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10 CFR 50 Appendix I

RA13-021

May 15, 2013

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

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

Subject: 2012 Annual Radiological Environmental Operating Report

Enclosed is the Exelon Generation Company, LLC, LaSalle County Station 2012 Annual Radiological Environmental Operating Report, submitted in accordance with Technical Specification 5.6.2, "Annual Radiological Environmental Operating Report." This report contains the results of the Radiological Environmental and Meteorological Monitoring Programs. This report is enclosed as an attachment.

In addition, this attachment 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.

Should you have any questions concerning this letter, please contact Mr. Guy V. Ford, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,

Peter J. Karaba
Site Vice President
LaSalle County Station

Attachment

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 2012

Prepared By

Teledyne Brown Engineering
Environmental Services

LaSalle County Station
Marseilles, IL 61341

May 2013

Table Of Contents

Appendices

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 2012 through 31 December 2012. During that time period, 1,460 analyses were performed on 1,361 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.

Fish (commercially and recreationally important species) and sediment samples were analyzed for concentrations of gamma emitting nuclides. No fission or activation products were detected in fish or sediment.

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

High sensitivity 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 K-40 were consistent with those detected in previous years. No fission or activation products were found.

Food product 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). 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 were deployed and Thermo-luminescent Dosimetry (TLD) were discontinued. This change may result in a step change in readings, up or down, depending on site characteristics. 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).

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 2012 through 31 December 2012.

A. Objective 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 2012. Sample locations and descriptions can be found in Tables B–1 and B–2, and Figures B–1 through B–4, 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-11). 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 were 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 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 annually in September at five locations (L-Quad C, L-Quad 1, L-Quad 2, L-Quad 3 and L-Quad 4). The control

location was L-Quad C. Various types of 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 release.

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-11).

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 TBE and Environmental Inc. (Midwest Labs) to analyze the environmental samples for radioactivity for the LSCS REMP in 2012. The analytical procedures used by the laboratories 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 and food product 12 nuclides, 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, 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 2012, the LSCS REMP had a sample recovery rate in excess of 99%. 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
A/I	L-08	02/09/12	Estimated reading of 168.0 hours; collector replaced timer.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
A/I	L-03	03/01/12	No apparent reason for low reading of 161.2 hours. Low timer readings of this nature are consistent with weather related power interruptions.
A/I	L-11	03/01/12	No apparent reason for low reading of 166.3 hours. Low timer readings of this nature are consistent with weather related power interruptions.
A/I	L-07	04/12/12	No apparent reason for low reading of 164.0 hours. Low timer readings of this nature are consistent with weather related power interruptions.
A/I	L-04	05/10/12	Low reading of 81.0 hours; no power; collector replaced fuse.
A/I	L-05	05/10/12	Low reading of 71.0 hours; no electricity to sampler; station notified.
A/I	L-06	05/10/12	Low reading of 80.1 hours; no power; collector replaced fuse.
A/I	L-08	05/10/12	Low reading of 65.7 hours; no power; collector replaced fuse.
A/I	L-05	05/17/12	Low reading of 110.1 hours due to recent power restoration on 05-11-12, 17:00.
A/I	L-05	05/31/12	No apparent reason for low reading of 164.9 hours. Low timer readings of this nature are consistent with weather related power interruptions.
A/I	L-05	06/28/12	No apparent reason for low reading of 162.0 hours. Low timer readings of this nature are consistent with weather related power interruptions.
A/I	L-01	07/05/12	No apparent reason for low reading of 152.0 hours. Low timer readings of this nature are consistent with weather related power interruptions.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
OSLD	L105-1	03/29/12	1st Qtr. missing in field at quarterly exchange.
OSLD	L115-2	03/29/12	1st Qtr. missing in field at quarterly exchange.
OSLD	L112-1	03/29/12	The OSLD was inadvertently left out of shipment to the lab. The OSLD was read at the end of the second quarter. The data is invalid
OSLD	L207-2	03/29/12	1st Qtr. missing in field at quarterly exchange.
OSLD	L216-3	03/29/12	1st Qtr. missing in field at quarterly exchange.
OSLD	L05-1	04/19/12	OSLD missing during weekly visual check.
OSLD	L05-1	04/26/12	Collector could not locate missing dosimeter; placed spare.
OSLD	L112-2	06/28/12	No data was available for the OSLD.
OSLD	L116-1	09/27/12	3rd Qtr. missing in field at quarterly exchange.
OSLD	L204-2	12/06/12	4th Qtr. missing in field; new utility pole in place. Collector placed spare. Data is invalid

Each program exception was 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 changes to the program in 2012.

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 22 of 24 samples with a range of 5.9 to 10.4 pCi/l. Concentrations detected were consistent with those detected in previous years (Figure C–1, Appendix C). The required LLD was met.

Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C–I.2, Appendix C). Tritium was detected in five of eight samples. The concentrations ranged from 183 to 1,150 pCi/l. Concentrations detected were consistent with those detected in previous years through the first three quarters. Fourth quarter control and indicator sample results were both slightly higher than previous years. However, because both control and indicator results were statistically equivalent, the elevated results were not attributed to LaSalle effluent releases (Figure C–2, Appendix C). The 2000 pCi/L OCDM and contractually required 200 pCi/L LLDs were met.

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 2000 pCi/L OCDM and 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 2,400 to 3,630 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. Locations L-40 and L-41, located downstream, could be affected by LaSalle's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from both locations were analyzed for gamma emitting nuclides (Table C–IV.1, Appendix C). Nuclides detected were naturally occurring K-40. Potassium-40 was found at all stations and ranged from 11,600 to 19,700 pCi/kg dry. No LaSalle 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 control location at an intermediate distance from LSCS (L-04, L-07, L-08 and L-11) 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 6 to 44 E–3 pCi/m^3 with a mean of 20 E–3 pCi/m^3. The results from the near site location (Group II) ranged from 8 to 48 E–3 pCi/m^3 with a mean of 21 E–3 pCi/m^3. The results from the far field locations (Group III) ranged from 6 to 47 E-3 pCi/m^3 with a mean of 21 E–3 pCi/m^3. The results from the Control location (Group IV) ranged from 9 to 49 E–3 pCi/m^3 with a mean of 21 E–3 pCi/m^3. Comparison of the 2012 air particulate data with previous years data indicate no effects from the operation of LSCS (Figures C–3 through C-7, Appendix C). In addition, comparisons of the weekly mean values for 2012 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 all samples. These values ranged from 100 to 218 E–3 pCi/m^3. Naturally occurring K-40 was not detected in any samples. All other nuclides were less than the MDC.

b. Airborne Iodine

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

2. Terrestrial

a. Milk

Samples were collected from one location (L-42) biweekly May through October and monthly November through April. 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). No nuclides were detected, and all required LLDs were met.

Gamma Spectrometry

Each milk sample was analyzed for concentrations of gamma emitting nuclides (Table C–VII.2, Appendix C).

Naturally occurring K-40 activity was found in all samples and ranged from 1,170 to 1,420 pCi/l. No other nuclides were detected, and all required LLDs were met.

b. Food Products

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

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C–VIII.1, 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.

All OSLD measurements were below 30 mrem/quarter, with a range of 12.3 to 29.8 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 during the August 2012 growing season 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	3.8	-
E E	3.2	-	14.2
F ESE	1.4	-	-
G SE	1.7	4.7	-
H SSE	1.8	4.7	-
J S	1.5	4.7	-
K SSW	0.7	-	-
L SW	1.0	5.8	-
M WSW	1.5	1.5	-
N W	1.5	3.0	-
P WNW	0.9	3.0	-
Q NW	1.8	4.0	-
R NNW	1.7	4.6	-

E. Summary of Results – Inter-Laboratory Comparison Program

The primary and secondary laboratories analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation and water matrices (Appendix D). The PE samples, supplied by Analytics Inc., Environmental Resource Associates (ERA) and DOE's 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 laboratory results and Analytics' known value. Since flag values are not assigned by Analytics, TBE-ES evaluates the reported ratios based on internal QC requirements, which are 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, NELAC, state specific 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.

   The MAPEP defines three levels of performance: Acceptable (flag = "A"), Acceptable with Warning (flag = "W"), and Not Acceptable (flag = "N"). Performance is considered acceptable when a mean result for the specified analyte is ± 20% of the reference value. Performance is acceptable with warning when a mean result falls in the range from ± 20% to ± 30% of the reference value (i.e., 20% < bias < 30%). If the bias is greater than 30%, the results are deemed not acceptable.

For the TBE laboratory, 12 out of 18 analytes met the specified acceptance criteria. Six analytes (Co-60, Gross Alpha, Gross Beta, Sr-89, Sr-90 and Zn-65) did not meet the specified acceptance criteria for the following reason:

1. Teledyne Brown Engineering's MAPEP March 2012 Co-60 in soil result of 7.61 Bq/kg was higher than the known value of 1.56 Bq/kg, resulting in a found to known ratio of 4.88 on a sensitivity evaluation. NCR 12-08 was initiated to investigate this failure. No cause could be found for the failure. TBE is monitoring the Co-60 in soil analyses on a case-to-case basis. Sensitivity evaluations are primarily a qualitative assessment. Since Cobalt-60 was not observed in any Radiological Environmental Monitoring Program (REMP) samples, there was no impact to client samples as a result of this issue.

2. Teledyne Brown Engineering's MAPEP March 2012 Zn-65 in AP result of 4.19 Bq/sample was higher than the known value of 2.99 Bq/sample, exceeding the upper control limit of 3.89 Bq/sample. NCR 12-08 was initiated to investigate this failure. No cause could be found for the failure and is considered an anomaly specific to the MAPEP sample. The first and second quarter 2012 Analytics AP Zn-65 analyses were acceptable. Since Zn-65 was not present in any REMP samples, there was no impact to client samples as a result of this issue.

