51	< 35	< 343	< 109
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-35												
Quillback	05/08/18	< 76	< 70	< 199	< 59	< 167	< 111	< 203	< 75	< 90	< 733	< 235
Smallmouth Buffalo	05/08/18	< 56	< 46	< 147	< 50	< 116	< 56	< 108	< 51	< 47	< 425	< 115
Smallmouth Bass	10/17/18	< 85	< 98	< 218	< ##	< 229	< 101	< 205	< 91	< 98	< 927	< 283
Smallmouth Buffalo	10/17/18	< 60	< 76	< 176	< 61	< 163	< 78	< 114	< 74	< 67	< 716	< 244
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-36												
Channel Catfish	05/08/18	< 64	< 84	< 167	< 69	< 164	< 85	< 123	< 77	< 70	< 544	< 183
Smallmouth Buffalo	05/08/18	< 49	< 51	< 150	< 49	< 117	< 74	< 89	< 60	< 69	< 451	< 160
Largemouth Bass	10/17/18	< 52	< 52	< 116	< 61	< 117	< 51	< 96	< 48	< 45	< 424	< 123
Smallmouth Buffalo	10/17/18	< 76	< 87	< 195	< 68	< 156	< 97	< 161	< 85	< 75	< 738	< 221
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-IV.1

CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PC/KG DRY ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
L-21	05/16/18	< 91	< 95	< 195	< 107	< 242	< 110	< 153	< 116	< 111	< 618	< 189
	10/16/18	< 104	< 78	< 208	< 86	< 222	< 110	< 169	< 129	< 107	< 415	< 146
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-40	05/16/18	< 78	< 68	< 159	< 79	< 167	< 93	< 110	< 76	< 87	< 417	< 96
	10/16/18	< 92	< 91	< 201	< 94	< 186	< 87	< 152	< 100	< 111	< 444	< 113
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-41	05/16/18	< 48	< 48	< 115	< 58	< 121	< 62	< 94	< 56	< 50	< 397	< 75
	10/16/18	< 45	< 40	< 96	< 50	< 118	< 49	< 76	< 50	< 46	< 229	< 78
	MEAN	-	-	-	-	-	-	-	-	-	-	-

(1) THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES (VALUES ≥ MDC)

Table C-V.1 **CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION	GROUP I		GROUP II		GROUP III				GROUP IV
PERIOD	L-03	L-05	L-01	L-06	L-04	L-07	L-08	L-11A	L-10
01/04/18 - 01/10/18	18 ± 6	18 ± 5	17 ± 6	25 ± 6	22 ± 6	20 ± 6	20 ± 6	20 ± 6	19 ± 6
01/10/18 - 01/18/18	17 ± 4	15 ± 4	14 ± 4	18 ± 4	15 ± 4	17 ± 4	14 ± 4	17 ± 4	17 ± 4
01/18/18 - 01/25/18	13 ± 4	17 ± 4	20 ± 4	15 ± 4	18 ± 4	17 ± 4	17 ± 4	16 ± 4	17 ± 4
01/25/18 - 01/30/18	21 ± 6	15 ± 5	26 ± 6	23 ± 6	18 ± 6	17 ± 5	13 ± 5	18 ± 6	20 ± 6
01/30/18 - 02/07/18	19 ± 4	19 ± 4	19 ± 4	20 ± 4	20 ± 4	19 ± 4	20 ± 4	20 ± 4	20 ± 4
02/07/18 - 02/15/18	23 ± 4	22 ± 4	22 ± 4	22 ± 4	21 ± 4	23 ± 4	29 ± 4	23 ± 4	22 ± 4
02/15/18 - 02/22/18	14 ± 4	19 ± 4	13 ± 4	12 ± 4	18 ± 4	16 ± 4	18 ± 4	15 ± 4	14 ± 4
02/22/18 - 02/28/18	15 ± 5	18 ± 5	15 ± 5	15 ± 5	14 ± 5	13 ± 4	21 ± 5	14 ± 5	13 ± 4
02/28/18 - 03/08/18	13 ± 4	11 ± 3	13 ± 4	15 ± 4	14 ± 4	19 ± 4	12 ± 3	12 ± 3	12 ± 3
03/08/18 - 03/15/18	16 ± 4	16 ± 4	19 ± 4	17 ± 4	16 ± 4	16 ± 4	17 ± 4	14 ± 4	19 ± 4
03/15/18 - 03/22/18	16 ± 4	17 ± 4	16 ± 4	16 ± 4	14 ± 4	16 ± 4	14 ± 4	17 ± 4	12 ± 4
03/22/18 - 03/28/18	15 ± 5	15 ± 4	16 ± 5	17 ± 5	13 ± 4	10 ± 4	14 ± 4	16 ± 5	10 ± 4
03/28/18 - 04/05/18	18 ± 4	11 ± 4	17 ± 4	14 ± 4	11 ± 4	14 ± 4	13 ± 4	14 ± 4	12 ± 4
04/05/18 - 04/11/18	17 ± 5	20 ± 5	20 ± 5	18 ± 5	19 ± 5	20 ± 5	22 ± 5	22 ± 5	20 ± 5
04/11/18 - 04/18/18	12 ± 4	14 ± 4	14 ± 4	10 ± 3	13 ± 4	14 ± 4	11 ± 3	12 ± 4	10 ± 4
04/18/18 - 04/26/18	15 ± 4	11 ± 3	14 ± 3	12 ± 3	18 ± 4	14 ± 3	12 ± 3	15 ± 3	13 ± 3
04/26/18 - 05/02/18	14 ± 5	16 ± 5	21 ± 5	22 ± 5	22 ± 5	21 ± 5	19 ± 5	18 ± 5	22 ± 5
05/02/18 - 05/10/18	10 ± 3	16 ± 4	17 ± 4	17 ± 4	15 ± 4	15 ± 4	15 ± 4	16 ± 4	15 ± 4
05/10/18 - 05/17/18	14 ± 4	15 ± 4	16 ± 4	13 ± 4	14 ± 4	15 ± 4	18 ± 4	17 ± 4	15 ± 4
05/17/18 - 05/24/18	14 ± 4	20 ± 4	15 ± 4	18 ± 4	14 ± 4	16 ± 4	14 ± 4	14 ± 4	16 ± 4
05/24/18 - 05/31/18	23 ± 5	19 ± 4	19 ± 4	25 ± 5	22 ± 4	21 ± 4	27 ± 5	20 ± 4	22 ± 4
05/31/18 - 06/06/18	9 ± 4	11 ± 4	13 ± 4	11 ± 4	11 ± 4	9 ± 4	10 ± 4	11 ± 4	14 ± 5
06/06/18 - 06/14/18	18 ± 4	14 ± 4	16 ± 4	16 ± 4	20 ± 4	16 ± 4	13 ± 4	21 ± 4	18 ± 4
06/14/18 - 06/21/18	17 ± 4	10 ± 4	13 ± 4	16 ± 4	17 ± 4	19 ± 5	16 ± 4	12 ± 4	16 ± 4
06/21/18 - 06/27/18	10 ± 4	14 ± 4	9 ± 4	9 ± 4	6 ± 4	12 ± 4	10 ± 4	10 ± 4	13 ± 4
06/27/18 - 07/05/18	12 ± 4	12 ± 4	16 ± 4	14 ± 4	16 ± 4	16 ± 4	13 ± 4	16 ± 4	14 ± 4
07/05/18 - 07/11/18	19 ± 5	19 ± 5	16 ± 5	19 ± 5	21 ± 5	18 ± 5	22 ± 5	17 ± 5	23 ± 5
07/11/18 - 07/19/18	16 ± 4	11 ± 3	16 ± 4	15 ± 4	13 ± 4	14 ± 4	15 ± 4	12 ± 4	14 ± 4
07/19/18 - 07/26/18	19 ± 5	20 ± 4	18 ± 4	15 ± 4	16 ± 4	20 ± 4	20 ± 4	21 ± 5	23 ± 5
07/26/18 - 08/01/18	15 ± 5	13 ± 5	15 ± 5	10 ± 4	20 ± 5	14 ± 5	21 ± 5	15 ± 5	19 ± 5
08/01/18 - 08/09/18	28 ± 5	25 ± 4	25 ± 4	28 ± 5	28 ± 5	25 ± 4	28 ± 5	26 ± 4	30 ± 5
08/09/18 - 08/16/18	19 ± 4	21 ± 4	18 ± 4	20 ± 4	24 ± 4	20 ± 4	23 ± 4	22 ± 4	22 ± 4
08/16/18 - 08/23/18	15 ± 4	14 ± 4	16 ± 4	17 ± 4	20 ± 4	20 ± 4	18 ± 4	18 ± 4	17 ± 4
08/23/18 - 08/30/18	22 ± 5	21 ± 5	23 ± 5	22 ± 5	23 ± 5	20 ± 5	23 ± 5	23 ± 5	20 ± 5
08/30/18 - 09/05/18	13 ± 4	11 ± 4	12 ± 4	9 ± 4	16 ± 5	15 ± 4	13 ± 4	15 ± 4	18 ± 5
09/05/18 - 09/13/18	14 ± 4	12 ± 3	13 ± 4	14 ± 4	11 ± 3	14 ± 3	12 ± 3	11 ± 3	14 ± 4
09/13/18 - 09/20/18	14 ± 4	20 ± 5	20 ± 4	15 ± 4	15 ± 4	16 ± 4	18 ± 4	15 ± 4	19 ± 4
09/20/18 - 09/27/18	12 ± 4	13 ± 4	11 ± 4	13 ± 4	13 ± 4	14 ± 4	13 ± 4	13 ± 4	14 ± 4
09/27/18 - 10/04/18	16 ± 4	15 ± 4	17 ± 4	14 ± 4	16 ± 4	13 ± 4	11 ± 3	17 ± 4	14 ± 4
10/04/18 - 10/10/18	12 ± 4	12 ± 4	19 ± 5	14 ± 4	14 ± 5	12 ± 4	10 ± 4	11 ± 4	12 ± 4
10/10/18 - 10/18/18	13 ± 3	11 ± 3	12 ± 3	11 ± 3	14 ± 4	11 ± 3	11 ± 3	10 ± 3	11 ± 3
10/18/18 - 10/25/18	10 ± 4	8 ± 4	14 ± 4	10 ± 4	12 ± 4	9 ± 4	13 ± 4	12 ± 4	13 ± 4
10/25/18 - 10/31/18	22 ± 5	16 ± 5	20 ± 5	16 ± 5	18 ± 5	23 ± 5	18 ± 5	21 ± 5	22 ± 5
10/31/18 - 11/08/18	9 ± 3	9 ± 3	11 ± 3	13 ± 4	13 ± 4	13 ± 3	12 ± 4	13 ± 4	14 ± 4
11/08/18 - 11/15/18	19 ± 4	17 ± 4	18 ± 4	20 ± 4	16 ± 4	17 ± 4	18 ± 4	19 ± 4	22 ± 4
11/15/18 - 11/21/18	26 ± 5	21 ± 5	23 ± 5	23 ± 5	27 ± 5	27 ± 5	25 ± 5	26 ± 5	24 ± 5
11/21/18 - 11/29/18	31 ± 5	34 ± 5	32 ± 5	33 ± 5	26 ± 5	35 ± 5	30 ± 5	30 ± 5	36 ± 5
11/29/18 - 12/05/18	14 ± 5	14 ± 5	12 ± 5	13 ± 4	12 ± 4	12 ± 4	13 ± 5	14 ± 5	14 ± 5
12/05/18 - 12/13/18	38 ± 5	36 ± 5	35 ± 5	37 ± 6	34 ± 5	35 ± 5	40 ± 5	37 ± 5	36 ± 5
12/13/18 - 12/20/18	28 ± 5	21 ± 5	28 ± 5	25 ± 5	27 ± 5	27 ± 5	25 ± 5	22 ± 5	23 ± 5
12/20/18 - 12/26/18	20 ± 5	17 ± 5	18 ± 5	13 ± 5	14 ± 5	19 ± 5	19 ± 5	19 ± 5	18 ± 5
12/26/18 - 01/03/19	14 ± 4	16 ± 4	17 ± 4	13 ± 4	14 ± 4	16 ± 4	15 ± 4	14 ± 4	13 ± 4
(2) MEAN ± 2 STD DEV	17 ± 11	16 ± 11	17 ± 10	17 ± 11	17 ± 10	17 ± 11	17 ± 12	17 ± 10	18 ± 11

THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES (VALUES ≥ MDC)

Table C-V.2

MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

GROUP I - ONSITE LOCATIONS				GROUP II - NEAR-SITE LOCATIONS				GROUP III - FAR-FIELD LOCATIONS				GROUP IV - CONTROL LOCATION			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
01/04/18 - 01/30/18	13	21	17 ± 5	01/04/18 - 01/30/18	14	26	20 ± 9	01/04/18 - 01/30/18	13	22	17 ± 5	01/04/18 - 01/30/18	17	20	18 ± 3
01/30/18 - 02/28/18	14	23	19 ± 6	01/30/18 - 02/28/18	12	22	17 ± 8	01/30/18 - 02/28/18	13	29	19 ± 8	01/30/18 - 02/28/18	13	22	17 ± 9
02/28/18 - 03/28/18	11	17	15 ± 4	02/28/18 - 03/28/18	13	19	16 ± 3	02/28/18 - 03/28/18	10	19	15 ± 4	02/28/18 - 03/28/18	10	19	13 ± 8
03/28/18 - 05/02/18	11	20	15 ± 6	03/28/18 - 05/02/18	10	22	16 ± 8	03/28/18 - 05/02/18	11	22	16 ± 8	03/28/18 - 05/02/18	10	22	16 ± 10
05/02/18 - 05/31/18	10	23	16 ± 8	05/02/18 - 05/31/18	13	25	17 ± 7	05/02/18 - 05/31/18	14	27	17 ± 7	05/02/18 - 05/31/18	15	22	17 ± 7
05/31/18 - 06/27/18	9	18	13 ± 7	05/31/18 - 06/27/18	9	16	13 ± 6	05/31/18 - 06/27/18	6	21	13 ± 8	05/31/18 - 06/27/18	13	18	15 ± 5
06/27/18 - 08/01/18	11	20	16 ± 7	06/27/18 - 08/01/18	10	19	15 ± 5	06/27/18 - 08/01/18	12	22	17 ± 6	06/27/18 - 08/01/18	14	23	18 ± 9
08/01/18 - 08/30/18	14	28	21 ± 9	08/01/18 - 08/30/18	16	28	21 ± 8	08/01/18 - 08/30/18	18	28	23 ± 6	08/01/18 - 08/30/18	17	30	22 ± 11
08/30/18 - 10/04/18	11	20	14 ± 5	08/30/18 - 10/04/18	9	20	14 ± 6	08/30/18 - 10/04/18	11	18	14 ± 4	08/30/18 - 10/04/18	14	19	16 ± 5
10/04/18 - 10/31/18	8	22	13 ± 9	10/04/18 - 10/31/18	10	20	14 ± 7	10/04/18 - 10/31/18	9	23	14 ± 8	10/04/18 - 10/31/18	11	22	15 ± 10
10/31/18 - 11/29/18	9	34	21 ± 18	10/31/18 - 11/29/18	11	33	21 ± 16	10/31/18 - 11/29/18	12	35	22 ± 15	10/31/18 - 11/29/18	14	36	24 ± 18
11/29/18 - 01/03/19	14	38	22 ± 18	11/29/18 - 01/03/19	12	37	21 ± 19	11/29/18 - 01/03/19	12	40	21 ± 18	11/29/18 - 01/03/19	13	36	21 ± 18
01/04/18 - 01/03/19	8	38	17 ± 11	01/04/18 - 01/03/19	9	37	17 ± 11	01/04/18 - 01/03/19	6	40	17 ± 11	01/04/18 - 01/03/19	10	36	18 ± 11

Table C-V.3

CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
L-01	01/04/18 - 03/28/18	< 4	< 6	< 23	< 4	< 6	< 8	< 12	< 3	< 3	< 1054	< 323
	03/28/18 - 06/27/18	< 2	< 4	< 13	< 2	< 6	< 4	< 9	< 2	< 3	< 229	< 91
	06/27/18 - 10/04/18	< 3	< 4	< 12	< 3	< 5	< 4	< 8	< 2	< 2	< 410	< 183
	10/04/18 - 01/03/19	< 3	< 5	< 13	< 3	< 7	< 5	< 9	< 3	< 3	< 201	< 61
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-03	01/04/18 - 03/28/18	< 2	< 5	< 14	< 3	< 5	< 5	< 11	< 2	< 2	< 1150	< 293
	03/28/18 - 06/27/18	< 1	< 2	< 7	< 2	< 4	< 3	< 3	< 2	< 1	< 113	< 31
	06/27/18 - 10/04/18	< 1	< 4	< 15	< 2	< 6	< 5	< 8	< 3	< 2	< 347	< 206
	10/04/18 - 01/03/19	< 2	< 2	< 12	< 2	< 5	< 3	< 6	< 2	< 2	< 127	< 53
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-04	01/04/18 - 03/28/18	< 3	< 6	< 21	< 2	< 8	< 7	< 11	< 3	< 3	< 1123	< 539
	03/28/18 - 06/27/18	< 3	< 5	< 16	< 3	< 6	< 5	< 8	< 3	< 2	< 269	< 70
	06/27/18 - 10/04/18	< 3	< 4	< 12	< 2	< 6	< 5	< 7	< 2	< 2	< 430	< 187
	10/04/18 - 01/03/19	< 2	< 4	< 9	< 3	< 6	< 3	< 6	< 3	< 2	< 148	< 57
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-05	01/04/18 - 03/28/18	< 5	< 7	< 30	< 4	< 12	< 9	< 17	< 5	< 3	< 1607	< 615
	03/28/18 - 06/27/18	< 1	< 2	< 6	< 1	< 3	< 3	< 4	< 1	< 1	< 143	< 30
	06/27/18 - 10/04/18	< 4	< 5	< 18	< 4	< 10	< 6	< 10	< 4	< 3	< 696	< 285
	10/04/18 - 01/03/19	< 3	< 4	< 12	< 3	< 8	< 4	< 8	< 3	< 3	< 187	< 71
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-06	01/04/18 - 03/28/18	< 3	< 4	< 17	< 3	< 8	< 7	< 9	< 3	< 3	< 1269	< 508
	03/28/18 - 06/27/18	< 1	< 2	< 9	< 1	< 3	< 3	< 5	< 1	< 2	< 154	< 51
	06/27/18 - 10/04/18	< 1	< 4	< 12	< 2	< 5	< 3	< 6	< 2	< 2	< 371	< 146
	10/04/18 - 01/03/19	< 2	< 3	< 9	< 3	< 4	< 3	< 7	< 2	< 2	< 147	< 37
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-V.3

CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
L-07	01/04/18 - 03/28/18	< 2	< 5	< 21	< 2	< 7	< 6	< 9	< 2	< 2	< 973	< 501
	03/28/18 - 06/27/18	< 2	< 2	< 7	< 1	< 4	< 2	< 5	< 1	< 1	< 139	< 52
	06/27/18 - 10/04/18	< 3	< 3	< 14	< 2	< 8	< 3	< 7	< 3	< 2	< 514	< 184
	10/04/18 - 01/03/19	< 3	< 3	< 11	< 2	< 7	< 3	< 7	< 3	< 2	< 143	< 36
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-08	01/04/18 - 03/28/18	< 3	< 6	< 21	< 3	< 8	< 5	< 10	< 3	< 3	< 1021	< 432
	03/28/18 - 06/27/18	< 2	< 3	< 10	< 2	< 5	< 3	< 6	< 2	< 2	< 178	< 74
	06/27/18 - 10/04/18	< 4	< 7	< 19	< 4	< 9	< 7	< 11	< 3	< 3	< 655	< 237
	10/04/18 - 01/03/19	< 3	< 4	< 11	< 2	< 6	< 4	< 7	< 2	< 2	< 115	< 55
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-10	01/04/18 - 03/28/18	< 4	< 7	< 22	< 4	< 12	< 9	< 18	< 4	< 3	< 1614	< 578
	03/28/18 - 06/27/18	< 2	< 3	< 10	< 2	< 5	< 4	< 7	< 3	< 1	< 204	< 70
	06/27/18 - 10/04/18	< 3	< 3	< 12	< 3	< 5	< 4	< 8	< 2	< 2	< 323	< 171
	10/04/18 - 01/03/19	< 3	< 4	< 7	< 3	< 6	< 3	< 7	< 3	< 2	< 141	< 51
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-11A	01/04/18 - 03/28/18	< 3	< 5	< 15	< 4	< 6	< 7	< 12	< 3	< 3	< 1012	< 515
	03/28/18 - 06/27/18	< 3	< 6	< 12	< 3	< 7	< 4	< 7	< 2	< 3	< 280	< 101
	06/27/18 - 10/04/18	< 3	< 6	< 18	< 4	< 10	< 6	< 12	< 3	< 3	< 586	< 246
	10/04/18 - 01/03/19	< 3	< 4	< 10	< 3	< 4	< 4	< 7	< 2	< 3	< 130	< 55
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-VI.1

CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION	GROUP I		GROUP II		GROUP III				GROUP IV
PERIOD	L-03	L-05	L-01	L-06	L-04	L-07	L-08	L-11A	L-10
01/04/18 - 01/10/18	< 52	< 50	< 35	< 53	< 41	< 65	< 64	< 64	< 65
01/10/18 - 01/18/18	< 57	< 57	< 20	< 54	< 56	< 59	< 63	< 62	< 63
01/18/18 - 01/25/18	< 60	< 59	< 59	< 65	< 58	< 66	< 35	< 65	< 65
01/25/18 - 01/30/18	< 58	< 59	< 31	< 58	< 58	< 58	< 58	< 61	< 61
01/30/18 - 02/07/18	< 60	< 60	< 26	< 60	< 61	< 47	< 47	< 47	< 47
02/07/18 - 02/15/18	< 50	< 50	< 27	< 51	< 49	< 42	< 41	< 36	< 44
02/15/18 - 02/22/18	< 60	< 63	< 25	< 60	< 60	< 35	< 34	< 34	< 35
02/22/18 - 02/28/18	< 54	< 53	< 23	< 53	< 52	< 46	< 47	< 46	< 46
02/28/18 - 03/08/18	< 47	< 45	< 20	< 46	< 46	< 35	< 35	< 35	< 35
03/08/18 - 03/15/18	< 49	< 49	< 20	< 50	< 48	< 32	< 33	< 34	< 34
03/15/18 - 03/22/18	< 62	< 61	< 32	< 59	< 62	< 37	< 38	< 38	< 37
03/22/18 - 03/28/18	< 54	< 53	< 23	< 55	< 56	< 38	< 37	< 38	< 38
03/28/18 - 04/05/18	< 63	< 60	< 61	< 61	< 25	< 36	< 34	< 34	< 34
04/05/18 - 04/11/18	< 59	< 58	< 24	< 58	< 57	< 39	< 38	< 38	< 38
04/11/18 - 04/18/18	< 45	< 43	< 45	< 33	< 44	< 35	< 32	< 28	< 34
04/18/18 - 04/26/18	< 24	< 23	< 19	< 23	< 24	< 16	< 38	< 38	< 38
04/26/18 - 05/02/18	< 65	< 62	< 35	< 66	< 68	< 22	< 60	< 59	< 58
05/02/18 - 05/10/18	< 52	< 52	< 18	< 51	< 51	< 22	< 49	< 49	< 52
05/10/18 - 05/17/18	< 51	< 61	< 49	< 66	< 52	< 65	< 56	< 57	< 57
05/17/18 - 05/24/18	< 70	< 70	< 26	< 69	< 69	< 63	< 62	< 61	< 62
05/24/18 - 05/31/18	< 42	< 60	< 42	< 63	< 42	< 62	< 52	< 53	< 52
05/31/18 - 06/06/18	< 49	< 46	< 41	< 48	< 49	< 67	< 70	< 69	< 67
06/06/18 - 06/14/18	< 67	< 65	< 65	< 36	< 65	< 37	< 35	< 37	< 30
06/14/18 - 06/21/18	< 56	< 53	< 57	< 45	< 56	< 69	< 21	< 53	< 53
06/21/18 - 06/27/18	< 68	< 68	< 56	< 66	< 69	< 68	< 65	< 65	< 66
06/27/18 - 07/05/18	< 54	< 54	< 44	< 53	< 54	< 47	< 46	< 48	< 48
07/05/18 - 07/11/18	< 64	< 61	< 50	< 59	< 60	< 48	< 48	< 49	< 49
07/11/18 - 07/19/18	< 48	< 45	< 46	< 62	< 46	< 64	< 34	< 64	< 64
07/19/18 - 07/26/18	< 51	< 49	< 50	< 53	< 49	< 55	< 54	< 23	< 55
07/26/18 - 08/01/18	< 32	< 27	< 28	< 18	< 29	< 44	< 43	< 44	< 44
08/01/18 - 08/09/18	< 33	< 33	< 33	< 57	< 32	< 48	< 59	< 59	< 59
08/09/18 - 08/16/18	< 48	< 48	< 40	< 46	< 47	< 61	< 63	< 62	< 63
08/16/18 - 08/23/18	< 41	< 41	< 34	< 41	< 42	< 21	< 22	< 21	< 21
08/23/18 - 08/30/18	< 67	< 68	< 68	< 39	< 65	< 48	< 49	< 50	< 49
08/30/18 - 09/05/18	< 65	< 65	< 65	< 51	< 68	< 63	< 64	< 63	< 62
09/05/18 - 09/13/18	< 36	< 36	< 30	< 34	< 35	< 56	< 58	< 58	< 60
09/13/18 - 09/20/18	< 48	< 49	< 47	< 57	< 48	< 59	< 60	< 25	< 59
09/20/18 - 09/27/18	< 48	< 47	< 41	< 46	< 48	< 68	< 69	< 69	< 69
09/27/18 - 10/04/18	< 55	< 57	< 55	< 24	< 55	< 55	< 56	< 56	< 56
10/04/18 - 10/10/18	< 56	< 57	< 47	< 53	< 55	< 61	< 63	< 62	< 62
10/10/18 - 10/18/18	< 40	< 40	< 33	< 38	< 40	< 60	< 62	< 62	< 63
10/18/18 - 10/25/18	< 23	< 24	< 23	< 13	< 23	< 16	< 15	< 16	< 15
10/25/18 - 10/31/18	< 34	< 33	< 35	< 53	< 35	< 54	< 46	< 55	< 55
10/31/18 - 11/08/18	< 40	< 41	< 34	< 39	< 40	< 46	< 48	< 48	< 48
11/08/18 - 11/15/18	< 35	< 36	< 35	< 37	< 35	< 31	< 38	< 38	< 38
11/15/18 - 11/21/18	< 66	< 66	< 27	< 63	< 41	< 50	< 52	< 51	< 51
11/21/18 - 11/29/18	< 59	< 59	< 58	< 54	< 56	< 67	< 68	< 67	< 68
11/29/18 - 12/05/18	< 21	< 50	< 50	< 28	< 50	< 34	< 36	< 35	< 35
12/05/18 - 12/13/18	< 63	< 63	< 68	< 66	< 63	< 26	< 62	< 63	< 62
12/13/18 - 12/20/18	< 65	< 65	< 55	< 64	< 66	< 66	< 69	< 67	< 68
12/20/18 - 12/26/18	< 59	< 59	< 49	< 57	< 60	< 64	< 67	< 67	< 66
12/26/18 - 01/03/19	< 44	< 44	< 44	< 8.062	< 45	< 20	< 20	< 20	< 20
MEAN	-	-	-	-	-	-	-	-	-

Table C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	CONTROL FARM L-42
01/04/18	< 0.8
02/01/18	< 0.3
02/28/18	< 0.5
04/05/18	< 0.8
05/31/18	< 0.9
06/14/18	< 0.4
07/11/18	< 1.0
07/26/18	< 0.8
08/09/18	< 0.9
08/23/18	< 0.9
09/05/18	< 0.6
09/20/18	< 0.9
10/04/18	< 0.7
10/18/18	< 0.4
10/31/18	< 0.7
12/05/18	< 1.0
MEAN	-

Table C-VII.2 **CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
L-42	01/04/18	< 7	< 7	< 18	< 8	< 21	< 8	< 13	< 10	< 9	< 37	< 12
	02/01/18	< 5	< 6	< 15	< 8	< 13	< 5	< 10	< 6	< 7	< 26	< 7
	02/28/18	< 7	< 8	< 17	< 10	< 17	< 8	< 13	< 10	< 8	< 41	< 12
	04/05/18	< 6	< 5	< 11	< 7	< 14	< 6	< 11	< 6	< 5	< 27	< 8
	05/31/18	< 6	< 6	< 10	< 5	< 13	< 6	< 9	< 6	< 5	< 25	< 9
	06/14/18	< 8	< 9	< 21	< 9	< 19	< 10	< 16	< 10	< 10	< 43	< 15
	07/11/18	< 6	< 8	< 15	< 7	< 13	< 7	< 13	< 8	< 7	< 36	< 8
	07/26/18	< 6	< 7	< 12	< 9	< 16	< 7	< 13	< 8	< 6	< 32	< 9
	08/09/18	< 9	< 8	< 20	< 10	< 20	< 10	< 15	< 9	< 9	< 38	< 11
	08/23/18	< 6	< 8	< 20	< 6	< 18	< 8	< 13	< 8	< 8	< 40	< 9
	09/05/18	< 9	< 8	< 20	< 9	< 18	< 7	< 14	< 8	< 8	< 45	< 9
	09/20/18	< 6	< 7	< 17	< 6	< 13	< 8	< 12	< 7	< 7	< 31	< 6
	10/04/18	< 6	< 7	< 16	< 6	< 15	< 7	< 10	< 5	< 6	< 39	< 14
	10/18/18	< 5	< 7	< 14	< 8	< 16	< 5	< 9	< 5	< 6	< 26	< 7
	10/31/18	< 7	< 7	< 16	< 7	< 15	< 8	< 14	< 8	< 7	< 40	< 12
	12/05/18	< 6	< 7	< 15	< 8	< 14	< 6	< 12	< 5	< 7	< 29	< 10

Table C-VIII.1

CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
L-QUAD 1													
Beets	08/09/18	< 16	< 17	< 35	< 18	< 34	< 17	< 30	< 26	< 17	< 17	< 74	< 24
Beet Leaves	08/09/18	< 36	< 35	< 77	< 41	< 71	< 43	< 70	< 58	< 41	< 33	< 166	< 45
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 2													
Horseradish Leaves	08/01/18	< 13	< 12	< 30	< 13	< 29	< 14	< 23	< 36	< 14	< 13	< 80	< 25
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 3													
Red Beets	07/19/18	< 27	< 26	< 65	< 36	< 52	< 27	< 48	< 46	< 26	< 26	< 135	< 25
Green Beans	07/19/18	< 27	< 22	< 53	< 28	< 56	< 28	< 45	< 38	< 27	< 27	< 107	< 37
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 4													
Beets	07/11/18	< 20	< 25	< 48	< 16	< 50	< 23	< 39	< 34	< 24	< 23	< 99	< 26
Beet Leaves	07/11/18	< 36	< 37	< 72	< 35	< 77	< 40	< 58	< 59	< 39	< 37	< 170	< 43
Cauliflower Leaves	07/11/18	< 20	< 27	< 48	< 26	< 62	< 28	< 34	< 35	< 29	< 26	< 112	< 20
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-VIII.2

CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
L-VEG C													
Clover	05/17/18	< 20	< 19	< 40	< 20	< 44	< 21	< 38	< 33	< 22	< 20	< 95	< 29
Clover #2	05/17/18	< 17	< 18	< 38	< 18	< 42	< 18	< 30	< 30	< 19	< 19	< 90	< 23
Field grass	05/17/18	< 21	< 22	< 45	< 25	< 48	< 23	< 39	< 35	< 24	< 24	< 98	< 31
Purple clover	06/14/18	< 22	< 24	< 51	< 21	< 49	< 25	< 44	< 59	< 27	< 23	< 146	< 36
Yellow sweet clover	06/14/18	< 12	< 13	< 28	< 12	< 26	< 14	< 24	< 34	< 14	< 13	< 79	< 21
Field grass	06/14/18	< 25	< 24	< 55	< 25	< 55	< 26	< 43	< 57	< 25	< 24	< 147	< 47
Red clover	07/19/18	< 24	< 27	< 51	< 27	< 56	< 24	< 44	< 36	< 26	< 25	< 107	< 34
Common mullein	07/19/18	< 19	< 17	< 36	< 19	< 39	< 18	< 31	< 27	< 19	< 18	< 80	< 26
Milkweed	07/19/18	< 31	< 31	< 67	< 36	< 68	< 33	< 60	< 47	< 34	< 29	< 142	< 46
Cabbage	07/26/18	< 29	< 30	< 65	< 40	< 66	< 31	< 49	< 44	< 30	< 27	< 127	< 40
Cucumber	07/26/18	< 24	< 22	< 47	< 30	< 49	< 19	< 33	< 42	< 30	< 21	< 90	< 28
Catalpa leaves	08/16/18	< 22	< 22	< 47	< 23	< 47	< 25	< 41	< 38	< 25	< 23	< 102	< 35
Grass	08/16/18	< 27	< 25	< 53	< 27	< 55	< 26	< 44	< 44	< 27	< 27	< 119	< 36
Milkweed	08/16/18	< 26	< 27	< 56	< 29	< 55	< 26	< 49	< 46	< 33	< 28	< 128	< 34
Catalpa leaves	09/20/18	< 14	< 15	< 36	< 15	< 33	< 16	< 27	< 58	< 16	< 15	< 113	< 35
Field grass	09/20/18	< 16	< 16	< 37	< 16	< 33	< 17	< 28	< 58	< 16	< 15	< 118	< 35
Dandelion greens	09/20/18	< 12	< 13	< 31	< 15	< 28	< 15	< 24	< 47	< 14	< 13	< 106	< 24
Milkweed	10/18/18	< 38	< 39	< 80	< 42	< 83	< 42	< 69	< 92	< 42	< 40	< 228	< 67
Dandelions	10/18/18	< 45	< 48	< 91	< 41	< 94	< 45	< 73	< ##	< 47	< 42	< 277	< 72
Catalpa leaves	10/18/18	< 41	< 42	< 87	< 41	< 88	< 46	< 75	< ##	< 44	< 42	< 239	< 78
Grass	12/13/18	< 29	< 28	< 56	< 28	< 67	< 25	< 45	< 36	< 27	< 27	< 110	< 38
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-ESE-1													
Buckhorn Plantain	05/17/18	< 32	< 32	< 69	< 38	< 75	< 32	< 58	< 48	< 38	< 31	< 148	< 52
Dandelion leaves	05/17/18	< 38	< 34	< 73	< 34	< 73	< 36	< 63	< 59	< 38	< 40	< 167	< 48
Mullein weed	05/17/18	< 28	< 24	< 58	< 27	< 55	< 26	< 43	< 43	< 33	< 28	< 128	< 36
Broadleaf Plantain	06/14/18	< 22	< 22	< 50	< 24	< 49	< 23	< 41	< 54	< 24	< 23	< 136	< 45
Narrow-leaf Aster	06/14/18	< 22	< 21	< 50	< 23	< 51	< 22	< 37	< 45	< 24	< 22	< 119	< 44
Narrow-leaf Collomia	06/14/18	< 25	< 25	< 54	< 27	< 55	< 24	< 42	< 58	< 27	< 24	< 140	< 45
Black eyed susan	07/19/18	< 19	< 19	< 42	< 22	< 43	< 20	< 32	< 30	< 21	< 20	< 84	< 26
Echinacea	07/19/18	< 16	< 15	< 32	< 16	< 36	< 17	< 29	< 27	< 17	< 16	< 75	< 20
Milkweed	07/19/18	< 20	< 19	< 42	< 21	< 43	< 21	< 35	< 34	< 22	< 20	< 96	< 23
Common tansy	08/16/18	< 27	< 25	< 53	< 26	< 56	< 26	< 45	< 44	< 29	< 27	< 126	< 38
Purple coneflowers	08/16/18	< 22	< 22	< 48	< 24	< 50	< 24	< 41	< 41	< 25	< 23	< 109	< 32
Goldenrod	08/16/18	< 28	< 27	< 54	< 32	< 57	< 28	< 44	< 47	< 28	< 28	< 124	< 38
Broadleaf plantain	09/20/18	< 16	< 17	< 38	< 16	< 35	< 17	< 30	< 59	< 17	< 16	< 120	< 35
Purple coneflowers	09/20/18	< 16	< 16	< 36	< 17	< 32	< 18	< 28	< 58	< 16	< 16	< 115	< 37
Goldenrod	09/20/18	< 15	< 16	< 36	< 16	< 30	< 16	< 29	< 59	< 18	< 16	< 115	< 34
Broad leaf aster	10/18/18	< 26	< 24	< 58	< 28	< 57	< 28	< 48	< 63	< 28	< 24	< 150	< 50
Purple coneflower	10/18/18	< 41	< 44	< 87	< 40	< 86	< 45	< 76	< ##	< 45	< 43	< 250	< 72
Goldenrod	10/18/18	< 41	< 44	< 89	< 41	< 92	< 46	< 75	< ##	< 45	< 40	< 241	< 76
Purple coneflower; Goldenrod	12/13/18	< 24	< 25	< 43	< 23	< 49	< 24	< 44	< 53	< 24	< 24	< 137	< 38
Grass	12/13/18	< 33	< 26	< 83	< 40	< 79	< 36	< 63	< 56	< 44	< 38	< 173	< 59
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-VIII.2

CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
L-ESE-2													
Clover	05/17/18	< 16	< 15	< 30	< 18	< 35	< 16	< 27	< 26	< 17	< 16	< 73	< 20
Wire vine	05/17/18	< 24	< 23	< 48	< 23	< 49	< 24	< 39	< 37	< 26	< 24	< 105	< 33
Field grass	05/17/18	< 30	< 30	< 70	< 32	< 66	< 30	< 53	< 43	< 35	< 31	< 138	< 39
Purple clover	06/14/18	< 21	< 21	< 47	< 24	< 43	< 23	< 41	< 48	< 24	< 22	< 117	< 39
Dandelion greens	06/14/18	< 19	< 21	< 41	< 20	< 42	< 21	< 36	< 51	< 22	< 19	< 122	< 34
Corn leaves	06/14/18	< 25	< 25	< 53	< 25	< 53	< 26	< 44	< 60	< 28	< 25	< 145	< 49
Narrow leaved plantain	07/19/18	< 19	< 18	< 37	< 16	< 38	< 18	< 32	< 29	< 22	< 20	< 88	< 24
Dandelion greens	07/19/18	< 21	< 20	< 42	< 21	< 48	< 21	< 36	< 32	< 22	< 23	< 95	< 31
Field grass	07/19/18	< 17	< 17	< 38	< 18	< 39	< 17	< 31	< 26	< 19	< 17	< 78	< 25
Narrow leaved plantain	08/16/18	< 22	< 24	< 46	< 23	< 48	< 23	< 40	< 37	< 26	< 24	< 112	< 33
Clover	08/16/18	< 21	< 22	< 46	< 23	< 49	< 22	< 41	< 37	< 24	< 21	< 109	< 32
Birch leaves	08/16/18	< 24	< 24	< 50	< 26	< 53	< 26	< 42	< 40	< 27	< 25	< 120	< 33
Broadleaf plantain	09/20/18	< 14	< 15	< 34	< 17	< 34	< 16	< 27	< 59	< 16	< 15	< 118	< 35
Field grass	09/20/18	< 15	< 17	< 37	< 16	< 38	< 17	< 30	< 59	< 17	< 15	< 117	< 33
Yellow coneflowers	09/20/18	< 16	< 15	< 38	< 16	< 33	< 17	< 27	< 54	< 16	< 15	< 118	< 36
Narrow leaf plantain	10/18/18	< 39	< 39	< 89	< 37	< 92	< 42	< 70	< ##	< 42	< 40	< 236	< 75
Field grass	10/18/18	< 25	< 27	< 56	< 39	< 59	< 31	< 46	< 64	< 29	< 26	< 152	< 52
Dandelions	10/18/18	< 29	< 30	< 67	< 30	< 77	< 33	< 52	< 79	< 31	< 31	< 185	< 58
Grass	12/13/18	< 19	< 19	< 39	< 20	< 41	< 20	< 33	< 30	< 20	< 21	< 85	< 27
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

Table C-IX.1 QUARTERLY OSLD RESULTS FOR LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF MILLIREM/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
L-01	15.4 ± 10.0	13.1	14.8	22.6	11.2
L-03	13.5 ± 8.7	12.7	12.3	19.7	9.4
L-04	13.9 ± 10.5	10.6	13.5	21.4	9.9
L-05	13.7 ± 9.5	12.2	13.2	20.3	9.0
L-06	14.2 ± 10.6	11.5	13.7	21.8	9.9
L-07	14.7 ± 10.7	12.5	13.5	22.4	10.2
L-08	14.1 ± 10.6	12.5	12.5	21.8	9.7
L-10	12.3 ± 10.1	11.2	9.6	19.7	8.7
L-11	13.0 ± 9.4	11.6	12.1	19.7	8.7
L-101	15.0 ± 9.5	13.7	13.2	21.9	11.2
L-102	17.0 ± 11.2	16.1	14.5	25.1	12.3
L-103	14.2 ± 8.8	12.5	13.1	20.6	10.6
L-104	14.2 ± 10.7	12.5	13.5	21.7	9.0
L-105	15.3 ± 11.2	12.9	13.6	23.5	11.1
L-106	14.0 ± 10.2	11.9	12.9	21.4	9.8
L-107	15.1 ± 12.3	12.5	14.0	24.0	9.9
L-108	14.4 ± 11.4	11.9	14.5	22.3	9.0
L-109	14.6 ± 9.3	14.1	13.6	20.9	9.7
L-110	15.3 ± 9.2	13.3	13.9	22.1	12.0
L-111B	15.0 ± 8.9	13.4	13.7	21.5	11.4
L-112	13.1 ± 10.0	12.3	11.3	20.2	8.5
L-113A	16.2 ± 13.0	13.8	15.4	25.3	10.1
L-114	16.0 ± 11.1	14.2	14.5	24.0	11.3
L-115	14.2 ± 10.3	11.9	13.4	21.6	9.8
L-116	13.4 ± 9.4	12.2	12.6	19.9	8.7
L-201	11.9 ± 9.7	11.4	9.9	18.7	7.4
L-202	11.7 ± 9.8	9.9	10.6	18.7	7.4
L-203	15.3 ± 9.5	13.5	15.6	21.7	10.4
L-204	14.7 ± 9.1	14.8	11.9	21.1	11.1
L-205-1	15.3 ± 11.0	15.1	12.3	23.1	10.7
L-205-3	14.3 ± 11.0	13.2	12.5	22.2	9.4
L-206	15.1 ± 10.7	15.3	12.9	22.4	9.9
L-207	14.6 ± 9.2	14.8	13.1	20.7	9.7
L-208	14.0 ± 6.9	14.1	12.4	18.8	10.8
L-209	14.2 ± 10.1	13.0	12.1	21.5	10.1
L-210	16.2 ± 9.7	14.3	15.1	23.3	12.2
L-211	16.1 ± 9.6	14.7	16.5	22.3	10.8
L-212	14.9 ± 10.2	14.5	12.3	22.2	10.6
L-213	14.8 ± 13.4	12.4	12.6	24.6	9.5
L-214	14.5 ± 10.9	12.7	13.5	22.2	9.5
L-215	16.9 ± 12.3	*(1)*	16.0	23.5	11.3
L-216	15.5 ± 8.8	14.1	15.8	21.3	10.7

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.2 MEAN QUARTERLY OSLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF MILLIREM/QUARTER ± 2 STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	13.1 ± 2.3	13.6 ± 2.9	12.1 ± 1.6	11.2 ± 0
APR-JUN	13.6 ± 1.9	13.1 ± 3.7	13.2 ± 1.8	9.6 ± 0
JUL-SEP	22.3 ± 3.3	21.6 ± 3.4	21.2 ± 2.3	19.7 ± 0
OCT-DEC	10.3 ± 2.4	10.0 ± 2.5	9.8 ± 1.5	8.7 ± 0

Table C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF MILLIREM/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	64	8.5	25.3	26.8 ± 3.9
OUTER RING	67	7.4	24.6	26.5 ± 3.4
OTHER	32	8.7	22.6	26.3 ± 3.2
CONTROL	4	8.7	19.7	12.3 ± 10.1

INNER RING STATIONS - L-101-1, L-101-2, L-102-1, L-102-2, L-103-1, L-103-2, L-104-1, L-104-2, L-105-1, L-105-2, L-106-1, L-106-2, L-107-1, L-107-2, L-108-1, L-108-2, L109-1, L109-2, L110-1, L110-2, L-111B-1, L-111B-2, L-112-1, L-112-2, L113A-1, L-113A-2, L114-1, L-114-2, L-115-1, L-115-2, L-116-1. L-116-2

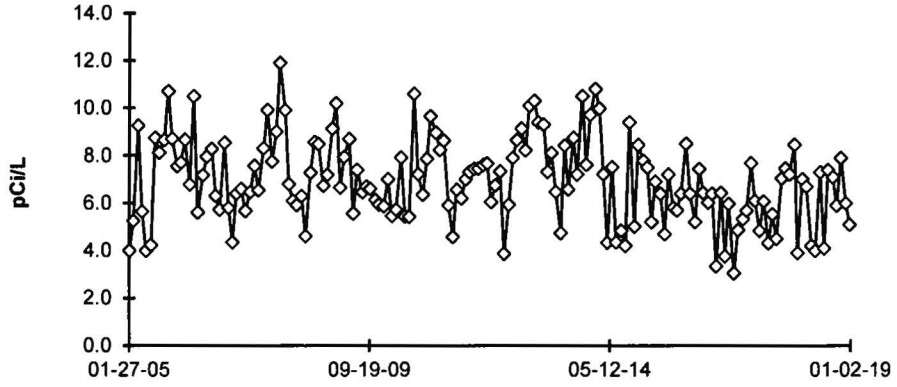
OUTER RING STATIONS - L-201-3, L-201-4, L-202-3, L-202-4, L-203-1, L-203-2, L-204-1, L-204-2, L205-1, L-205-2, L-205-3, L-205-4, L-206-1, L-206-2, L-207-1, L207-2, L208-1, L208-2, L209-1, L209-2, L210-1, L-210-2, L-211-1, L-211-2, L-212-1, L-212-2, L-213-3, L-213-4, L-214-3, L-214-4, L-215-3, L-215-4, L-2016-3, L-216-4

OTHER STATIONS - L-01-1, L-01-2, L-03-1, L-03-2, L-04-1, L-04-2, L-05-1, L-05-2, L-06-1, L-06-2, L-07-1, L-07-2, L-08-1, L-08-2, L-11A-1, L-11A-2

CONTROL STATIONS - L-10-1, L-10-2

FIGURE C-1
Surface Water - Gross Beta - Stations L-21 (C) and L-40 Collected in the Vicinity of LSCS, 2005 - 2018

L-21 (C) Illinois River at Seneca



L-40 Illinois River Downstream

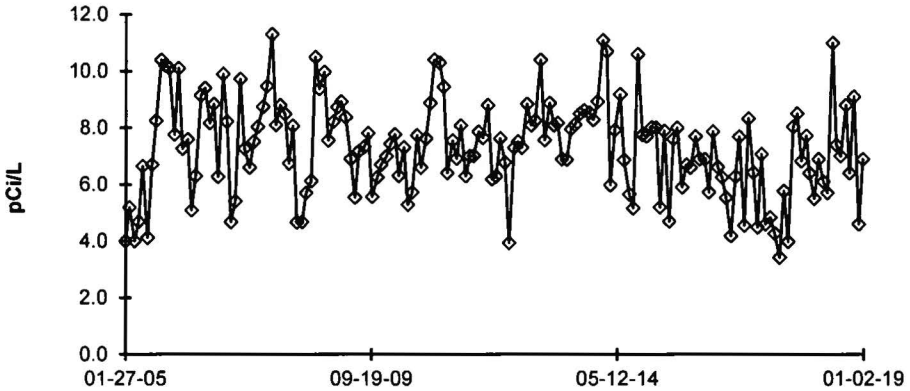
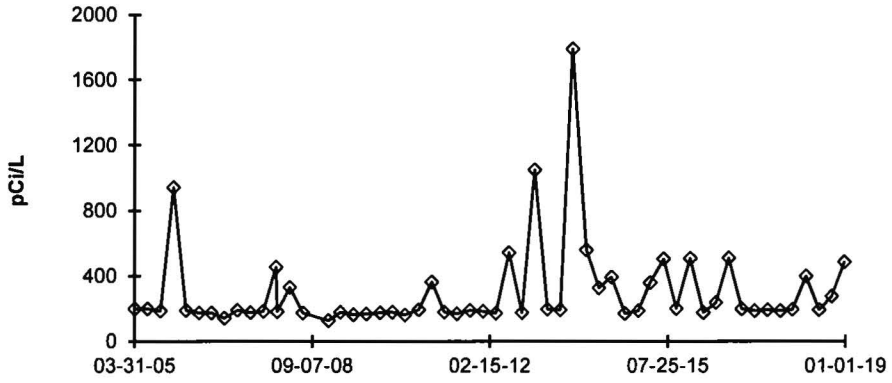


FIGURE C-2
Surface Water - Tritium - Stations L-21 (C) and L-40 Collected in the Vicinity of LSCS, 2005 - 2018

L-21 Illinois River at Seneca



L-40 Illinois River Downstream

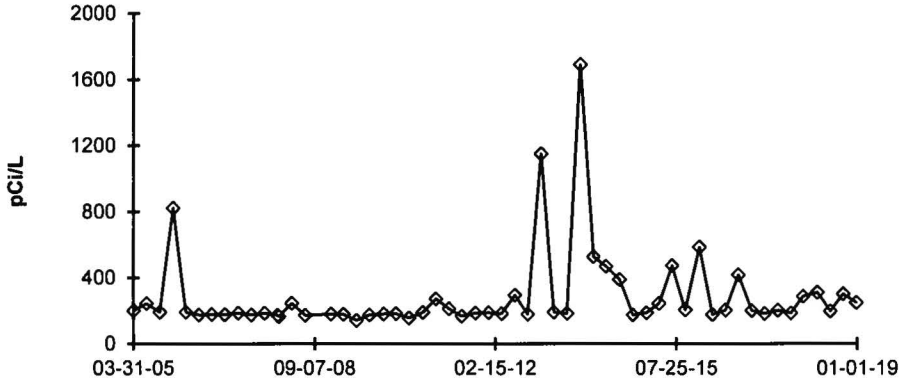
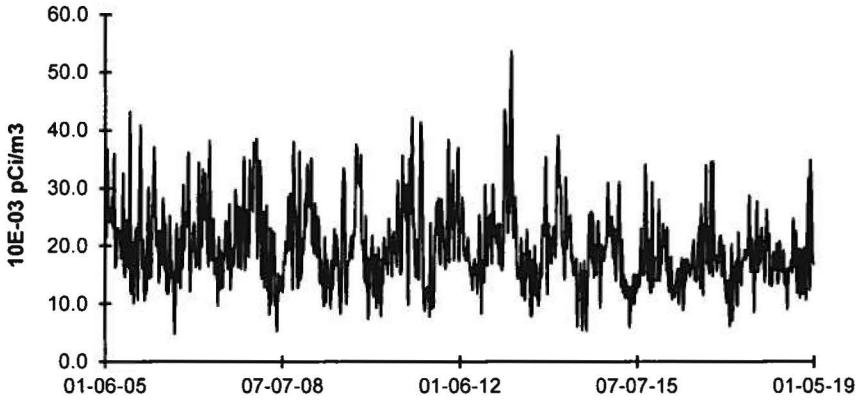


FIGURE C-3
Air Particulate - Gross Beta - Stations L-01 and L-03 Collected in the Vicinity of LSCS, 2005 - 2018

L-01 Nearsite No. 1



L-03 Onsite No. 3

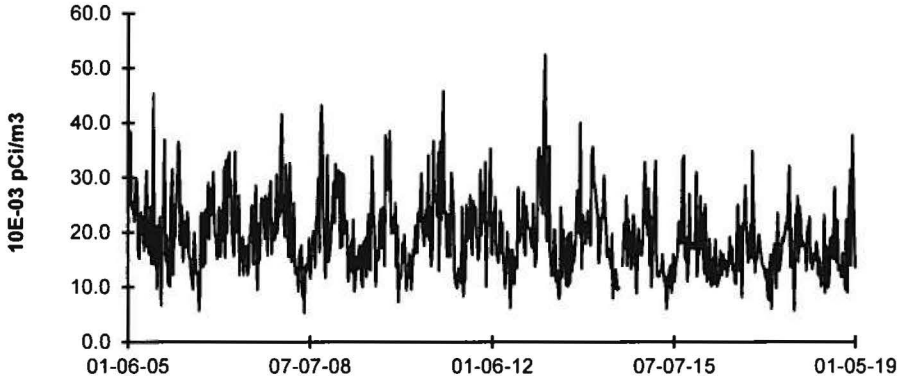
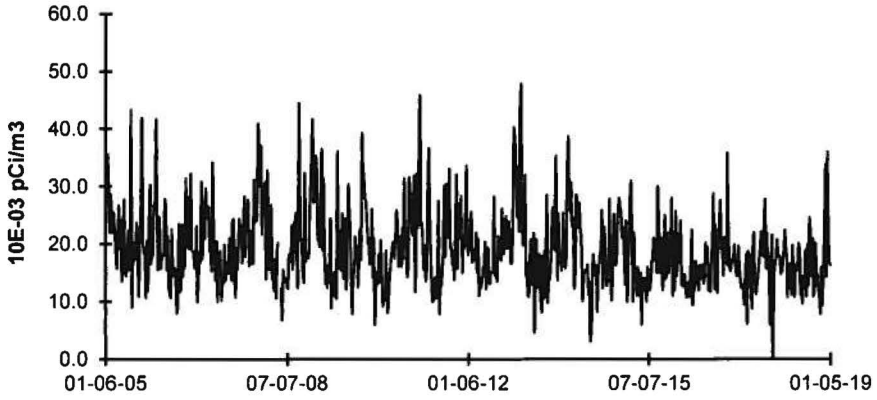


FIGURE C-4
Air Particulate - Gross Beta - Stations L-05 and L-06 Collected in the Vicinity of LSCS, 2005 - 2018

L-05 Onsite No. 5



L-06 Nearsite No. 6

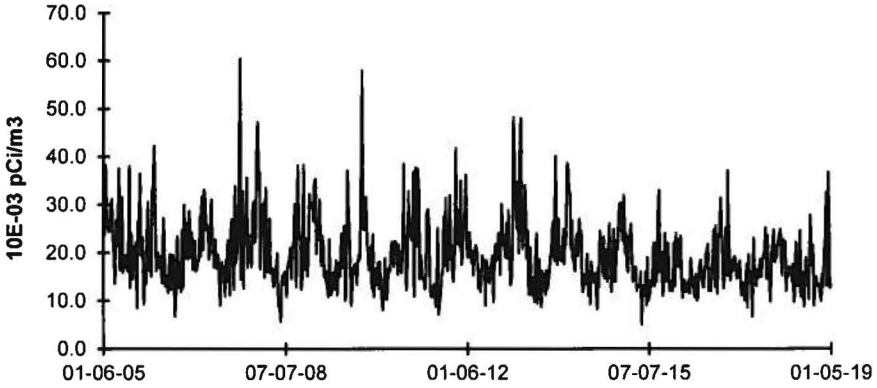


FIGURE C-5
Air Particulate - Gross Beta - Station L-10 (C)
Collected in the Vicinity of LSCS, 2005 - 2018

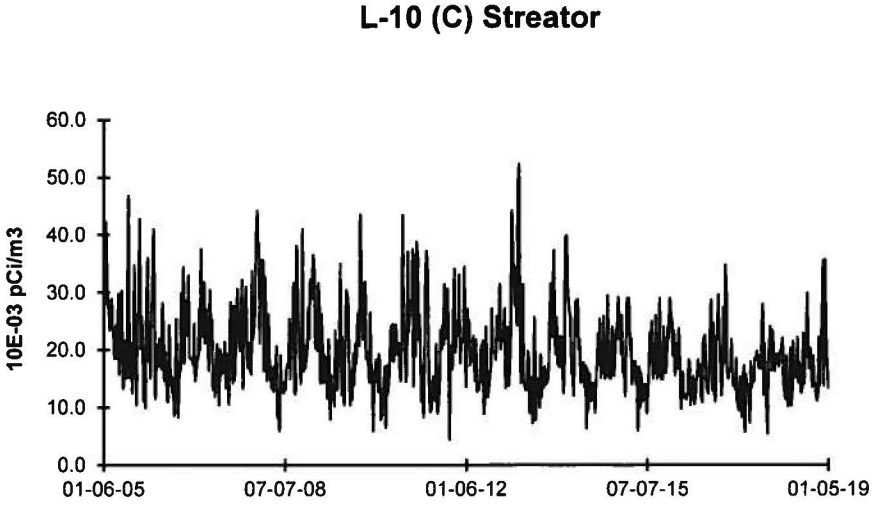
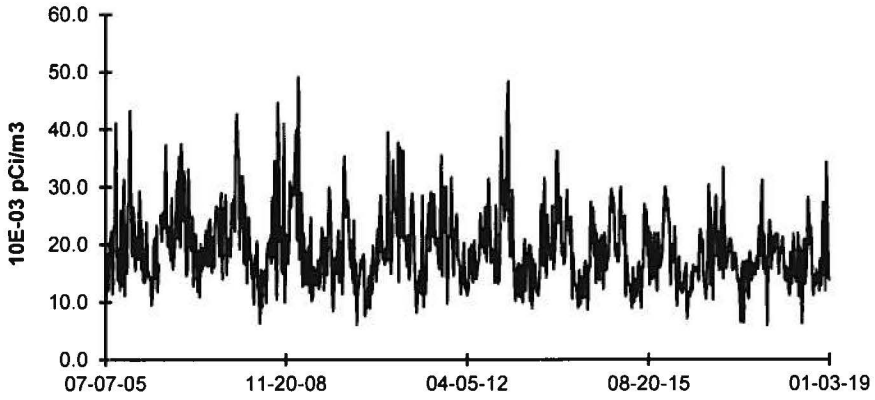