3. Teledyne Brown Engineering's MAPEP September 2012 Sr-90 in water result of 19.6 pCi/L was higher than the known value of 12.2 pCi/L, exceeding the upper control limit of 15.9 pCi/L. NCR 12-11 was initiated to investigate this failure. An incorrect aliquot was entered into LIMS. Using the correct aliquot, the result would have fallen within the acceptance range. The failure was specific to the sample, therefore there was no impact to client samples as a result of this issue.

4. Teledyne Brown Engineering's ERA May 2012 Gross Alpha in water result of 82.4 pCi/L was higher than the known value of 62.9 pCi/L, which exceeded the upper control limit of 78.0 pCi/L. NCR 12-05 was initiated to investigate this failure. The G-1 detector is slightly biased high for Th-230 based measurements. The G-1 detector is used only for ERA samples. The detector was recalibrated. The failure was specific to the ERA sample, therefore there was no impact to client samples as a result of this issue.

5. Teledyne Brown Engineering's ERA November 2012 Gross Beta in water result of 59.3 pCi/L was higher than the known value of 39.2 pCi/L, which exceeded the upper control limit of 46.7 pCi/L. NCR 12-13 was initiated to investigate this failure. The rerun result of 44.8 fell within the control limits. It appears an incorrect aliquot was entered into LIMS. The failure was specific to the ERA sample,

therefore there was no impact to client samples as a result of this issue.

6. Teledyne Brown Engineering's ERA November 2012 Sr-89 in water result of 46.5 pCi/L was higher than the known value of 39.1 pCi/L, which exceeded the upper control limit of 46.1 pCi/L. NCR 12-13 was initiated to investigate this failure. The found to known ratio was 1.19, which TBE considers acceptable with warning, therefore there was no impact to client samples as a result of this issue.

For the EIML laboratory, 12 out of 14 analytes met the specified acceptance criteria. Two analytes (Gross Beta and Co-57) did not meet the specified acceptance criteria for the following reason:

1. Environmental Inc., Midwest Laboratory's ERA April 2012 GrossBeta in water result of 76.2 pCi/L was higher than the known value of 44.2 pCi/L, exceeding the upper control limit of 51.5 pCi/L. The reanalyzed result of 38.3 fell within the control limits. A sample dilution problem was suspected. The failure was specific to the ERA sample, therefore there was no impact to client samples as a result of this issue.

2. Environmental Inc., Midwest Laboratory's MAPEP August 2012 Co-57 in vegetation result of 7.44 pCi/L was higher than the known value of 5.66 pCi/L, exceeding the upper control limit of 7.36 pCi/L. The reanalyzed result of 6.74 fell within the control limits. The sample was recounted using a geometry more closely matched to the MAPEP sample size. The failure was specific to the MAPEP sample, therefore there was no impact to client samples as a result of this issue.

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

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY:	LASALLE			DOCKET NUMBER:		50-373 & 50-374 2012		
LOCATION OF FACILITY:	MARSEILLES, IL			REPORTING PERIOD:		ANNUAL		
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GR-B	24	4	7.8 (11/12) (6.3/10.4)	8.2 (11/12) (5.9/10.3)	8.2 (11/12) (5.9/10.3)	L-21 CONTROL ILLINOIS RIVER AT SENECA - UPSTREAM 4.0 MILES NE OF SITE	0
	H-3	8	200	542 (3/4) (183/1150)	797 (2/4) (543/1050)	797 (2/4) (543/1050)	L-21 CONTROL ILLINOIS RIVER AT SENECA - UPSTREAM 4.0 MILES NE OF SITE	0
	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

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	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 (PCI/LITER)	H-3	12	200	<LLD	<LLD	-		0
	GAMMA	12						
	MN-54		15	<LLD	<LLD	-		0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	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

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0
FISH (PCI/KG WET)	GAMMA	12						
	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

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FISH (PCI/KG WET)	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 (PCI/KG DRY)	GAMMA MN-54	6	NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	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

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	477	10	21 (422/424) (6/48)	21 (53/53) (9/49)	22 (53/53) (8/47)	L-01 INDICATOR NEARSITE 1 1.5 MILES NNW OF SITE	0
	GAMMA	36						
	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

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

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LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	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 (E-3 PCI/CU.METER)	GAMMA I-131	477	70	<LLD	<LLD	-		0
MILK (PCI/LITER)	I-131	19	1	NA	<LLD	-		0
	GAMMA MN-54	19	NA	NA	<LLD	-		0
	CO-58		NA	NA	<LLD	-		0

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	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

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				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	LA-140		15	NA	<LLD	-		0
VEGETATION (PCI/KG WET)	GAMMA MN-54	10	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

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE LASALLE COUNTY STATION, 2012