FIGURE C-6
Air Particulate - Gross Beta - Stations L-04 and L-07 Collected in the Vicinity of LSCS, 2005 - 2018

L-04 Rte. 170



L-07 Seneca

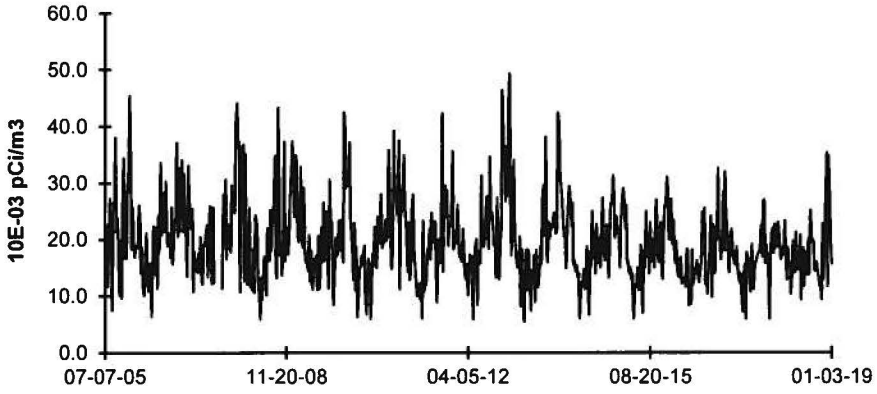
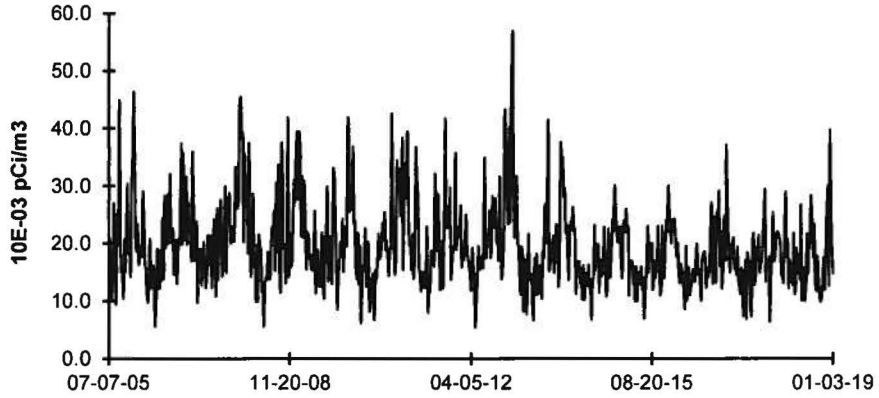
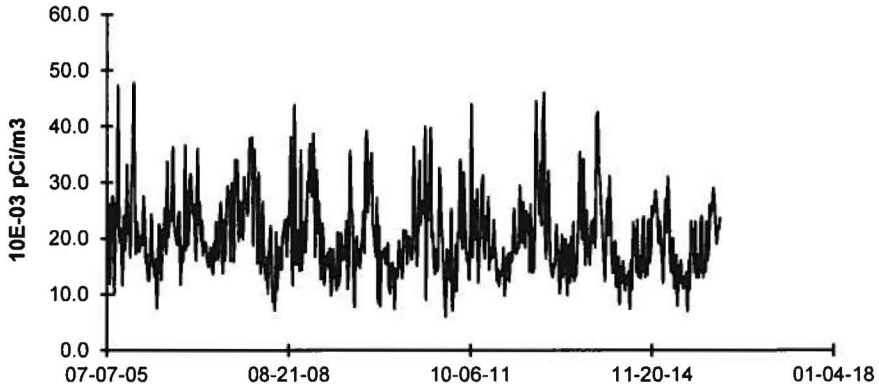


FIGURE C-7
Air Particulate - Gross Beta - Stations L-08 and L-11 Collected in the Vicinity of LSCS, 2005 - 2018

L-08 Marseilles

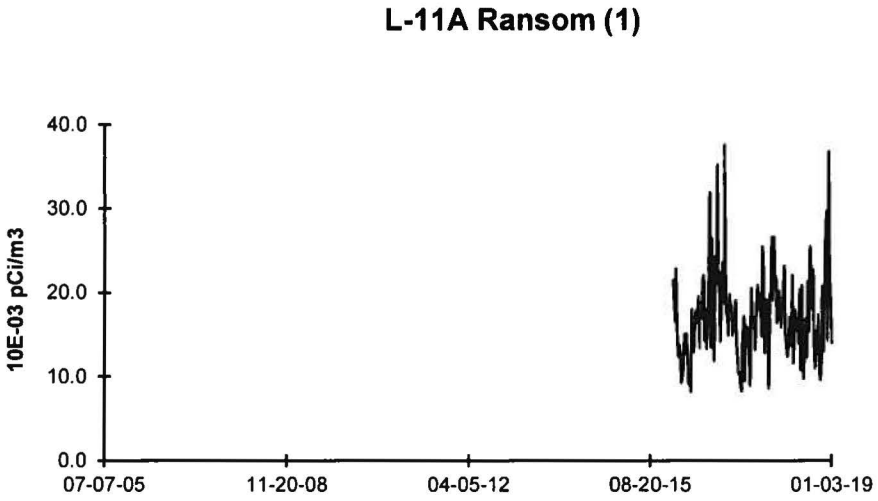


L-11 Ransom *(1)*



(1) Air monitoring station L-11 was retired on 01/21/16

FIGURE C-8
Air Particulate - Gross Beta - Station L-11A
Collected in the Vicinity of LSCS, 2016 - 2018



(1) Air monitoring station L-11A was placed in service on 01/14/16

APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

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TABLE D.1 **Analytics Environmental Radioactivity Cross Check Program**
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
March 2018	E12133	Milk	Sr-89	pCi/L	76.1	90.1	0.84	A
			Sr-90	pCi/L	12.2	12.5	0.98	A
	E12134	Milk	Ce-141	pCi/L	77.8	77.0	1.01	A
			Co-58	pCi/L	105	114	0.92	A
			Co-60	pCi/L	181	187	0.97	A
			Cr-51	pCi/L	298	326	0.92	A
			Cs-134	pCi/L	150	180	0.84	A
			Cs-137	pCi/L	164	172	0.95	A
			Fe-59	pCi/L	140	139	1.01	A
			I-131	pCi/L	105	108.0	0.97	A
			Mn-54	pCi/L	133	131	1.01	A
			Zn-65	pCi/L	242	244	0.99	A
	E12135	Charcoal	I-131	pCi	93.7	95.4	0.98	A
	E12136	AP	Ce-141	pCi	92.6	85.3	1.09	A
			Co-58	pCi	130	126	1.03	A
			Co-60	pCi	237	207	1.14	A
			Cr-51	pCi	411	361	1.14	A
			Cs-134	pCi	194	199	0.98	A
			Cs-137	pCi	200	191	1.05	A
			Fe-59	pCi	160	154	1.04	A
			Mn-54	pCi	152	145	1.05	A
			Zn-65	pCi	267	271	0.99	A
	E12137	Water	Fe-55	pCi/L	1990	1700	1.17	A
	E12138	Soil	Ce-141	pCi/g	0.148	0.118	1.26	W
			Co-58	pCi/g	0.171	0.174	0.98	A
			Co-60	pCi/g	0.297	0.286	1.04	A
			Cr-51	pCi/g	0.537	0.498	1.08	A
			Cs-134	pCi/g	0.274	0.275	1.00	A
			Cs-137	pCi/g	0.355	0.337	1.05	A
			Fe-59	pCi/g	0.243	0.212	1.15	A
			Mn-54	pCi/g	0.228	0.201	1.14	A
			Zn-65	pCi/g	0.395	0.374	1.06	A

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

TABLE D.1 **Analytics Environmental Radioactivity Cross Check Program**
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
June 2018	E12205	Milk	Sr-89	pCi/L	74.9	84.6	0.89	A
			Sr-90	pCi/L	10.5	11.4	0.92	A
	E12206	Milk	Ce-141	pCi/L	89.2	82.2	1.08	A
			Co-58	pCi/L	94.8	89	1.07	A
			Co-60	pCi/L	125	113	1.10	A
			Cr-51	pCi/L	256	239	1.07	A
			Cs-134	pCi/L	112	114	0.99	A
			Cs-137	pCi/L	107	98.8	1.08	A
			Fe-59	pCi/L	95.9	86.0	1.12	A
			I-131	pCi/L	69.8	71.9	0.97	A
			Mn-54	pCi/L	138	130	1.06	A
			Zn-65	pCi/L	186	157	1.18	A
	E12207	Charcoal	I-131	pCi	69.6	72.2	0.96	A
	E12208	AP	Ce-141	pCi	151	165	0.92	A
			Co-58	pCi	174	178	0.98	A
			Co-60	pCi	290	227	1.28	W
			Cr-51	pCi	452	478	0.95	A
			Cs-134	pCi	215	227	0.95	A
			Cs-137	pCi	206	198	1.04	A
			Fe-59	pCi	180	172	1.05	A
			Mn-54	pCi	265	260	1.02	A
			Zn-65	pCi	280	315	0.89	A
	E12209	Water	Fe-55	pCi/L	1790	1740	1.03	A
	E12210	AP	Sr-89	pCi	77.8	90.3	0.86	A
			Sr-90	pCi	9.54	12.2	0.78	W

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

TABLE D.1 **Analytics Environmental Radioactivity Cross Check Program**
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
September 2018	E12271	Milk	Sr-89	pCi/L	79.4	81.7	0.97	A
			Sr-90	pCi/L	12.2	14.8	0.82	A
	E12272	Milk	Ce-141	pCi/L	152	128	1.19	A
			Co-58	pCi/L	161	144	1.12	A
			Co-60	pCi/L	208	190	1.10	A
			Cr-51	pCi/L	244	265	0.92	A
			Cs-134	pCi/L	124	123	1.01	A
			Cs-137	pCi/L	166	147	1.13	A
			Fe-59	pCi/L	158	119	1.32	N(1)
			I-131	pCi/L	83.1	58.2	1.43	N(2)
			Mn-54	pCi/L	191	167	1.14	A
			Zn-65	pCi/L	229	201	1.14	A
	E12273	Charcoal	I-131	pCi	83.0	80.7	1.03	A
	E12274	AP	Ce-141	pCi	101	85.6	1.18	A
			Co-58	pCi	92.7	96.0	0.97	A
			Co-60	pCi	142	127	1.12	A
			Cr-51	pCi	218	177	1.23	W
			Cs-134	pCi	81.2	81.9	0.99	A
			Cs-137	pCi	99.0	98.5	1.01	A
			Fe-59	pCi	93.7	79.7	1.18	A
			Mn-54	pCi	116	112	1.04	A
			Zn-65	pCi	139	134	1.04	A
	E12302	Water	Fe-55	pCi/L	2120	1820	1.17	A
	E12276	Soil	Ce-141	pCi/g	0.259	0.221	1.17	A
			Co-58	pCi/g	0.279	0.248	1.12	A
			Co-60	pCi/g	0.367	0.328	1.12	A
			Cr-51	pCi/g	0.597	0.457	1.31	N (3)
			Cs-134	pCi/g	0.261	0.212	1.23	W
			Cs-137	pCi/g	0.376	0.330	1.14	A
			Fe-59	pCi/g	0.248	0.206	1.20	A
			Mn-54	pCi/g	0.317	0.289	1.10	A
			Zn-65	pCi/g	0.407	0.347	1.17	A

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:
A = Acceptable - reported result falls within ratio limits of 0.80-1.20
W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30
N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

*(1) See **NCR 18-20***
*(2) See **NCR 18-24***
*(3) See **NCR 18-21***

TABLE D.1 **Analytics Environmental Radioactivity Cross Check Program**
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Ratio of TBE to Analytics Result	Evaluation [b]
December 2018	E12313	Milk	Sr-89	pCi/L	71.9	91.9	0.78	W
			Sr-90	pCi/L	12.1	13.3	0.91	A
	E12314	Milk	Ce-141	pCi/L	124	133	0.93	A
			Co-58	pCi/L	110	119	0.93	A
			Co-60	pCi/L	202	212	0.95	A
			Cr-51	pCi/L	292	298	0.98	A
			Cs-134	pCi/L	146	171	0.85	A
			Cs-137	pCi/L	118	121	0.98	A
			Fe-59	pCi/L	120	114	1.05	A
			I-131	pCi/L	94.2	93.3	1.01	A
			Mn-54	pCi/L	151	154	0.98	A
			Zn-65	pCi/L	266	264	1.01	A
	E12315	Charcoal	I-131	pCi	94.8	89.9	1.05	A
	E12316A	AP	Ce-141	pCi	92.3	94.0	0.98	A
			Co-58	pCi	73.4	83.8	0.88	A
			Co-60	pCi	137	150	0.91	A
			Cr-51	pCi	202	210	0.96	A
			Cs-134	pCi	115	121	0.95	A
			Cs-137	pCi	85.0	85.4	1.00	A
			Fe-59	pCi	83.1	80.8	1.03	A
			Mn-54	pCi	104	109	0.96	A
			Zn-65	pCi	168	187	0.90	A
	E12317	Water	Fe-55	pCi/L	2110	1840	1.15	A
	E12318	AP	Sr-89	pCi	81.1	83.0	0.98	A
			Sr-90	pCi	11.4	12.0	0.95	A

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

TABLE D.2 **DOE's Mixed Analyte Performance Evaluation Program (MAPEP)**
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Range	Evaluation [b]
February 2018	18-MaS38	Soil	Ni-63	Bq/kg	9.94		*(1)*	A
			Sr-90	Bq/kg	0.846		*(1)*	A
	18-MaW38	Water	Am-241	Bq/L	0.785	0.709	0.496 - 0.922	A
			Ni-63	Bq/L	12.6	14.0	9.8 - 18.2	A
			Pu-238	Bq/L	0.0214	0.023	*(2)*	A
			Pu-239/240	Bq/L	0.544	0.600	0.420 - 0.780	A
	18-RdF38	AP	U-234/233	Bq/sample	0.111	0.124	0.087 - 0.161	A
			U-238	Bq/sample	0.123	0.128	0.090 - 0.166	A
	18-RdV38	Vegetation	Cs-134	Bq/sample	2.46	3.23	2.26 - 4.20	W
			Cs-137	Bq/sample	3.14	3.67	2.57 - 4.77	A
			Co-57	Bq/sample	4.12	4.42	3.09 - 5.75	A
			Co-60	Bq/sample	1.86	2.29	1.60 - 2.98	A
			Mn-54	Bq/sample	2.21	2.66	1.86 - 3.46	A
			Sr-90	Bq/sample				NR[3]
			Zn-65	Bq/sample	-0.201		*(1)*	A
November 2018	18-MaS39	Soil	Ni-63	Bq/kg	703	765	536 - 995	A
			Sr-90	Bq/kg	137	193	*135 - 251*	W
	18-MaW39	Water	Am-241	Bq/L	0.0363		*(1)*	A
			Ni-63	Bq/L	6.18	7.0	4.9 - 9.1	A
			Pu-238	Bq/L	0.73	0.674	0.472 - 0.876	A
			Pu-239/240	Bq/L	0.89	0.928	0.650 - 1.206	A
	18-RdF39	AP	U-234/233	Bq/sample	0.159	0.152	0.106 - 0.198	A
			U-238	Bq/sample	0.162	0.158	0.111 - 0.205	A
	18-RdV39	Vegetation	Cs-134	Bq/sample	1.85	1.94	1.36 - 2.52	A
			Cs-137	Bq/sample	2.5	2.36	1.65 - 3.07	A
			Co-57	Bq/sample	3.53	3.31	2.32 - 4.30	A
			Co-60	Bq/sample	1.6	1.68	1.18 - 2.18	A
			Mn-54	Bq/sample	2.61	2.53	1.77 - 3.29	A
			Sr-90	Bq/sample	0.338	0.791	0.554 - 1.028	N[4]
			Zn-65	Bq/sample	1.32	1.37	*0.96 - 1.78*	A

(a) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) DOE/MAPEP evaluation:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

(1) False positive test

(2) Sensitivity evaluation

*(3) See **NCR 18-09***

*(4) See **NCR 18-25***

TABLE D.3 **ERA Environmental Radioactivity Cross Check Program**
Teledyne Brown Engineering Environmental Services

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value [a]	Acceptance Limits	Evaluation [b]
March 2018	MRAD-28	AP	GR-A	pCi/sample	65.7	43.4	22.7 - 71.5	A
			GR-B	pCi/sample	57.2	52	31.5 - 78.6	A
April 2018	RAD-113	Water	Ba-133	pCi/L	91.2	91.5	77.1 - 101	A
			Cs-134	pCi/L	70.4	75.9	62.0 - 83.5	A
			Cs-137	pCi/L	122	123	111 - 138	A
			Co-60	pCi/L	64.8	64.3	57.9 - 73.2	A
			Zn-65	pCi/L	98.6	86.7	78.0 - 104	A
			GR-A	pCi/L	32.8	28.6	14.6 - 37.5	A
			GR-B	pCi/L	62.9	73.7	51.4 - 81.1	A
			U-Nat	pCi/L	6.7	6.93	5.28 - 8.13	A
			H-3	pCi/L	17100	17200	15000 - 18900	A
			Sr-89	pCi/L	38.6	48.8	38.3 - 56.2	A
			Sr-90	pCi/L	27.1	26.5	19.2 - 30.9	A
			I-131	pCi/L	26.7	24.6	20.4 - 29.1	A
September 2018	MRAD-29	AP	GR-A	pCi/sample	49.7	55.3	28.9 - 91.1	A
		AP	GR-B	pCi/sample	75.3	86.5	52.4 - 131	A
October 2018	RAD-115	Water	Ba-133	pCi/L	15.2	16.3	11.9 - 19.4	A
			Cs-134	pCi/L	85.9	93.0	76.4 - 102	A
			Cs-137	pCi/L	229	235	212 - 260	A
			Co-60	pCi/L	81.9	80.7	72.6 - 91.1	A
			Zn-65	pCi/L	348	336	302 - 392	A
			GR-A	pCi/L	38.9	60.7	31.8 - 75.4	A
			GR-B	pCi/L	36.5	41.8	27.9 - 49.2	A
			U-Nat	pCi/L	17.48	20.9	16.8 - 23.4	A
			H-3	pCi/L	2790	2870	2410 - 3170	A
			I-131	pCi/L	26.9	27.2	22.6 - 32.0	A
			Sr-89	pCi/L	57.2	56.9	45.5 - 64.6	A
			Sr-90	pCi/L	36.8	31.4	22.9- 36.4	N[1]

(a) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(b) ERA evaluation:
A = Acceptable - Reported value falls within the Acceptance Limits
N = Not Acceptable - Reported value falls outside of the Acceptance Limits

*(1) See **NCR 18-23***

APPENDIX E

EFFLUENT DATA

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INTRODUCTION

LaSalle County Station, a two-unit BWR, is located near Marseilles, Illinois in LaSalle County, 3.5 miles south of the Illinois River. Both units are rated at 3546 MWt. Unit 1 loaded fuel in March 1982. Unit 2 loaded fuel in late December 1983. The Station is designed to keep releases to the environment at levels below those specified in the regulations.