NAME OF FACILITY: LASALLE				DOCKET NUMBER: 50-373 & 50-374 2012				
LOCATION OF FACILITY: MARSEILLES, IL				REPORTING PERIOD: ANNUAL				
				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	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 (MREM/QUARTER)	OSLD-QUARTERLY	324	NA	22.3 (316/316) (12.3/29.8)	20.4 (8/8) (13.9/24.0)	27.2 (3/3) (24.8/29.8)	L-105-1 INDICATOR 0.7 MILES E	0

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APPENDIX B

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

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, LaSalle County Station, 2012

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-11	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	Diane Partridge	4.5 miles NE
Quadrant 2	Mike and Gina Welbourne	3.8 miles ESE
Quadrant 3	Michael Olson	1.5 miles WSW
Quadrant 4	Robert Eisers	4.5 miles NW
Control	Eugene Clements	10.0 miles NW

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, LaSalle County Station, 2012

Location	Location Description	Distance & Direction From Site
H. 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-11-1 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, 2012

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 Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Surface Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices Env. Inc., W(DS)-01 Determination of gross alpha and/or gross beta in water (dissolved solids or total residue)
Surface Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Ground/Well Water	Gamma Spectroscopy	Quarterly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Ground/Well Water	Tritium	Quarterly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Sediment	Gamma Spectroscopy	Semi-annual grab samples	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
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 Env. Inc., AP-02 Determination of gross alpha and/or gross beta in air particulate filters
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Air Iodine	Gamma Spectroscopy	Bi-weekly composite of continuous air sampling through charcoal filter	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., I-131-02 Determination of I-131 in charcoal canisters by gamma spectroscopy (batch method)
Milk	I-131	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2012 Radioiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by an ion exchange
Milk	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Food Products	Gamma Spectroscopy	Annual grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
OSLD	Optically Stimulated Luminescence Dosimetry	Quarterly OSLDs comprised of two Al_2O_3:C Landauer Incorporated elements.	Landauer Incorporated

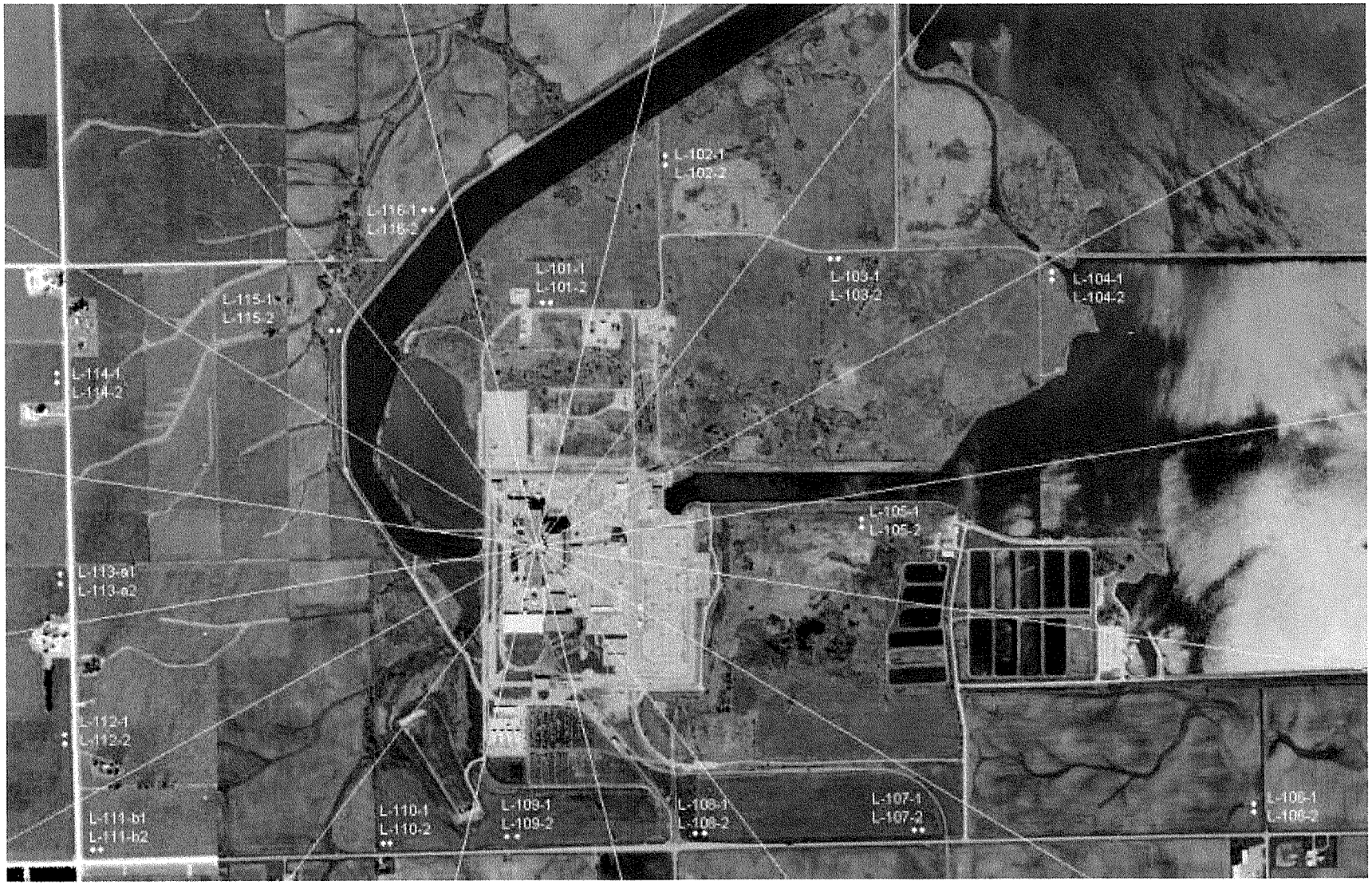


Figure B-1
Inner Ring OSLD Locations
of the LaSalle County Station, 2012

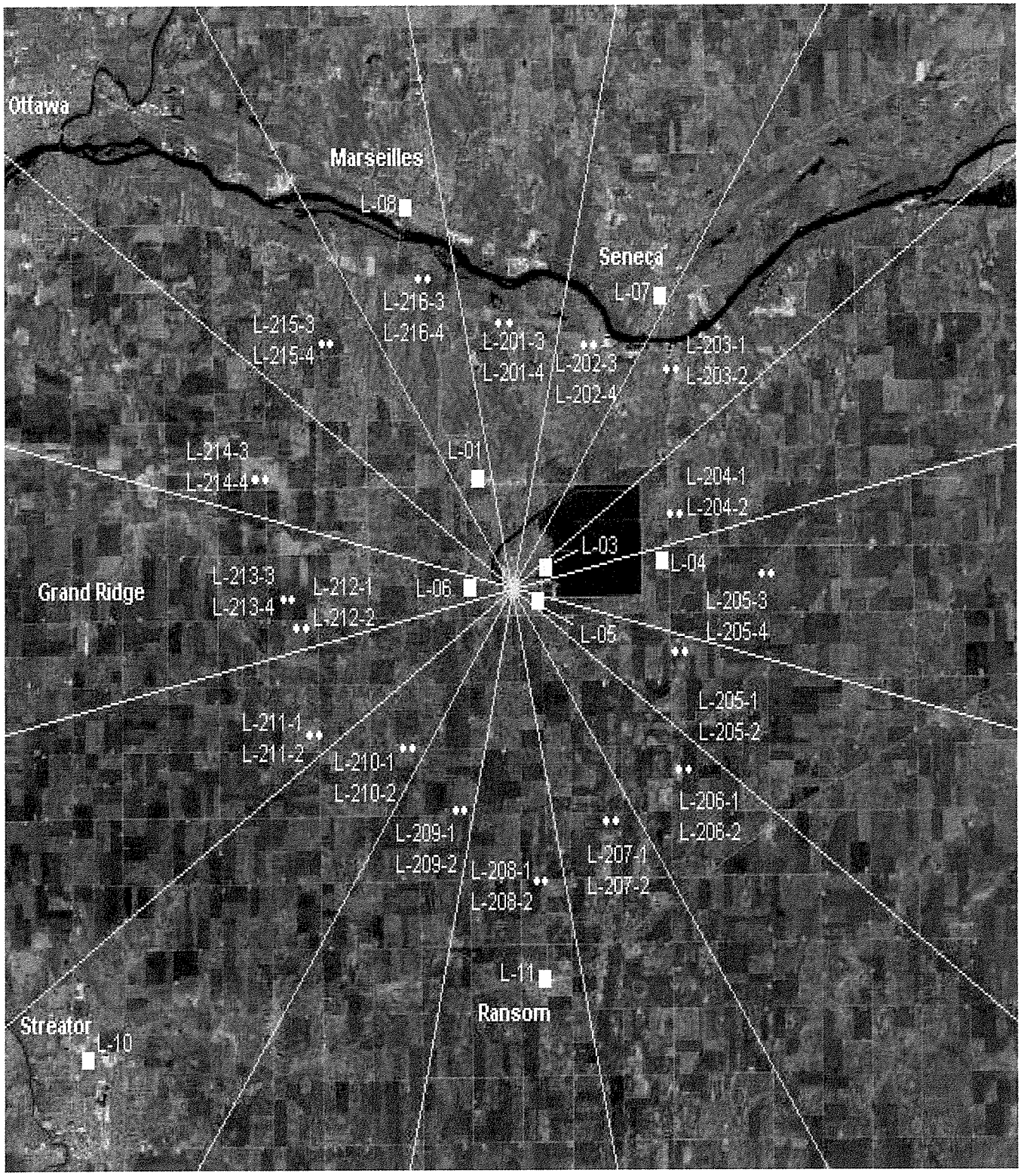


Figure B-2
Outer Ring OSLD Locations and Fixed Air Sampling Locations
of the LaSalle County Station, 2012