Liquid effluents, although no longer batch released from LaSalle County Station, were designed to be released to the Illinois River in controlled batches after radioassay of each batch. Gaseous effluents are released to the atmosphere after delay allowing time for short-lived (noble) gases to decay. Releases to the atmosphere are sampled and analyzed on a routine basis. The gaseous effluent samples are analyzed for particulate, iodine, noble gas, and tritium activity. The particulate and iodine sample results are obtained from continuously collected composite samples. The noble gas and tritium sample results are obtained from routine grab samples. The results of effluent analyses are summarized on a monthly basis and reported to the Nuclear Regulatory Commission as required per Technical Specifications. Airborne concentrations of noble gases, tritium, I-131, and particulate radioactivity in offsite areas are calculated using effluent and meteorological data.

Environmental monitoring is conducted by sampling at indicator and control (background) locations in the vicinity of LaSalle County Station to measure changes in radiation or radioactivity levels that may be attributable to station operations. If significant changes attributable to LaSalle County Station are measured, these changes are correlated with effluent releases. External gamma radiation exposure from noble gases and internal dose from I-131 in milk are the critical pathways at this site; however, an environmental monitoring program is conducted which also includes these and many other pathways which are less significant in terms of radiation protection.

SUMMARY

Gaseous effluents for the period contributed to only a small fraction of the LaSalle County Station Radiological Effluent Controls Limits. Liquid effluents had no contribution to offsite dose, as no liquid batch radioactive discharges were conducted. Calculations of environmental concentrations based on effluent, Illinois River flow, and meteorological data for the period indicate that consumption by the public of radionuclides attributable to LaSalle County Station does not exceed regulatory limits. Radiation exposure from radionuclides released to the atmosphere represented the critical pathway for the period with a maximum individual total dose estimated to be 9.55E-01 mrem for the year, where a shielding factor of 0.7 and an occupancy factor of 0.95 are assumed for the nearest resident. The assessment of radiation doses is performed in accordance with the Offsite Dose Calculation Manual (ODCM), specifically, a comparison of preoperational studies with operational controls or with previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. Control locations are basis for "preoperational data." The results of analysis confirm that the station is operating in compliance with 10 CFR 50 Appendix I, 10 CFR 20 and 40 CFR 190.

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

Measured concentrations of noble gases, radioiodine, and particulate radioactivity released to the atmosphere during the year, are listed in Table 1.1-1. A total of 1.00E+03 curies of fission and activation gases were released with an average release rate of 1.27E+02 µCi/sec.

A total of 4.74E-02 curies of I-131 were released during the year with an average release rate of 6.00E-03 µCi/sec.

A total of 8.44E-03 curies of beta-gamma emitters were released as airborne particulate matter with an average release rate of 1.07E-03 µCi/sec. Alpha-emitting radionuclides were below the lower limit of detection (LLD). Carbon-14 released in 2018 was calculated separately with a total of 3.45E+01 curies released with an average release rate of 4.39E+00 µCi/sec.

A total of 2.60E+01 curies of tritium were released with an average release rate of 4.60E+00 µCi/sec.

1.2 Liquids Released to Illinois River

There were no liquid batch releases in 2018. Continuous release path activity was below applicable Lower Limits of Detection.

2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck to a disposal facility or to a waste processor. For further detail, refer the LaSalle 2018 Annual Radioactive Effluent Release Report (ARERR). This report was submitted to the USNRC by the required date of May 1st, 2019.

3.0 DOSE TO MAN

3.1 Gaseous Effluent Pathways

Table 3.1-1 summarizes the doses resulting from releases of airborne radioactivity via the different exposure pathways.

3.1.1 Noble Gases

3.1.1.1 Gamma Dose Rates

Unit 1 and Unit 2 gaseous releases at LaSalle County Station are reported as Unit 1 releases due to a single station vent stack (SVS) release point. Offsite Gamma air and whole body dose rates are shown in Table 3.1-1 and were calculated based on measured release rates, isotopic composition of the noble gases and average meteorological data for the period. Doses based on concurrent meteorological data are shown in Table 3.4-1. Based on measured effluents and meteorological data, the maximum total body dose to an individual would be 1.04E-02 mrem (Table 3.1-1) for the year, with an occupancy factor of 0.95 and a shielding factor of 0.7 included. The maximum total body dose based on measured effluents and concurrent meteorological data would be 1.25E-02 mrem (Table 3.4-1).

The maximum gamma air dose was 1.56E-02 mrad from Table 3.1-1, and the maximum gamma air dose from concurrent meteorological data was 1.50E-03 mrad (Table 3.4-1).

3.1.1.2 Beta Air and Skin Dose Rates

The range of beta particles in air is relatively small (on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin and clothing covering sensitive tissues. For purposes of this report the skin is taken to have a thickness of 7.0 mg/cm^2 and an occupancy factor of 1.0 is used. The skin dose (from beta and gamma radiation) for the year was 1.76E-02 mrem from Table 3.1-1, and the skin dose from concurrent meteorological data was 1.55E-03 mrem (Table 3.4-1). The maximum offsite beta dose for the

year was 6.77E-04 mrad from Table 3.1-1, and the maximum offsite beta dose from concurrent meteorological data was 4.98E-04 mrad (Table 3.4-1).

3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The radioiodine, I-131, released during routing operation of the plant, may be made available to man resulting in a dose to the thyroid. The principal pathway of interest for this radionuclide is ingestion of radioiodine in milk.

3.1.2.1 Dose to Thyroid

The hypothetical thyroid dose to a maximum exposed individual living near the station via ingestion of milk was calculated. The radionuclide considered was I-131 and the source of milk was taken to be the nearest dairy farm with the cows pastured from May through October. The maximum thyroid does due to I-131 was 2.32E-01 mrem for the year.

3.2 Liquid Effluent Pathways

The three principal pathways through the aquatic environment for potential doses to man from liquid waste are ingestion of potable water, eating aquatic foods, and exposure while on the shoreline. Not all of these pathways are significant or applicable at a given time but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC developed equations* were used to calculate the doses to the whole body, lower gastro-intestinal tracts, thyroid, bone and skin; specific parameters for use in the equations are given in the Offsite Dose Calculation Manual. The maximum whole body dose was 0.00E+00 mrem and organ dose was 0.00E+00 for the year mrem (Table 3.2-1).

3.3 Assessment of Dose to Member of Public

During the period January to December 2017, LaSalle County Station did not exceed these limits as shown in Table 3.1-1 and Table 3.2-1 (based on annual average meteorological data), and

as shown in Table 3.3-1:

- The Radiological Effluent Technical Standards (RETS) limits on dose or dose commitment to an individual due to radioactive materials in liquid effluents from each reactor unit (1.5 mrem to the whole body or 5 mrem to any organ during any calendar year; 3 mrem to the whole body or 10 mrem to any organ during the calendar year).

- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (5 mrad for gamma radiation or 10 mrad for beta radiation during any calendar quarter; 10 mrad for gamma radiation or 20 mrad for beta radiation during a calendar year).

- The RETS limits on dose to a member of the public due to iodine-131, iodine-133, tritium and radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released from each reactor unit (7.5 mrem to any organ during any calendar quarter; 15 mrem to any organ during any calendar year).

- The 10 CFR 20 limit on Total Effective Dose Equivalent to individual members of the public (100 mrem).

4.0 SITE METEOROLOGY

A summary of the site meteorological measurements taken during each calendar quarter of the year is given in Appendix F. The data are presented as cumulative joint frequency distributions of the wind direction for the 375' level and wind speed class by atmospheric stability class determined from the temperature difference between the 375' and 33' levels. Data recovery for these measurements was 99.7% during 2018.

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*Nuclear Regulatory Commission, Regulatory Guide 1.109 (Rev. 1)

APPENDIX E-1

DATA TABLES AND FIGURES

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Table 1.1-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2018)
UNIT 1 AND UNIT 2
DOCKET NUMBERS 50-373 AND 50-374
GASEOUS EFFLUENTS SUMMATION OF ALL RELEASES

A. Fission & Activation Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter4	Est. Total Error %
1. Total Release	Ci	1.51E+02	2.40E+02	3.69E+02	2.43E+02	2.50E+01
2. Average release rate for the period	µCi/sec	1.94E+01	3.05E+01	4.64E+01	3.06E+01	
3. Percent of ODCM limit	%	*	*	*	*	
B. Iodine						
1. Total Iodine – 131	Ci	1.23E-02	9.23E-03	1.99E-02	5.98E-03	1.50E+01
2. Average release rate for the period	µCi/sec	1.58E-03	1.17E-03	2.50E-03	7.52E-04	
3. Percent of ODCM limit	%	*	*	*	*	
C. Particulates						
1. Particulates with half-lives > 8 days	Ci	1.11E-03	1.59E-03	3.46E-03	2.28E-03	3.50E+01
2. Average release rate for the period	µCi/sec	1.42E-04	2.02E-04	4.35E-04	2.87E-04	
3. Percent of ODCM limit	%	*	*	*	*	
D. Tritium						
1. Total Release	Ci	5.75E+00	6.07E+00	1.30E+01	1.16E+00	1.50E+01
2. Average release rate for the period	µCi/sec	7.39E-01	7.71E-01	1.63E-00	1.46E-00	
3. Percent of ODCM limit	%	*	*	*	*	
E. Gross Alpha						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average release rate for the period	µCi/sec	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	*	*	*	*	
F. Carbon-14						
1. Total Release	Ci	8.62E+00	8.62E+00	8.62E+00	8.63E+00	
2. Average release rate for the period	µCi/sec	1.11E+00	1.10E+00	1.09E+00	1.09E+00	
3. Percent of ODCM limit	%	*	*	*	*	

"*" This information is contained in the Radiological Impact on Man section of the report.
"<" Indicates activity of sample is less than LLD given in µCi/ml

The LaSalle County Nuclear Power Station maximum expected annual dose from Carbon-14 has been calculated using the maximum gross thermal capacity at full power operation. The resultant bounding doses are based upon site specific assumptions of source term.

Table 1.2-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2018)
LIQUID RELEASES
UNIT 1 AND UNIT 2
SUMMATION OF ALL LIQUID RELEASES

A. Fission & Activation Products	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter4	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average diluted concentration during period	µCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of applicable limit	%	*	*	*	*	
B. Tritium						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average diluted concentration during period	µCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of applicable limit	%	*	*	*	*	
C. Dissolved & Entrained Gases						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average diluted concentration during period	µCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of applicable limit	%	*	*	*	*	
D. Gross Alpha Activity						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average release rate for the period	µCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	*	*	*	*	
E. Volume of Waste Released (prior to dilution)	Liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
F. Volume of Dilution Water Used During Period	Liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

"*" This information is contained in the Radiological Impact on Man section of the report.
"<" Indicates activity of sample is less than LLD given in µCi/ml

Table 2.1-1

LASALLE COUNTY NUCLEAR POWER STATION
SOLID WASTE ANNUAL REPORT (2018)

Table 2.1-1 deliberately deleted. For solid waste disposal detail, refer to the LaSalle County Station 2018 Annual Radiological Effluent Release Report (ARERR).

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2018)
RADIOLOGICAL IMPACT ON MAN
MAXIMUM DOSES RESULTING FROM GASEOUS RELEASES AND COMPLIANCE STATUS

Infant Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
Gamma Air	5.00E+00	mRad	1.98E-03	0.040	3.49E-03	0.070	6.34E-03	0.127	3.82E-03	0.076	1.00E+01	0.156
Beta Air	1.00E+01	mRad	9.05E-05	0.001	1.41E-04	0.001	2.96E-04	0.003	1.49E-04	0.001	2.00E+01	0.003
NG Total Body	2.50E+00	mRem	1.32E-03	0.053	2.33E-03	0.093	4.23E-03	0.169	2.55E-03	0.102	5.00E+00	0.209
NG Skin	7.50E+00	mRem	2.22E-03	0.030	3.92E-03	0.052	7.15E-03	0.095	4.28E-03	0.057	1.50E+01	0.117
NNG Organ	7.50E+00	mRem	6.16E-02	0.821	4.68E-02	0.624	9.89E-02	1.32	3.09E-02	0.411	1.50E+01	1.588

Child Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
Gamma Air	5.00E+00	mRad	1.98E-03	0.040	3.49E-03	0.070	6.34E-03	0.127	3.82E-03	0.076	1.00E+01	0.156
Beta Air	1.00E+01	mRad	9.05E-05	0.001	1.41E-04	0.001	2.96E-04	0.003	1.49E-04	0.001	2.00E+01	0.003
NG Total Body	2.50E+00	mRem	1.32E-03	0.053	2.33E-03	0.093	4.23E-03	0.169	2.55E-03	0.102	5.00E+00	0.209
NG Skin	7.50E+00	mRem	2.22E-03	0.030	3.92E-03	0.052	7.15E-03	0.095	4.28E-03	0.057	1.50E+01	0.117
NNG Organ	7.50E+00	mRem	2.55E-02	0.340	1.94E-02	0.259	4.10E-02	0.546	1.29E-02	0.172	1.50E+01	0.659

Teenager Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
Gamma Air	5.00E+00	mRad	1.98E-03	0.040	3.49E-03	0.070	6.34E-03	0.127	3.82E-03	0.076	1.00E+01	0.156
Beta Air	1.00E+01	mRad	9.05E-05	0.001	1.41E-04	0.001	2.96E-04	0.003	1.49E-04	0.001	2.00E+01	0.003
NG Total Body	2.50E+00	mRem	1.32E-03	0.053	2.33E-03	0.093	4.23E-03	0.169	2.55E-03	0.102	5.00E+00	0.209
NG Skin	7.50E+00	mRem	2.22E-03	0.030	3.92E-03	0.052	7.15E-03	0.095	4.28E-03	0.057	1.50E+01	0.117
NNG Organ	7.50E+00	mRem	1.29E-02	0.171	9.76E-03	0.130	2.06E-02	0.275	6.50E-03	0.087	1.50E+01	0.332

Adult Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
Gamma Air	5.00E+00	mRad	1.98E-03	0.040	3.49E-03	0.070	6.34E-03	0.127	3.82E-03	0.076	1.00E+01	0.156
Beta Air	1.00E+01	mRad	9.05E-05	0.00	1.41E-04	0.001	2.96E-04	0.003	1.49E-04	0.001	2.00E+01	0.003
NG Total Body	2.50E+00	mRem	1.32E-03	0.053	2.33E-03	0.093	4.23E-03	0.169	2.55E-03	0.102	5.00E+00	0.209
NG Skin	7.50E+00	mRem	2.22E-03	0.030	3.92E-03	0.052	7.15E-03	0.095	4.28E-03	0.057	1.50E+01	0.117
NNG Organ	7.50E+00	mRem	8.11E-02	0.108	6.15E-03	0.082	1.30E-02	0.174	4.12E-03	0.055	1.50E+01	0.696

The LaSalle County Nuclear Power Station maximum expected annual dose from Carbon-14 has been calculated using the maximum gross thermal capacity at full power operation. The resultant bounding doses are based upon site specific assumptions of source term.

Table 3.2-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2018)
RADIOLOGICAL IMPACT ON MAN
MAXIMUM DOSES RESULTING FROM LIQUID RELEASES AND COMPLIANCE STATUS

Infant Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
10CFR50 Appendix I compliance												
Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
40CFR141 compliance (nearest public drinking water)												
Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00

Child Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
10CFR50 Appendix I compliance												
Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
40CFR141 compliance (nearest public drinking water)												
Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00

Teenager Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
10CFR50 Appendix I compliance												
Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
40CFR141 compliance (nearest public drinking water)												
Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00

Adult Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
10CFR50 Appendix I compliance												
Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
40CFR141 compliance (nearest public drinking water)												
Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00

Table 3.3-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2018)
RADIOLOGICAL IMPACT ON MAN
MAXIMUM DOSES RESULTING FROM RELEASES AND COMPLIANCE STATUS

10CFR20 / 40CFR190 Compliance

	1st Quarter Dose (mRem)	2nd Quarter Dose (mRem)	3rd Quarter Dose (mRem)	4th Quarter Dose (mRem)	Annual Dose (mRem)	Annual Limit (mRem/yr)	% Annual Limit
Unit 1							
						40CFR190 Compliance	
U1 D^{Ex}	6.92E-02	9.88E-02	1.00E-01	1.01E-01	3.69E-01	25	1.48
						10CFR20 Compliance	
U1 D^{Tot}	1.31E-01	1.46E-01	1.99E-01	1.27E-01	6.03E-01	100	0.60
						40CFR190 Compliance	
Bone	8.67E-03	7.09E-03	7.27E-03	7.14E-03	3.02E-02	25	0.11
Liver	1.70E-03	1.65E-03	1.84E-03	1.70E-03	6.89E-03	25	0.03
Thyroid	6.16E-02	4.68E-02	9.89E-02	2.44E-02	2.32E-01	75	0.31
Kidney	1.73E-03	1.67E-03	1.89E-03	1.71E-03	7.00E-03	25	0.03
Lung	1.51E-03	1.51E-03	1.54E-03	1.59E-03	6.15E-03	25	0.02
GI-LLI	1.52E-03	1.51E-03	1.55E-03	1.61E-03	6.19E-03	25	0.02
Unit 2							
						40CFR190 Compliance	
U2 D^{Ex}	9.70E-02	9.65E-02	9.31E-02	9.85E-02	3.85E-01	25	1.54
						10CFR20 Compliance	
U2 D^{Tot}	9.70E-02	9.65E-02	9.31E-02	9.85E-02	3.85E-01	100	0.39
						40CFR190 Compliance	
Bone	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
Liver	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
Thyroid	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	75	0.00
Kidney	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
Lung	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
GI-LLI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00

Table 3.4-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2018)
RADIOLOGICAL IMPACT ON MAN
MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES
BASED ON CONCURRENT METEROLOGICAL DATA

Doses Resulting From Airborne Releases

The following are the maximum annual calculated cumulative offsite doses resulting from LaSalle County Station airborne releases:

LaSalle County Generating Station:

Dose	*Maximum Value*	*Sector Affected*
gamma air [1]	1.500 E-03 mrad	Northeast
beta air [2]	4.980 E-04 mrad	Northeast
whole body [3]	1.250 E-02 mrem	Northeast
skin [4]	1.550 E-03 mrem	Northeast
organ [5] (infant-thyroid)	7.590 E-01 mrem	Southeast

Compliance Status

10 CFR 50 Appendix I	**Yearly Objective**	**% of Appendix I**
gamma air	10.0 mrad	0.02
beta air	20.0 mrad	0.00
whole body	5.0 mrem	0.25
skin	15.0 mrem	0.01
organ	15.0 mrem	5.06

(1) Gamma Air Dose – GASPAR II, NUREG-0597
(2) Beta Air Dose – GASPAR II, NUREG-0597
(3) Whole Body Dose – GASPAR II, NUREG-0597
(4) Skin Dose – GASPAR II, NUREG-0597
(5) Inhalation and Food Pathways Dose – GASPAR II, NUREG-0597

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APPENDIX F

METEOROLOGICAL DATA

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LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	1	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	1	1	0	0	2
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	1	2	0	0	3

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	2	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	0	0	3	4	0	7
E	0	0	0	1	0	0	1
ESE	0	0	0	2	0	0	2
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	1	1	0	2
SW	0	0	0	2	0	0	2
WSW	0	0	0	3	0	0	3
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	1	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	14	6	0	20

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	2	1	0	0	3
NNE	0	0	0	2	0	0	2
NE	0	0	1	0	2	0	3
ENE	0	0	4	2	1	0	7
E	0	0	1	3	0	0	4
ESE	0	0	0	6	0	0	6
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	1	1	1	0	0	3
SSW	0	0	1	3	2	0	6
SW	0	2	3	2	0	1	8
WSW	0	0	3	4	2	0	9
W	0	1	2	0	0	0	3
WNW	0	0	5	1	1	0	7
NW	0	0	3	1	4	0	8
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	4	27	26	12	1	70

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Neutral - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	16	51	28	1	0	97
NNE	0	9	15	8	2	0	34
NE	0	1	7	2	2	0	12
ENE	0	0	11	18	10	0	39
E	0	3	13	15	8	3	42
ESE	1	3	7	9	2	2	24
SE	2	5	9	3	0	0	19
SSE	3	4	2	8	5	0	22
S	1	5	15	12	8	0	41
SSW	1	8	5	13	5	0	32
SW	0	6	14	15	3	1	39
WSW	0	9	16	12	4	1	42
W	0	4	12	22	4	1	43
WNW	1	6	45	58	8	1	119
NW	0	6	22	29	2	0	59
NNW	0	7	47	53	13	0	120
Variable	0	0	0	0	0	0	0
Total	10	92	291	305	77	9	784

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	3	22	7	5	0	0	37
NNE	0	11	10	1	0	0	22
NE	0	4	17	27	0	0	48
ENE	0	2	22	15	1	0	40
E	0	7	22	20	12	2	63
ESE	1	2	11	0	4	3	21
SE	0	3	7	12	0	0	22
SSE	0	6	12	12	4	0	34
S	2	10	8	25	10	0	55
SSW	0	8	9	30	25	4	76
SW	2	8	10	25	12	1	58
WSW	4	6	11	18	8	0	47
W	1	9	33	10	8	4	65
WNW	4	13	39	17	7	2	82
NW	0	12	33	6	0	0	51
NNW	3	15	16	11	2	0	47
Variable	0	0	0	0	0	0	0
Total	20	138	267	234	93	16	768

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	0	0	0	0	2
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	1	4	0	0	0	5
E	0	12	27	5	0	0	44
ESE	0	8	0	0	0	0	8
SE	0	4	5	3	0	0	12
SSE	0	4	8	0	0	0	12
S	0	16	11	11	1	0	39
SSW	1	3	16	18	5	0	43
SW	1	6	11	20	4	0	42
WSW	0	6	13	4	1	0	24
W	2	24	26	0	0	0	52
WNW	3	26	18	0	0	0	47
NW	1	9	8	0	0	0	18
NNW	0	7	2	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	8	129	149	61	11	0	358

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	4	0	0	0	4
ESE	0	4	2	0	0	0	6
SE	0	4	3	0	0	0	7
SSE	1	5	4	1	0	0	11
S	0	5	16	0	0	0	21
SSW	0	4	19	12	0	0	35
SW	0	4	8	5	0	0	17
WSW	0	8	15	1	0	0	24
W	0	5	3	0	0	0	8
WNW	0	8	7	0	0	0	15
NW	0	2	0	0	0	0	2
NNW	0	3	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	1	52	81	19	0	0	153

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	1	0	1
ESE	0	0	0	0	1	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	1	0	1
WSW	0	0	0	1	0	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	1	3	0	4

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	1	4	0	5
NE	0	0	0	1	0	0	1
ENE	0	0	0	0	1	3	4
E	0	0	0	8	3	0	11
ESE	0	0	1	2	4	0	7
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	1	1	0	2
SW	0	0	0	0	0	0	0
WSW	0	0	0	1	2	0	3
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	1	2	1	4
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	1	15	17	4	37

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Neutral - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	5	13	47	32	9	106
NNE	0	8	19	23	7	3	60
NE	0	5	2	20	15	10	52
ENE	1	6	8	10	29	10	64
E	0	3	3	12	16	21	55
ESE	0	6	2	9	8	16	41
SE	1	2	7	6	4	2	22
SSE	2	6	3	2	6	3	22
S	4	8	5	12	12	19	60
SSW	0	6	4	14	16	25	65
SW	2	5	8	22	16	7	60
WSW	0	7	7	18	13	10	55
W	0	3	12	20	16	19	70
WNW	0	5	16	50	34	16	121
NW	1	7	14	45	62	23	152
NNW	0	5	3	32	34	12	86
Variable	0	0	0	0	0	0	0
Total	11	87	126	342	320	205	1091

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 37
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	5	4	15	2	2	28
NNE	0	4	15	6	0	0	25
NE	1	2	2	6	1	0	12
ENE	1	1	2	6	9	4	23
E	0	4	8	16	19	8	55
ESE	1	3	1	8	4	8	25
SE	3	2	1	9	4	5	24
SSE	1	2	1	9	9	11	33
S	1	3	5	14	14	31	68
SSW	0	3	6	10	13	62	94
SW	2	8	3	7	20	37	77
WSW	2	6	7	6	12	14	47
W	0	3	3	9	14	3	32
WNW	0	3	11	23	15	5	57
NW	1	1	10	14	15	4	45
NNW	0	3	9	17	18	6	53
Variable	0	0	0	0	0	0	0
Total	13	53	88	175	169	200	698

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	3	4	1	9
NNE	0	0	3	3	1	0	7
NE	0	1	0	1	0	0	2
ENE	0	0	0	0	0	0	0
E	0	0	1	3	5	1	10
ESE	1	1	0	3	11	0	16
SE	0	0	0	0	0	0	0
SSE	0	0	2	1	1	0	4
S	0	2	5	8	6	7	28
SSW	0	1	1	8	5	25	40
SW	0	1	0	5	9	15	30
WSW	0	0	5	0	7	5	17
W	0	0	4	7	9	0	20
WNW	0	1	4	9	11	1	26
NW	0	1	3	5	4	1	14
NNW	0	1	3	13	5	0	22
Variable	0	0	0	0	0	0	0
Total	1	9	32	69	78	56	245

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: January - March 2018
Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	0	0	1	3	0	5
NNE	0	0	0	0	0	1	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	1	0	0	1	2
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	1	0	1
SSE	0	0	0	1	2	1	4
S	0	0	0	1	1	1	3
SSW	0	0	0	3	2	3	8
SW	0	0	0	1	9	1	11
WSW	0	0	0	0	1	0	1
W	0	0	0	0	0	0	0
WNW	0	1	0	2	3	0	6
NW	0	0	0	0	0	0	0
NNW	0	0	0	3	0	0	3
Variable	0	0	0	0	0	0	0
Total	1	1	1	12	22	8	45

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	3	0	0	3
E	0	0	0	0	0	0	0
ESE	0	0	0	1	0	0	1
SE	0	0	2	1	0	0	3
SSE	0	0	0	1	0	0	1
S	0	0	0	2	0	0	2
SSW	0	0	0	8	5	0	13
SW	0	0	0	1	3	4	8
WSW	0	0	0	1	2	0	3
W	0	0	1	0	0	0	1
WNW	0	0	5	2	0	0	7
NW	0	0	0	0	0	0	0
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	0	10	20	10	4	44

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	7	0	0	0	7
NNE	0	0	2	0	0	0	2
NE	0	0	3	4	0	0	7
ENE	0	0	2	3	0	0	5
E	0	0	0	2	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	0	1	0	0	1
SSE	0	0	4	0	0	0	4
S	0	2	0	0	0	0	2
SSW	0	0	2	1	2	0	5
SW	0	3	2	1	1	0	7
WSW	0	0	4	3	1	1	9
W	0	3	1	2	1	0	7
WNW	0	0	12	5	0	0	17
NW	0	0	3	1	0	0	4
NNW	0	0	1	3	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	8	43	26	5	1	83

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	4	1	0	0	6
NNE	0	3	8	1	0	0	12
NE	0	2	9	4	2	0	17
ENE	0	2	5	6	0	0	13
E	0	1	1	8	0	0	10
ESE	0	1	1	0	0	0	2
SE	0	2	1	2	0	0	5
SSE	0	5	0	1	0	0	6
S	0	3	5	0	0	0	8
SSW	0	3	9	1	1	1	15
SW	0	3	10	1	0	0	14
WSW	0	6	6	5	0	0	17
W	1	3	3	2	0	0	9
WNW	0	1	11	3	0	0	15
NW	0	0	7	1	0	0	8
NNW	0	1	5	4	0	0	10
Variable	0	0	0	0	0	0	0
Total	1	37	85	40	3	1	167

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Neutral - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	18	15	0	0	0	35
NNE	1	24	26	6	0	0	57
NE	3	21	48	46	9	0	127
ENE	2	24	55	63	3	0	147
E	1	12	22	5	8	0	48
ESE	2	7	12	3	0	0	24
SE	2	7	9	2	0	0	20
SSE	0	13	14	3	0	0	30
S	3	10	18	5	0	0	36
SSW	2	8	14	4	5	0	33
SW	4	8	11	9	3	0	35
WSW	0	5	13	8	1	0	27
W	3	10	22	10	3	0	48
WNW	3	11	17	34	16	2	83
NW	1	7	16	9	1	0	34
NNW	3	10	27	26	0	0	66
Variable	0	0	0	0	0	0	0
Total	32	195	339	233	49	2	850

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	3	25	4	0	0	0	32
NNE	0	31	13	1	0	0	45
NE	2	11	27	7	2	0	49
ENE	0	8	44	36	9	0	97
E	1	32	55	8	0	0	96
ESE	2	17	8	0	0	0	27
SE	2	8	11	0	0	0	21
SSE	2	7	7	1	1	0	18
S	4	1	10	7	3	0	25
SSW	2	4	12	15	7	1	41
SW	1	6	10	5	6	1	29
WSW	1	11	12	6	3	0	33
W	0	14	5	7	2	3	31
WNW	2	17	13	14	4	3	53
NW	1	13	9	3	0	0	26
NNW	0	10	16	5	0	0	31
Variable	0	0	0	0	0	0	0
Total	23	215	256	115	37	8	654

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	5	0	0	0	0	7
NNE	0	2	0	0	0	0	2
NE	2	0	1	0	0	0	3
ENE	1	2	0	0	0	0	3
E	0	19	14	0	0	0	33
ESE	0	12	3	0	0	0	15
SE	0	14	1	0	0	0	15
SSE	1	7	5	0	0	0	13
S	0	11	5	5	0	0	21
SSW	1	8	18	6	0	0	33
SW	1	6	11	0	0	0	18
WSW	0	9	8	4	0	0	21
W	1	23	7	0	0	0	31
WNW	0	16	1	1	0	0	18
NW	4	0	0	0	0	0	4
NNW	1	4	0	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	14	138	74	16	0	0	242

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	8	0	0	0	0	8
ESE	1	10	0	0	0	0	11
SE	2	7	1	0	0	0	10
SSE	0	8	8	0	0	0	16
S	1	6	18	0	0	0	25
SSW	0	12	17	1	0	0	30
SW	0	8	4	0	0	0	12
WSW	1	7	6	0	0	0	14
W	1	4	1	0	0	0	6
WNW	1	3	0	0	0	0	4
NW	0	0	1	0	0	0	1
NNW	0	3	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	7	76	56	1	0	0	140

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	1	1
SW	0	0	0	0	0	2	2
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	3

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	1	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	1	0	0	1
S	0	0	0	0	1	0	1
SSW	0	0	0	0	8	3	11
SW	0	0	0	0	0	5	5
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	2	1	0	3
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	4	10	8	22

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	9	0	0	9
NNE	0	0	2	0	0	0	2
NE	0	0	0	2	2	0	4
ENE	0	0	1	1	3	0	5
E	0	0	0	1	1	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	0	3	1	0	4
SSE	0	1	1	1	1	0	4
S	0	0	1	0	0	0	1
SSW	0	0	1	1	2	0	4
SW	0	0	0	0	0	0	0
WSW	0	0	0	2	3	2	7
W	0	0	0	3	0	2	5
WNW	0	0	2	14	1	0	17
NW	0	0	2	7	0	0	9
NNW	0	0	0	5	0	0	5
Variable	0	0	0	0	0	0	0
Total	0	1	10	49	14	4	78

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Neutral - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	14	13	16	2	0	49
NNE	1	14	31	21	5	2	74
NE	0	11	23	67	43	16	160
ENE	5	17	33	80	78	22	235
E	1	11	21	30	18	7	88
ESE	2	13	11	11	5	2	44
SE	2	7	16	12	1	0	38
SSE	2	12	14	12	4	0	44
S	0	7	15	11	7	0	40
SSW	1	6	18	20	8	9	62
SW	2	8	14	16	9	8	57
WSW	0	4	15	21	9	2	51
W	2	10	15	11	9	4	51
WNW	3	10	24	14	34	31	116
NW	2	5	23	30	26	4	90
NNW	0	10	20	15	16	1	62
Variable	0	0	0	0	0	0	0
Total	27	159	306	387	274	108	1261

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	6	6	3	0	16
NNE	2	3	7	10	1	0	23
NE	0	3	12	7	4	0	26
ENE	0	4	8	26	20	3	61
E	0	9	15	37	16	0	77
ESE	1	5	14	10	10	0	40
SE	0	1	4	5	3	0	13
SSE	0	5	5	5	1	2	18
S	0	0	5	12	8	10	35
SSW	1	2	4	13	13	25	58
SW	0	1	5	7	9	12	34
WSW	0	3	9	12	5	8	37
W	0	2	12	11	4	4	33
WNW	0	1	9	9	9	7	35
NW	0	3	15	14	3	5	40
NNW	2	3	5	4	7	0	21
Variable	0	0	0	0	0	0	0
Total	6	46	135	188	116	76	567

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	1	3	0	0	0	5
NNE	2	1	4	1	0	0	8
NE	1	3	2	0	0	0	6
ENE	0	1	4	0	0	0	5
E	0	2	5	6	2	0	15
ESE	0	1	7	5	2	0	15
SE	0	0	4	6	0	0	10
SSE	0	0	0	11	3	2	16
S	0	0	3	10	2	3	18
SSW	0	0	0	6	8	6	20
SW	0	0	2	23	5	1	31
WSW	0	0	2	2	7	2	13
W	0	0	5	8	2	0	15
WNW	0	0	5	3	3	0	11
NW	0	0	6	3	0	0	9
NNW	0	3	9	0	0	0	12
Variable	0	0	0	0	0	0	0
Total	4	12	61	84	34	14	209

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: April - June 2018
Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	1	2	0	0	3
SE	0	0	0	7	0	0	7
SSE	0	0	0	3	0	0	3
S	0	0	0	0	5	2	7
SSW	0	0	0	1	4	10	15
SW	0	0	0	1	1	1	3
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	1	1	0	0	2
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	2	15	10	13	40

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 4

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	3	2	1	0	6
SW	0	0	6	3	0	0	9
WSW	0	0	7	3	0	0	10
W	0	0	0	0	0	0	0
WNW	0	0	2	1	0	0	3
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	18	9	1	0	28

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	2	0	0	0	2
E	0	0	1	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	1	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	0	1	0	0	1
SSW	0	1	5	2	0	0	8
SW	0	2	14	6	0	0	22
WSW	0	0	9	0	0	0	9
W	0	2	9	0	0	0	11
WNW	0	0	12	0	0	0	12
NW	0	0	1	0	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	6	53	9	0	0	68

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	3	1	0	0	6
NNE	0	1	0	1	0	0	2
NE	0	0	4	3	0	0	7
ENE	0	1	3	1	0	0	5
E	0	7	4	0	0	0	11
ESE	0	6	1	0	0	0	7
SE	0	3	1	0	0	0	4
SSE	0	3	4	0	0	0	7
S	0	2	2	2	0	0	6
SSW	0	7	5	5	0	0	17
SW	0	5	18	5	0	0	28
WSW	0	2	3	2	0	0	7
W	0	6	6	1	0	0	13
WNW	0	2	8	5	0	0	15
NW	0	4	14	0	0	0	18
NNW	0	1	8	2	0	0	11
Variable	0	0	0	0	0	0	0
Total	0	52	84	28	0	0	164

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Neutral - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	28	16	4	0	0	48
NNE	0	24	20	0	0	0	44
NE	1	21	32	34	0	0	88
ENE	2	22	10	6	0	0	40
E	0	28	30	0	0	0	58
ESE	1	20	12	1	0	0	34
SE	2	21	10	1	0	0	34
SSE	1	12	17	6	1	0	37
S	2	21	14	3	3	0	43
SSW	2	13	20	6	0	0	41
SW	2	12	21	9	0	0	44
WSW	2	13	8	9	0	0	32
W	1	14	11	11	4	0	41
WNW	1	13	19	3	1	0	37
NW	0	10	23	11	0	0	44
NNW	0	24	44	21	0	0	89
Variable	0	0	0	0	0	0	0
Total	17	296	307	125	9	0	754

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	35	5	0	0	0	42
NNE	1	20	15	0	0	0	36
NE	1	12	20	0	0	0	33
ENE	1	17	37	2	0	0	57
E	2	21	22	0	0	0	45
ESE	3	20	4	1	0	0	28
SE	4	5	6	0	0	0	15
SSE	7	7	8	3	1	0	26
S	1	15	30	6	0	0	52
SSW	1	12	38	12	0	0	63
SW	1	15	8	3	0	0	27
WSW	1	13	4	5	1	0	24
W	2	8	4	0	2	0	16
WNW	1	14	9	0	0	0	24
NW	0	10	11	0	0	0	21
NNW	1	11	11	0	0	0	23
Variable	0	0	0	0	0	0	0
Total	29	235	232	32	4	0	532

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	11	0	0	0	0	13
NNE	0	1	0	0	0	0	1
NE	4	3	0	0	0	0	7
ENE	3	7	2	0	0	0	12
E	2	40	20	0	0	0	62
ESE	4	32	0	0	0	0	36
SE	3	14	0	0	0	0	17
SSE	3	19	4	0	0	0	26
S	3	22	3	0	0	0	28
SSW	6	17	18	0	0	0	41
SW	1	8	6	0	0	0	15
WSW	4	14	7	0	0	0	25
W	4	13	3	1	0	0	21
WNW	4	28	0	0	0	0	32
NW	3	3	0	0	0	0	6
NNW	3	7	5	0	0	0	15
Variable	0	0	0	0	0	0	0
Total	49	239	68	1	0	0	357

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	8	0	0	0	0	9
NNE	0	0	0	0	0	0	0
NE	2	0	0	0	0	0	2
ENE	0	2	0	0	0	0	2
E	2	24	5	0	0	0	31
ESE	0	35	0	0	0	0	35
SE	0	25	0	0	0	0	25
SSE	3	28	0	0	0	0	31
S	0	25	6	0	0	0	31
SSW	3	19	7	0	0	0	29
SW	4	26	8	0	0	0	38
WSW	5	14	5	0	0	0	24
W	5	24	0	0	0	0	29
WNW	2	9	0	0	0	0	11
NW	3	0	0	0	0	0	3
NNW	2	3	0	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	32	242	31	0	0	0	305

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	2	2
SW	0	0	0	1	1	0	2
WSW	0	0	2	6	0	0	8
W	0	0	0	1	0	0	1
WNW	0	0	1	3	1	0	5
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	3	11	2	2	18

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	2	2	0	0	4
ESE	0	3	0	0	0	0	3
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	1	0	0	0	1
SSW	0	0	1	6	2	1	10
SW	0	0	6	8	3	0	17
WSW	0	0	5	7	0	0	12
W	0	0	8	1	0	0	9
WNW	0	0	6	3	0	0	9
NW	0	0	1	4	0	0	5
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	3	30	32	5	1	71