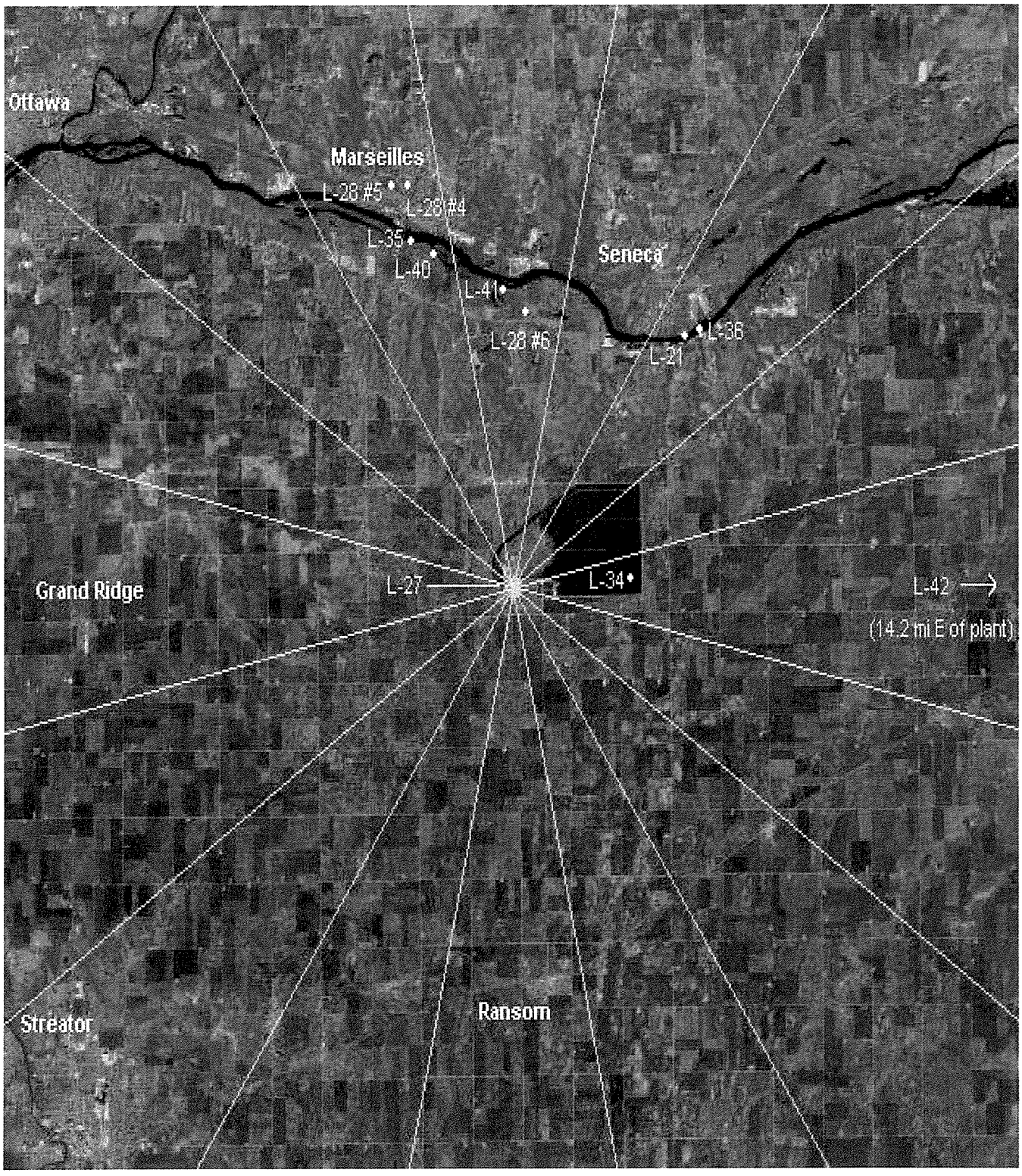


Figure B-3
Ingestion and Waterborne Exposure Pathway Sample Locations
of the LaSalle County Station, 2012

APPENDIX C

DATA TABLES AND FIGURES
PRIMARY LABORATORY

TABLE C-I.1 **CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	L-21	L-40
01/05/12 - 01/26/12	6.1 ± 1.6	6.3 ± 1.6
02/02/12 - 02/23/12	6.8 ± 1.9	7.6 ± 1.9
03/01/12 - 03/29/12	7.3 ± 2.8	6.8 ± 2.8
04/05/12 - 04/26/12	< 3.9	< 3.9
05/03/12 - 05/31/12	5.9 ± 1.5	7.3 ± 1.6
06/07/12 - 06/28/12	7.9 ± 1.7	7.5 ± 1.7
07/05/12 - 07/26/12	8.7 ± 1.9	7.3 ± 1.6
08/02/12 - 08/30/12	9.1 ± 1.9	8.8 ± 1.9
09/06/12 - 09/27/12	8.2 ± 1.7	8.1 ± 1.6
10/04/12 - 10/25/12	10.1 ± 1.8	8.3 ± 1.7
11/01/12 - 11/29/12	10.3 ± 1.9	10.4 ± 1.9
12/06/12 - 12/27/12	9.4 ± 2.1	7.6 ± 1.9
MEAN*	8.16 ± 3	7.81 ± 2.2