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Neutral - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	10	21	14	12	0	57
NNE	0	12	16	18	3	0	49
NE	0	13	16	41	49	5	124
ENE	0	9	10	24	14	2	59
E	1	17	44	14	1	0	77
ESE	1	23	18	1	2	0	45
SE	1	16	16	6	2	0	41
SSE	0	10	21	7	0	1	39
S	4	10	23	14	17	5	73
SSW	0	12	20	18	18	6	74
SW	1	6	27	25	19	2	80
WSW	1	7	15	15	6	0	44
W	0	9	11	4	7	7	38
WNW	1	11	17	15	9	3	56
NW	0	4	34	32	15	0	85
NNW	0	7	29	20	29	0	85
Variable	0	0	0	0	0	0	0
Total	10	176	338	268	203	31	1026

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	5	1	3	0	11
NNE	2	7	11	20	2	0	42
NE	1	4	11	15	7	0	38
ENE	0	3	31	23	3	0	60
E	1	6	18	28	10	0	63
ESE	3	5	10	13	6	0	37
SE	3	3	9	4	3	0	22
SSE	3	7	11	2	3	2	28
S	2	3	10	17	13	4	49
SSW	1	3	12	11	27	18	72
SW	0	4	5	14	19	3	45
WSW	0	3	15	11	8	3	40
W	0	5	7	7	2	2	23
WNW	1	3	9	13	0	0	26
NW	1	3	9	17	0	0	30
NNW	0	4	4	10	10	0	28
Variable	0	0	0	0	0	0	0
Total	18	65	177	206	116	32	614

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	3	3	3	11	4	24
NNE	0	1	4	5	1	0	11
NE	2	0	0	4	1	0	7
ENE	0	1	0	0	0	0	1
E	0	2	1	10	11	0	24
ESE	0	3	14	17	11	0	45
SE	4	10	7	15	8	0	44
SSE	0	5	12	11	1	0	29
S	0	2	8	17	10	0	37
SSW	0	3	4	17	13	4	41
SW	0	3	14	7	12	2	38
WSW	0	2	10	17	6	0	35
W	0	1	6	8	4	0	19
WNW	0	3	11	8	0	0	22
NW	0	0	10	7	0	0	17
NNW	3	4	4	3	1	0	15
Variable	0	0	0	0	0	0	0
Total	9	43	108	149	90	10	409

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2018
Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	4	1	0	5
SSE	1	0	5	8	3	0	17
S	1	0	2	1	5	0	9
SSW	1	1	1	3	1	0	7
SW	0	4	2	5	0	0	11
WSW	0	0	4	0	0	0	4
W	0	0	4	1	0	0	5
WNW	0	1	7	1	0	0	9
NW	0	1	2	0	0	0	3
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	3	7	27	23	10	0	70

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	1	0	1
SW	0	0	0	0	2	0	2
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	3	0	3

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	1	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	1	1	1	0	3
SW	0	0	2	1	3	0	6
WSW	0	0	0	0	1	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	1	0	0	1
NW	0	0	0	1	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	3	5	5	0	13

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	1	0	0	1
NNE	0	0	1	0	0	0	1
NE	0	0	1	0	0	0	1
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	1	2	0	0	3
SE	0	0	0	2	0	0	2
SSE	0	0	0	0	0	0	0
S	0	0	0	3	0	0	3
SSW	0	0	2	6	0	0	8
SW	0	0	5	3	1	0	9
WSW	0	0	0	1	3	0	4
W	0	0	1	0	0	0	1
WNW	0	0	2	3	2	0	7
NW	0	0	5	2	0	0	7
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	0	19	23	6	0	48

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Neutral - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	25	28	1	1	0	56
NNE	1	13	18	2	1	0	35
NE	0	13	23	6	3	2	47
ENE	2	4	18	2	0	0	26
E	0	15	12	0	0	0	27
ESE	0	13	8	6	0	0	27
SE	1	5	7	6	2	1	22
SSE	1	4	2	3	4	2	16
S	1	7	17	8	2	0	35
SSW	0	8	14	15	1	0	38
SW	3	14	14	11	0	1	43
WSW	1	9	34	22	6	2	74
W	1	7	48	31	7	3	97
WNW	1	12	40	40	7	2	102
NW	0	9	31	16	1	0	57
NNW	0	22	67	44	9	4	146
Variable	0	0	0	0	0	0	0
Total	13	180	381	213	44	17	848

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	28	8	0	3	0	43
NNE	2	16	32	1	4	0	55
NE	0	5	2	0	0	0	7
ENE	1	9	13	7	5	3	38
E	2	17	42	7	3	0	71
ESE	0	11	14	10	8	0	43
SE	1	1	8	2	1	6	19
SSE	2	5	10	15	1	1	34
S	1	8	25	16	6	0	56
SSW	1	8	20	17	0	0	46
SW	3	6	15	33	1	0	58
WSW	2	11	20	29	14	0	76
W	2	21	29	29	12	2	95
WNW	2	14	25	5	5	9	60
NW	2	22	24	2	0	0	50
NNW	2	31	11	16	0	0	60
Variable	0	0	0	0	0	0	0
Total	27	213	298	189	63	21	811

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	15	0	0	0	0	15
NNE	0	5	0	0	0	0	5
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	1	19	13	0	0	0	33
ESE	0	12	9	1	0	0	22
SE	1	14	10	1	0	0	26
SSE	0	4	13	3	0	0	20
S	1	6	24	2	0	0	33
SSW	0	4	22	0	0	0	26
SW	3	2	18	8	0	0	31
WSW	0	10	14	1	0	0	25
W	1	26	31	5	0	0	63
WNW	0	24	4	0	0	0	28
NW	2	3	1	0	0	0	6
NNW	2	9	1	0	0	0	12
Variable	0	0	0	0	0	0	0
Total	12	153	160	21	0	0	346

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	1	12	1	0	0	0	14
ESE	0	12	2	0	0	0	14
SE	2	16	1	0	0	0	19
SSE	1	11	4	0	0	0	16
S	1	6	7	0	0	0	14
SSW	1	9	5	0	0	0	15
SW	0	0	5	0	0	0	5
WSW	4	2	5	0	0	0	11
W	3	7	4	0	0	0	14
WNW	1	5	1	0	0	0	7
NW	0	1	0	0	0	0	1
NNW	1	2	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	16	83	35	0	0	0	134

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	1	1
SW	0	0	0	0	0	0	0
WSW	0	0	1	0	0	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	1	0	0	1	2

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	1	1	1	3
SW	0	0	0	0	1	3	4
WSW	0	0	1	0	1	0	2
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	1	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	1	2	3	4	10

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Neutral - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	9	30	29	13	6	87
NNE	0	0	26	32	1	6	65
NE	1	4	19	29	13	6	72
ENE	0	3	14	25	5	6	53
E	0	8	15	9	3	4	39
ESE	2	11	6	11	3	1	34
SE	0	2	6	8	14	8	38
SSE	0	1	3	2	2	8	16
S	0	2	14	13	11	15	55
SSW	1	3	11	15	22	2	54
SW	1	8	25	18	17	6	75
WSW	0	5	22	25	22	20	94
W	0	5	28	39	25	38	135
WNW	1	5	27	57	31	23	144
NW	2	6	36	63	26	13	146
NNW	0	5	15	48	33	13	114
Variable	0	0	0	0	0	0	0
Total	8	77	297	423	241	175	1221

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	3	11	12	2	0	32
NNE	2	7	19	5	0	0	33
NE	0	5	11	14	12	0	42
ENE	0	3	4	2	2	0	11
E	2	8	10	14	15	5	54
ESE	0	5	8	15	15	15	58
SE	0	5	5	9	4	10	33
SSE	1	2	1	6	2	9	21
S	0	1	2	10	16	21	50
SSW	0	3	9	10	31	14	67
SW	0	5	6	11	21	12	55
WSW	0	0	7	7	14	26	54
W	0	3	7	11	22	11	54
WNW	1	1	14	20	14	21	71
NW	0	3	12	16	6	4	41
NNW	0	4	8	17	5	1	35
Variable	0	0	0	0	0	0	0
Total	10	58	134	179	181	149	711

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	5	5	0	2	12
NNE	0	1	5	0	0	0	6
NE	0	1	1	2	1	3	8
ENE	0	1	1	0	0	0	2
E	0	0	2	2	1	0	5
ESE	0	1	4	6	5	0	16
SE	1	4	4	12	7	1	29
SSE	0	1	5	6	7	4	23
S	0	1	3	4	16	11	35
SSW	1	0	6	7	2	3	19
SW	0	2	5	4	13	2	26
WSW	0	3	1	0	1	2	7
W	1	1	0	1	11	1	15
WNW	0	0	3	1	9	5	18
NW	0	1	0	0	1	2	4
NNW	0	1	1	1	2	0	5
Variable	0	0	0	0	0	0	0
Total	3	18	46	51	76	36	230

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

LaSalle County Generating Station

Period of Record: October - December 2018
Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	0	1	0	0	5
NNE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	2	0	2
SSE	0	0	2	2	3	0	7
S	0	0	3	0	0	0	3
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	1	0	1
WSW	1	0	0	0	0	0	1
W	0	0	2	1	1	0	4
WNW	1	1	1	0	0	0	3
NW	0	0	0	0	0	0	0
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	3	6	8	4	7	0	28

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 5

APPENDIX G

ERRATA DATA

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There is no errata data for 2018.

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APPENDIX H

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

Docket No: 50-373
50-374

LASALLE COUNTY STATION
UNITS 1 and 2

Annual Radiological
Groundwater Protection Program Report

1 January through 31 December 2018

Prepared By
Teledyne Brown Engineering
Environmental Services

Exelon Generation.

LaSalle County Station
Marseilles, IL 61341

May 2019

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Appendices

I. Summary and Conclusions

In 2006, Exelon instituted a comprehensive program to evaluate the impact of station operations on groundwater and surface water in the vicinity of LaSalle County Station. This evaluation involved numerous station personnel and contractor support personnel. Following baseline sampling and subsequent recommendations, LaSalle's Radiological Groundwater Protection Program (RGPP) program now consists of the four surface water and twenty groundwater well sampling locations. The results for LaSalle's RGPP sampling efforts in 2018 are included in this report.

This is the twelfth in a series of annual reports on the status of the RGPP conducted at LaSalle County Station. This report covers groundwater and surface water samples, collected from the environment, both on and off station property in 2018. During that time period, 327 analyses were performed on 96 samples from 24 locations (4 surface water and 20 groundwater monitoring locations). The monitoring was conducted by station personnel.

In assessing all the data gathered for this report, it was concluded that the operation of LaSalle County Station had no adverse radiological impact on the environment, and there are no known active releases into the groundwater at LaSalle County Station.

Strontium-89 and Strontium-90 were not detected in any groundwater samples during 2018.

No gamma-emitting radionuclides attributable to licensed plant operations were detected in any of the groundwater or surface water samples.

In the case of tritium, Exelon specified that its laboratories achieve a lower limit of detection (LLD) 100 times lower than that required by federal regulation.

Tritium was not detected in surface water samples at concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L. Tritium levels were detected at concentrations greater than the LLD of 200 pCi/L in 11 of 18 surface water samples analyzed. The tritium concentrations ranged from <LLD to 331 ± 134 pCi/L. Tritium levels were detected at concentrations greater than the LLD of 200 pCi/L in 20 of 78 groundwater samples analyzed. The tritium concentrations ranged from <LLD to 7,300 ± 788 pCi/L. The elevated tritium levels (>200 pCi/L) being observed in groundwater are associated with the U1 CY tank leak that occurred in the June/July 2010 timeframe, as documented in the Station's 10 CFR 50.75(g) report.

Gross alpha and gross beta analyses in the dissolved and suspended fractions were performed on groundwater samples throughout the year in 2018. Gross alpha (dissolved) was not detected at any of the locations analyzed. Gross alpha (suspended) was detected in 5 of 16 samples affecting 5 of 12 groundwater locations analyzed. The concentrations ranged from 1.4 to 6.2 pCi/L.

Gross beta (dissolved) was detected in 10 of 16 samples affecting 8 of 12 groundwater locations analyzed. The concentrations ranged from 1.9 to 11.5 pCi/L. Gross beta (suspended) was detected in 7 of 16 samples affecting 7 of 12 groundwater locations analyzed. The concentrations ranged from 1.7 to 20.9 pCi/L.

Hard-to-detect analyses were performed on 12 of the groundwater sampling locations in accordance with the LaSalle RGPP and to aid in establishing background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235, and U-238. The isotopes of U-234 and U-238 were detected in 4 samples of each, affecting 2 of 12 groundwater locations. The U-234 concentrations ranged from 0.34 to 1.04 pCi/L. The U-238 concentrations ranged from 0.23 to 0.74 pCi/L. U-234 and U-238 are commonly found in groundwater at low concentrations due to the naturally-occurring Radium (Uranium) Decay Series.

II. Introduction

The LaSalle County Station (LSCS), consisting of two boiling water reactors, each rated for 3,546 MWt, owned and operated by Exelon Corporation, is located in LaSalle County, Illinois. Unit 1 went critical on March 16, 1982. Unit 2 went critical on December 2, 1983. The site is located in northern Illinois, approximately 75 miles southwest of Chicago, Illinois.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) on samples collected in 2018.

A. Objectives of the RGPP

The long-term objectives of the RGPP are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment and potential drinking water sources.

2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.

3. Perform routine water sampling and radiological analysis of water from selected locations.

4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.

5. Regularly assess analytical results to identify adverse trends.

6. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

The objectives identified have been implemented at LaSalle County Station as discussed below:

1. Exelon and its consultant identified locations as described in the 2006 Phase 1 study. Phase 1 studies were conducted by Conestoga Rovers and Associates (CRA) and the results and conclusions were made available to state and federal regulators.

2. The LaSalle County Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.

3. LaSalle County Station will continue to perform routine sampling and radiological analysis of water from selected locations.

4. LaSalle County Station has implemented procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.

5. LaSalle County Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

C. Program Description

1. Sample Collection

Sample locations can be found in Figure A–1, Appendix A.

<u>Groundwater and Surface Water</u>

Samples of water are collected, managed, transported and analyzed in accordance with approved procedures following EPA methods. Both groundwater and surface samples water are

collected. Sample locations, sample collection frequencies and analytical frequencies are controlled in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs, as well as nuclear industry audits. Station personnel review and evaluate all analytical data deliverables as data are received.

Analytical data results are reviewed by both station personnel and an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (3He). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as

water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by TBE to analyze the environmental samples for radioactivity for the LaSalle County Station RGPP in 2018. Sample and analysis and frequency is based upon well location, assessed risk and site hydrogeology as described in the RGPP.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of gamma emitters in groundwater and surface water
2. Concentrations of strontium in groundwater
3. Concentrations of tritium in groundwater and surface water
4. Concentrations of Gross Alpha, Dissolved and Suspended and Gross Beta, Dissolved and Suspended in groundwater
5. Concentrations of Am-241 in groundwater
6. Concentrations of Cm-242 and Cm-243/244 in groundwater
7. Concentrations of Pu-238 and PU-239/240 in groundwater
8. Concentrations of U-234, U-235 and U-238 in groundwater
9. Concentrations of Fe-55 in groundwater
10. Concentrations of Ni-63 in groundwater

B. Data Interpretation

The radiological data collected prior to LaSalle County Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, LaSalle County Station was considered operational at initial criticality. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is specified by federal regulation as a minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus ± the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, precipitation, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Environmental Radiological Monitoring for LaSalle County Nuclear Power Station, Commonwealth Edison Company, Annual Reports for the years 1979 and 1981. The pre-operational REMP contained analytical results from samples collected from the surface water and groundwater.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed

by others. Additional detail may be found by consulting references (CRA 2006).

a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at stations throughout the U.S. from 1960 up to and including 2006. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed

by a gradual decline since that time. Tritium concentrations in Midwest precipitation have typically been below 100 pCi/L since around 1980. LaSalle's 1979 or 1981 pre-operational REMP showed precipitation tritium concentrations >300 pCi/L. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Tritium concentrations are routinely measured in large surface water bodies, including Lake Michigan and the Mississippi River. Illinois surface water data were typically less than 100 pCi/L. Illinois River H-3 results have shown >200 pCi/L, as evidenced in LaSalle's REMP program sample results. This is attributable to releases from Braidwood and Dresden upstream.

The USEPA RadNet surface water data typically has a reported 'Combined Standard Uncertainty' of 35 to 50 pCi/L. According to USEPA, this corresponds to a ± 70 to 100 pCi/L 95% confidence bound on each given measurement. Therefore, the typical background data provided may be subject to measurement uncertainty of approximately ± 70 to 100 pCi/L.

The radio-analytical laboratory is counting tritium results to an Exelon specified LLD of 200 pCi/L. Typically, the lowest positive measurement will be reported within a range of 40 – 240 pCi/L or 140 ± 100 pCi/L. Clearly, these sample results cannot be distinguished as different from background at this concentration.

IV. Results and Discussion

A. Groundwater Results

Samples were collected from onsite wells throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from 20 locations were analyzed for tritium activity. Tritium values ranged from <LLD to 7,300 pCi/L. The highest tritium activity was found at well TW-LS-116S. Based on the hydrogeological study conducted at LaSalle, there is no feasible pathway into a drinking water supply. Based on established aquifer flow paths the location most representative of potential offsite release into groundwater was also less than the detection limit (Table B-I.1, Appendix B).

Strontium

A total of 18 samples from 15 groundwater locations were analyzed for Sr-89 and Sr-90. The results were less than the required detection limit of 10 pCi/L for Sr-89 and less than the required detection limit of 1.0 pCi/liter for Sr-90 (Table B-I.1, Appendix B).

Gross Alpha and Gross Beta (dissolved and suspended)

Gross alpha and gross beta analyses in the dissolved and suspended fractions were performed on groundwater samples throughout the year in 2018. Gross alpha (dissolved) was not detected in any of the 12 groundwater locations. Gross alpha (suspended) was detected in 5 of 16 samples affecting 5 of 12 groundwater locations analyzed. The concentrations ranged from 1.4 to 6.2 pCi/L. Gross beta (dissolved) was detected in 10 of 16 samples affecting 8 of 12 groundwater locations analyzed. The concentrations ranged from 1.9 to 11.5 pCi/L. Gross beta (suspended) was detected in 7 of 16 samples affecting 7 of 12 groundwater locations analyzed. The concentrations ranged from 1.7 to 20.9 pCi/L. These concentrations of gross alpha and gross beta, which are slightly above detectable levels, are considered to be background and are not the result of plant effluents (Table B-I.1, Appendix B).

Gamma Emitters

Naturally-occurring Potassium-40 (K-40) was detected in 2 of 19 samples affecting 2 of 12 groundwater locations. No other gamma emitting nuclides were detected in any of the samples analyzed (Table B-I.2, Appendix B).

Hard-To-Detect

Hard-to-detect analyses were performed on 12 of the groundwater sampling locations in accordance with the LaSalle RGPP and to aid in establishing background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235, and U-238. U-234 was detected in 4 of 9 samples, affecting 2 of 12 groundwater

locations. The concentrations ranged from 0.34 to 1.04 pCi/L. U-238 was detected in 4 of 9 samples, affecting 2 of 12 groundwater locations. The concentrations ranged from 0.23 to 0.74 pCi/L. U-234 and U-238 are commonly found in groundwater at low concentrations due to the naturally occurring Radium (Uranium) Decay Series. The concentrations of U-234 and U-238 discussed above are considered to be background and are not the result of plant effluents (Table B-1.3, Appendix B).

All other hard-to-detect nuclides were not detected at concentrations greater than their respective minimum detectable concentrations.

B. Surface Water Results

Samples were collected from on and off-site surface water locations throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from 4 locations were analyzed for tritium activity. Eleven (11) of 18 samples from all 4 surface water locations indicated activity above the minimum detectable concentration (MDC). The concentrations ranged from <174 to 331 pCi/L. Based on the hydrogeological study conducted at LaSalle, there is no feasible pathway into a drinking water supply. Based on established aquifer flow paths, the location most representative of potential offsite release into groundwater was also less than the detection limit. (Table B–II.1, Appendix B).

Strontium

Sr-89 and Sr-90 analyses were not performed on surface water samples in 2018.

Gross Alpha and Gross Beta (dissolved and suspended)

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were not performed on surface water samples in 2018.

Gamma Emitters

No gamma-emitting nuclides were detected at concentrations greater than their respective minimum detectable concentrations. (Table B-II.2, Appendix B).

C. Drinking Water Well Survey

A drinking water well survey was conducted during the summer 2006 by CRA (CRA 2006) around the LaSalle County Station. This survey concluded that no residents in the vicinity of the plant utilize the shallow water aquifer as a drinking water supply. Site hydrological studies of aquifer flow and permeation rates from the shallow aquifer to the deep aquifer concluded that there is no feasible dose receptor via a ground water pathway at LaSalle.

D. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE and Environmental Inc. (Midwest Labs) are presented in the AREOR.

E. Leaks, Spills, and Releases

There were no new leaks identified at LaSalle Station during the reporting period.

F. Trends

Analysis results from samples continue to be trended in order to assess impact to groundwater at LaSalle Station. There were no new leaks identified in the reporting period. Sample data from the plume arising from the historic 2010 U1 CY tank leak is being trended per the LaSalle RGPP. The plume had been dispersing with groundwater flow, and extraction wells have been installed to provide additional control of the plume migration (see Section H.3. below). Currently, no tritium has migrated offsite, and tritium migration offsite is not expected.

G. Investigations

No new investigations were carried out during the reporting period.

H. Actions Taken

1. Compensatory Actions

   No compensatory actions were taken during the reporting period.

2. Installation of Monitoring Wells

   No new monitoring wells have been installed during the reporting period.

3. Actions to Recover/Reverse Plumes

   Two (2) extraction wells (RW-LS-100S and RW-LS-101S) were installed to control the migration of the tritium plume near U1 CY tank. RW-LS-100S became operational in October 2012. RW-LS-101S became operational in April 2014.

APPENDIX A

LOCATION DESIGNATION

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TABLE A-1 LaSalle County Station Groundwater Monitoring Sample Point List, 2018

Site	Site Type
SW-LS-101	Surface Water
SW-LS-102	Surface Water
SW-LS-103	Surface Water
SW-LS-106	Surface Water
MW-LS-101S	Monitoring Well
MW-LS-102S	Monitoring Well
MW-LS-103S	Monitoring Well
MW-LS-104S	Monitoring Well
MW-LS-105S	Monitoring Well
MW-LS-106S	Monitoring Well
MW-LS-107S	Monitoring Well
MW-LS-108S	Monitoring Well
MW-LS-109S	Monitoring Well
MW-LS-110S	Monitoring Well
MW-LS-111S	Monitoring Well
MW-LS-112S	Monitoring Well
MW-LS-113S	Monitoring Well
HP-2	Monitoring Well
HP-5	Monitoring Well
HP-7	Monitoring Well
HP-10	Monitoring Well
RW-LS-100S	Extraction Well
RW-LS-101S	Extraction Well
TW-LS-114S	Monitoring Well
TW-LS-115S	Monitoring Well
TW-LS-116S	Monitoring Well
TW-LS-117S	Monitoring Well
TW-LS-118S	Monitoring Well
TW-LS-119S	Monitoring Well
TW-LS-120S	Monitoring Well
TW-LS-121S	Monitoring Well

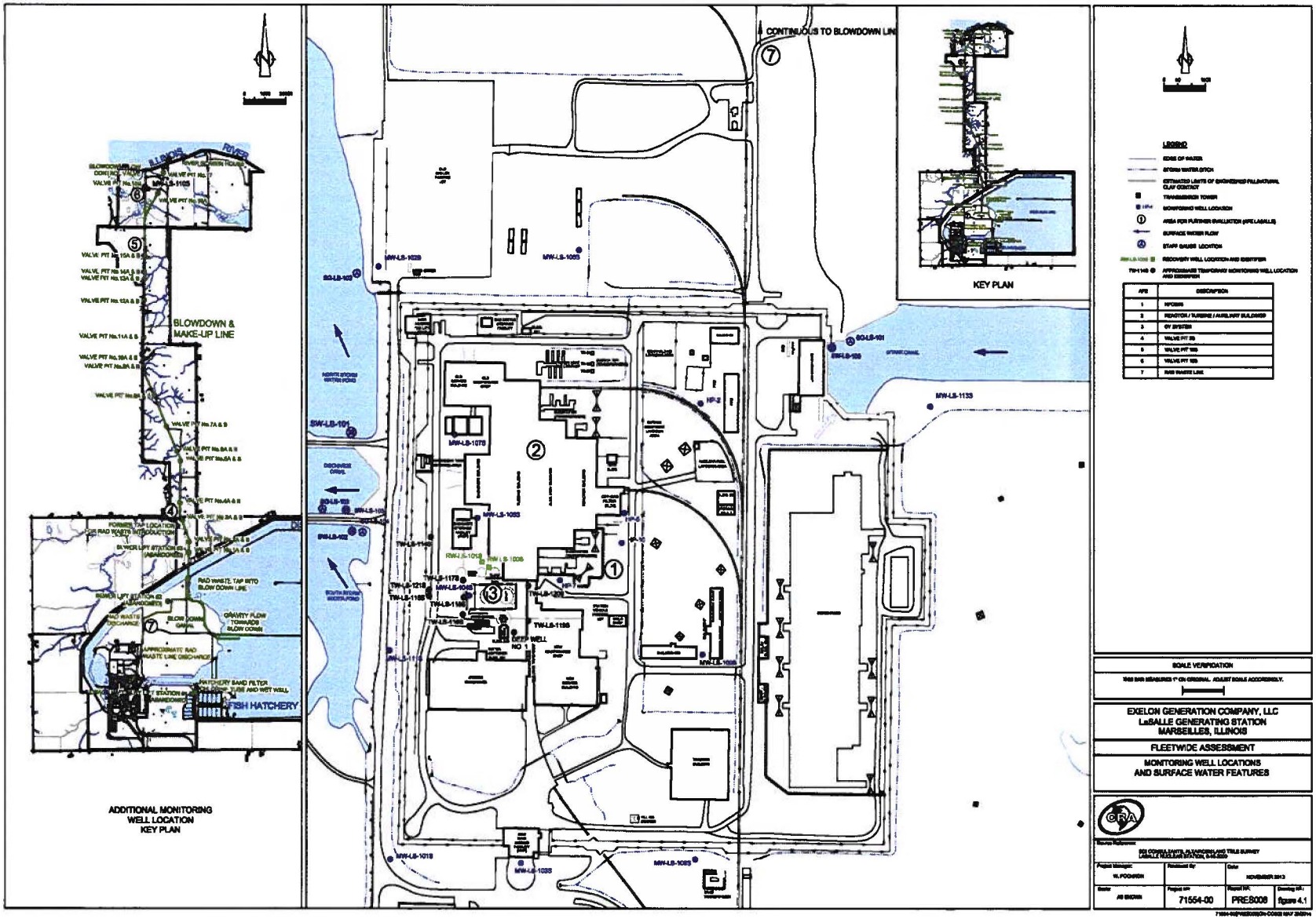

Figure A-1
Ground Water and Surface Water Locations
LaSalle County Station, 2018

APPENDIX B

DATA TABLES

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TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
HP-2	03/23/18	< 192						
HP-2	05/05/18	< 180	< 3.9	< 0.9	< 0.7	< 0.9	4.1 ± 0.9	1.7 ± 1.1
HP-2	09/11/18	< 194						
HP-2	10/29/18	< 192						
HP-5	03/23/18	< 199						
HP-5	05/05/18	< 181	< 3.3	< 0.6	< 1.7	1.4 ± 0.9	3.5 ± 1.2	< 1.6
HP-5	09/11/18	< 193						
HP-5	10/29/18	< 191						
HP-7	03/23/18	< 186						
HP-7	05/05/18	< 168	< 2.6	< 0.6	< 0.7	2.1 ± 1.1	4.6 ± 1.0	3.1 ± 1.3
HP-7	09/11/18	< 198						
HP-7	10/29/18	< 190						
HP-10	03/23/18	< 191						
HP-10	05/05/18	< 184	< 3.0	< 0.6	< 1.3	< 1.0	< 1.6	2.3 ± 1.2
HP-10	09/11/18	< 190						
HP-10	10/29/18	< 188						
MW-LS-104S	03/20/18	2850 ± 337						
MW-LS-104S	05/05/18	2900 ± 343	< 3.7	< 0.7	< 1.3	< 0.7	< 1.4	< 1.4
MW-LS-104S	09/11/18	2180 ± 284	< 6.6	< 0.8	< 1.3	< 0.7	< 1.4	< 1.4
MW-LS-104S	10/29/18	3360 ± 400	< 2.4	< 0.6	< 1.7	< 0.6	< 1.5	< 1.4
MW-LS-105S	03/23/18	< 186						
MW-LS-105S	05/05/18	< 176	< 5.4	< 0.6	< 0.9	6.2 ± 2.4	1.9 ± 0.8	20.9 ± 2.6
MW-LS-105S	09/11/18	< 191						
MW-LS-105S	10/29/18	< 187						
MW-LS-106S	03/23/18	< 187						
MW-LS-106S	05/08/18	< 180						
MW-LS-107S	03/23/18	< 190						
MW-LS-107S	05/05/18	< 178	< 2.6	< 0.6	< 2.8	4.7 ± 2.2	< 3.0	20.6 ± 2.6
MW-LS-107S	09/11/18	< 194						
MW-LS-107S	10/29/18	< 188						
MW-LS-111S	03/23/18	< 188						
MW-LS-111S	05/08/18	< 177	< 6.5	< 0.8	**< 6.4**	< 0.9	11.5 ± 3.3	7.2 ± 1.5
MW-LS-111S	09/12/18	< 195						
MW-LS-111S	10/30/18	< 187						
OIL SEPARATOR	03/23/18	< 187						
OIL SEPARATOR	05/05/18	< 178						
OIL SEPARATOR	09/11/18	< 192						
OIL SEPARATOR	10/29/18	< 170						
RW-LS-100S	03/20/18	2010 ± 256						
RW-LS-100S	05/05/18	1620 ± 223	< 3.9	< 0.5				
RW-LS-100S	09/11/18	1130 ± 186	< 6.8	< 0.7	< 1.2	< 0.7	3.7 ± 1.0	< 1.4
RW-LS-100S	10/29/18	1440 ± 214	< 2.7	< 0.6	< 1.6	< 0.9	4.7 ± 1.2	< 1.4
RW-LS-101S	03/20/18	4990 ± 548						
RW-LS-101S	05/05/18	5480 ± 596	< 4.4	< 0.6				
RW-LS-101S	09/11/18	3480 ± 410	< 6.2	< 0.7	< 1.4	< 0.7	8.6 ± 1.3	< 1.4
RW-LS-101S	10/29/18	4120 ± 474	< 2.6	< 0.7	< 1.4	< 0.9	6.1 ± 1.1	< 1.4

Bolded value = LLD was not met due to high solid content in the sample

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA, AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)	Gr-B (Dis)	Gr-B (Sus)
TW-LS-114S	03/23/18	< 191						
TW-LS-114S	05/05/18	< 174						
TW-LS-114S	09/11/18	< 195						
TW-LS-114S	10/29/18	< 193						
TW-LS-115S	03/20/18	< 190						
TW-LS-115S	05/05/18	< 176						
TW-LS-115S	09/11/18	< 194						
TW-LS-115S	10/29/18	< 190						
TW-LS-116S	03/20/18	5050 ± 554						
TW-LS-116S	05/05/18	5610 ± 611						
TW-LS-116S	09/11/18	6940 ± 754						
TW-LS-116S	10/29/18	7300 ± 788	< 2.6	< 0.5	< 1.7	2.0 ± 1.3	2.5 ± 1.0	3.3 ± 1.5
TW-LS-117S	03/23/18	< 185						
TW-LS-117S	05/05/18	< 180						
TW-LS-117S	09/11/18	< 199						
TW-LS-117S	10/29/18	< 198						
TW-LS-118S	03/20/18	5720 ± 621						
TW-LS-118S	05/05/18	6000 ± 649						
TW-LS-118S	09/11/18	3970 ± 456						
TW-LS-118S	10/29/18	5330 ± 593	< 2.3	< 0.5	< 0.8	< 0.6	< 1.2	< 1.4
TW-LS-119S	03/20/18	< 181						
TW-LS-119S	05/05/18	< 180						
TW-LS-119S	09/11/18	< 196						
TW-LS-119S	10/29/18	< 191						
TW-LS-120S	03/20/18	< 189						
TW-LS-120S	05/05/18	< 174						
TW-LS-120S	09/11/18	< 194						
TW-LS-120S	10/29/18	< 196						
TW-LS-121S	03/23/18	< 187						
TW-LS-121S	05/05/18	< 174						
TW-LS-121S	09/11/18	< 197						
TW-LS-121S	10/29/18	< 196						

TABLE B-I.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
HP-2	05/05/18	< 17	< 16	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 2	< 2	< 13	< 5
HP-5	05/05/18	< 14	< 35	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 6	< 2	< 2	< 12	< 4
HP-7	05/05/18	< 17	< 15	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 2	< 2	< 14	< 4
HP-10	05/05/18	< 15	< 34	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 6	< 2	< 2	< 13	< 5
MW-LS-104S	05/05/18	< 12	< 19	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 7	< 1	< 1	< 11	< 4
MW-LS-104S	09/11/18	< 18	< 14	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 2	< 2	< 18	< 5
MW-LS-104S	10/29/18	< 18	< 16	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 7	< 2	< 2	< 15	< 5
MW-LS-105S	05/05/18	< 17	< 35	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 15	< 5
MW-LS-106S	05/08/18	< 21	< 19	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 15	< 4
MW-LS-107S	05/05/18	< 20	64 ± 34	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 8	< 2	< 2	< 16	< 5
MW-LS-111S	05/08/18	< 21	< 24	< 2	< 2	< 5	< 2	< 5	< 3	< 5	< 8	< 3	< 2	< 16	< 6
RW-LS-100S	05/05/18	< 15	< 23	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 2	< 1	< 18	< 6
RW-LS-100S	09/11/18	< 15	< 14	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 9	< 1	< 1	< 14	< 5
RW-LS-100S	10/29/18	< 19	< 35	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 8	< 2	< 2	< 16	< 6
RW-LS-101S	05/05/18	< 15	< 26	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 14	< 6
RW-LS-101S	09/11/18	< 9	< 26	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 6	< 1	< 1	< 10	< 3
RW-LS-101S	10/29/18	< 31	< 56	< 3	< 3	< 9	< 4	< 6	< 4	< 7	< 14	< 4	< 4	< 24	< 8
TW-LS-116S	10/29/18	< 22	< 24	< 2	< 2	< 5	< 2	< 5	< 3	< 4	< 9	< 2	< 2	< 18	< 6
TW-LS-118S	10/29/18	< 19	55 ± 27	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 15	< 5

TABLE B-I.3 CONCENTRATIONS OF HARD-TO-DETECTS IN GROUNDWATER SAMPLES COLLECTED AS PART OF THE GROUNDWATER PROTECTION PROGRAM, LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Am-241	Cm-242	Cm-243/244	Pu-238	Pu-239/240	U-234	U-235	U-238	Fe-55	Ni-63
HP-2	05/05/18									< 141	< 3.8
HP-5	05/05/18									< 124	< 3.9
HP-7	05/05/18									< 185	< 4.0
HP-10	05/05/18									< 198	< 4.2
MW-LS-104S	05/05/18	< 0.10	< 0.04	< 0.11	< 0.19	< 0.17	1.04 ± 0.30	< 0.08	0.74 ± 0.26	< 194	< 4.5
MW-LS-104S	09/11/18	< 0.05	< 0.02	< 0.02	< 0.05	< 0.02	0.69 ± 0.23	< 0.03	0.62 ± 0.23	< 77	< 4.4
MW-LS-104S	10/29/18	< 0.05	< 0.03	< 0.03	< 0.07	< 0.07	0.82 ± 0.27	< 0.03	0.61 ± 0.22	< 188	< 4.9
MW-LS-105S	05/05/18									< 169	< 4.1
MW-LS-107S	05/05/18									< 114	< 4.1
MW-LS-111S	05/08/18									< 180	< 3.9
RW-LS-100S	05/05/18	< 0.10	< 0.02	< 0.08	< 0.05	< 0.12	< 0.05	< 0.06	< 0.05	< 195	< 4.3
RW-LS-100S	09/11/18	< 0.09	< 0.06	< 0.11	< 0.02	< 0.02	< 0.15	< 0.13	< 0.13	< 164	< 4.1
RW-LS-100S	10/29/18	< 0.07	< 0.02	< 0.05	< 0.07	< 0.07	< 0.02	< 0.06	< 0.02	< 179	< 4.2
RW-LS-101S	05/05/18	< 0.15	< 0.06	< 0.12	< 0.04	< 0.08	< 0.09	< 0.15	< 0.06	< 170	< 4.5
RW-LS-101S	09/11/18	< 0.05	< 0.10	< 0.09	< 0.02	< 0.02	0.34 ± 0.15	< 0.03	0.23 ± 0.11	< 196	< 4.7
RW-LS-101S	10/29/18	< 0.12	< 0.05	< 0.12	< 0.05	< 0.10	< 0.02	< 0.05	< 0.06	< 142	< 4.5
TW-LS-116S	10/29/18									< 195	< 4.9
TW-LS-118S	10/29/18									< 190	< 4.4

TABLE B-II.1 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3
SW-LS-101	03/23/18	< 183
SW-LS-101	05/08/18	< 174
SW-LS-101	09/12/18	331 ± 134
SW-LS-101	09/12/18	240 ± 129
SW-LS-101	10/30/18	< 189
SW-LS-102	03/23/18	< 181
SW-LS-102	05/08/18	< 176
SW-LS-102	09/12/18	228 ± 126
SW-LS-102	09/12/18	261 ± 130
SW-LS-102	10/30/18	< 189
SW-LS-103	03/23/18	205 ± 122
SW-LS-103	05/08/18	268 ± 121
SW-LS-103	09/12/18	279 ± 128
SW-LS-103	10/30/18	191 ± 126
SW-LS-106	03/23/18	< 187
SW-LS-106	05/09/18	233 ± 121
SW-LS-106	09/12/18	244 ± 128
SW-LS-106	10/31/18	266 ± 130

TABLE B-II.2

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2018

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
SW-LS-101	05/08/18	< 40	< 73	< 5	< 5	< 9	< 4	< 9	< 4	< 7	< 10	< 5	< 5	< 25	< 7
SW-LS-102	05/08/18	< 41	< 87	< 4	< 5	< 12	< 5	< 9	< 5	< 10	< 12	< 4	< 5	< 28	< 11
SW-LS-103	05/08/18	< 44	< 102	< 4	< 5	< 11	< 6	< 7	< 6	< 9	< 12	< 6	< 6	< 27	< 12
SW-LS-106	05/09/18	< 53	< 104	< 6	< 5	< 11	< 7	< 5	< 5	< 12	< 12	< 6	< 6	< 33	< 9