TABLE C-I.2 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	L-21	L-40
01/05/12 - 03/29/12	< 173	183 ± 115
04/05/12 - 06/28/12	543 ± 124	294 ± 109
07/05/12 - 09/27/12	< 177	< 179
10/04/12 - 12/27/12	1050 ± 169	1150 ± 178
MEAN*	797 ± 717	542 ± 1058

* THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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	01/05/12 - 01/26/12	< 2	< 3	< 8	< 3	< 6	< 3	< 6	< 13	< 3	< 3	< 24	< 8
	02/02/12 - 02/23/12	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 10	< 1	< 2	< 18	< 6
	03/01/12 - 03/29/12	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 11	< 2	< 2	< 17	< 6
	04/05/12 - 04/26/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 22	< 7
	05/03/12 - 05/31/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 14	< 1	< 2	< 21	< 6
	06/07/12 - 06/28/12	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 15	< 2	< 2	< 23	< 8
	07/05/12 - 07/26/12	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 13	< 2	< 2	< 21	< 7
	08/02/12 - 08/30/12	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 13	< 1	< 2	< 19	< 6
	09/06/12 - 09/27/12	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 14	< 2	< 2	< 21	< 4
	10/04/12 - 10/25/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 10	< 1	< 1	< 16	< 4
	11/01/12 - 11/29/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 19	< 7
	12/06/12 - 12/27/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 11	< 1	< 2	< 17	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-40	01/05/12 - 01/26/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 6
	02/02/12 - 02/23/12	< 1	< 2	< 4	< 2	< 3	< 2	< 4	< 12	< 2	< 2	< 19	< 5
	03/01/12 - 03/29/12	< 1	< 2	< 4	< 1	< 3	< 1	< 3	< 8	< 1	< 1	< 14	< 5
	04/05/12 - 04/26/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 23	< 6
	05/03/12 - 05/31/12	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 15	< 2	< 2	< 22	< 7
	06/07/12 - 06/28/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 21	< 7
	07/05/12 - 07/26/12	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 13	< 2	< 2	< 20	< 6
	08/02/12 - 08/30/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 12	< 1	< 1	< 17	< 6
	09/06/12 - 09/27/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 21	< 8
	10/04/12 - 10/25/12	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 1	< 2	< 16	< 6
	11/01/12 - 11/29/12	< 1	< 1	< 3	< 1	< 2	< 1	< 3	< 11	< 1	< 1	< 17	< 5
	12/06/12 - 12/27/12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 7	< 1	< 1	< 12	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.1 **CONCENTRATIONS OF TRITIUM IN GROUND/WELL WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	L-27	L-28-W4	L-28-W5	L-28-W6
01/12/12 - 01/12/12	< 184	< 181		< 181
04/12/12 - 04/12/12	< 170		< 170	< 168
07/12/12 - 07/12/12	< 160	< 160		< 160
10/11/12 - 10/11/12	< 160	< 161		< 160
MEAN	-	-	-	-

TABLE C-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUND/WELL WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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	01/12/12 - 01/12/12	< 6	< 7	< 12	< 6	< 11	< 7	< 12	< 6	< 5	< 37	< 12
	04/12/12 - 04/12/12	< 4	< 4	< 7	< 4	< 8	< 4	< 7	< 3	< 4	< 22	< 6
	07/12/12 - 07/12/12	< 3	< 3	< 7	< 4	< 7	< 4	< 5	< 3	< 4	< 15	< 6
	10/11/12 - 10/11/12	< 5	< 6	< 10	< 6	< 13	< 7	< 11	< 5	< 6	< 37	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W4	01/12/12 - 01/12/12	< 5	< 4	< 13	< 6	< 10	< 6	< 7	< 5	< 6	< 28	< 11
	07/12/12 - 07/12/12	< 4	< 4	< 8	< 5	< 8	< 4	< 8	< 4	< 5	< 26	< 8
	10/11/12 - 10/11/12	< 4	< 6	< 10	< 5	< 11	< 6	< 8	< 4	< 5	< 30	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W5	04/12/12 - 04/12/12	< 5	< 5	< 9	< 3	< 12	< 5	< 9	< 5	< 6	< 34	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W6	01/12/12 - 01/12/12	< 5	< 7	< 13	< 6	< 9	< 5	< 8	< 4	< 5	< 37	< 12
	04/12/12 - 04/12/12	< 5	< 4	< 8	< 5	< 13	< 3	< 9	< 4	< 4	< 25	< 7
	07/12/12 - 07/12/12	< 3	< 4	< 8	< 4	< 8	< 4	< 8	< 4	< 4	< 23	< 6
	10/11/12 - 10/11/12	< 4	< 4	< 8	< 4	< 7	< 5	< 7	< 3	< 4	< 25	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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												
Blue catfish	05/09/12	< 38	< 27	< 64	< 30	< 68	< 40	< 56	< 36	< 34	< 263	< 100
Common Carp	05/09/12	< 45	< 36	< 111	< 54	< 107	< 53	< 63	< 46	< 49	< 355	< 96
Common Carp	10/03/12	< 54	< 46	< 144	< 44	< 92	< 48	< 100	< 43	< 42	< 502	< 169
Largemouth Bass	10/03/12	< 60	< 88	< 199	< 70	< 144	< 81	< 135	< 72	< 70	< 918	< 213
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-35												
Freshwater Drum	05/09/12	< 56	< 59	< 112	< 52	< 83	< 57	< 80	< 49	< 64	< 418	< 126
Smallmouth Buffalo	05/09/12	< 42	< 42	< 103	< 57	< 97	< 45	< 78	< 39	< 43	< 310	< 115
Channel Catfish	10/03/12	< 52	< 59	< 131	< 58	< 85	< 61	< 95	< 48	< 43	< 647	< 172
Smallmouth Buffalo	10/03/12	< 82	< 99	< 243	< 78	< 184	< 115	< 182	< 73	< 104	< 860	< 327
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-36												
Channel Catfish	05/09/12	< 63	< 73	< 180	< 80	< 148	< 74	< 120	< 57	< 60	< 442	< 160
Freshwater Drum	05/09/12	< 36	< 38	< 80	< 37	< 76	< 40	< 67	< 36	< 37	< 290	< 79
Channel Catfish	10/03/12	< 55	< 53	< 134	< 53	< 106	< 64	< 102	< 52	< 40	< 626	< 230
Smallmouth Buffalo	10/03/12	< 66	< 64	< 137	< 56	< 132	< 86	< 92	< 52	< 64	< 756	< 177
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IV.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012

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	05/10/12	< 64	< 77	< 168	< 73	< 165	< 83	< 132	< 62	< 71	< 860	< 320
	10/04/12	< 65	< 71	< 187	< 81	< 159	< 93	< 132	< 61	< 89	< 765	< 143
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-40	05/10/12	< 56	< 56	< 134	< 64	< 126	< 72	< 111	< 55	< 76	< 387	< 119
	10/04/12	< 38	< 41	< 95	< 52	< 98	< 43	< 72	< 34	< 38	< 376	< 127
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-41	05/10/12	< 37	< 34	< 101	< 51	< 86	< 37	< 65	< 35	< 43	< 222	< 68
	10/04/12	< 39	< 43	< 117	< 55	< 113	< 56	< 94	< 35	< 52	< 429	< 126
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012

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-11	L-10
12/29/11 - 01/05/12	16 ± 4	18 ± 4	22 ± 5	19 ± 4	15 ± 4	19 ± 4	23 ± 5	16 ± 4	14 ± 4
01/05/12 - 01/12/12	24 ± 5	20 ± 4	22 ± 5	22 ± 5	23 ± 5	21 ± 5	21 ± 4	24 ± 5	27 ± 5
01/12/12 - 01/19/12	20 ± 4	24 ± 5	28 ± 5	24 ± 4	22 ± 4	19 ± 4	22 ± 4	20 ± 4	21 ± 4
01/19/12 - 01/26/12	27 ± 5	26 ± 5	27 ± 5	20 ± 4	25 ± 5	26 ± 5	27 ± 5	27 ± 5	25 ± 5
01/26/12 - 02/02/12	16 ± 4	17 ± 4	18 ± 4	18 ± 4	17 ± 4	20 ± 4	16 ± 4	14 ± 4	17 ± 4
02/02/12 - 02/09/12	16 ± 4	19 ± 4	19 ± 4	20 ± 4	17 ± 4	17 ± 4	19 ± 4	(1) 17 ± 4	20 ± 4
02/09/12 - 02/16/12	15 ± 4	17 ± 4	18 ± 4	15 ± 4	16 ± 4	17 ± 4	17 ± 4	18 ± 4	18 ± 4
02/16/12 - 02/23/12	18 ± 4	17 ± 4	19 ± 4	19 ± 4	11 ± 4	16 ± 4	20 ± 5	16 ± 4	22 ± 5
02/23/12 - 03/01/12	24 ± 5	(1) 22 ± 5	21 ± 5	22 ± 5	14 ± 5	22 ± 5	25 ± 5	23 ± 5	(1) 19 ± 5
03/01/12 - 03/08/12	16 ± 5	15 ± 5	18 ± 5	21 ± 5	15 ± 5	18 ± 5	18 ± 5	19 ± 5	15 ± 5
03/08/12 - 03/15/12	22 ± 5	21 ± 5	17 ± 5	19 ± 5	20 ± 5	14 ± 5	18 ± 5	17 ± 5	22 ± 5
03/15/12 - 03/22/12	15 ± 3	11 ± 3	15 ± 3	13 ± 3	12 ± 3	13 ± 3	16 ± 3	12 ± 3	13 ± 3
03/22/12 - 03/29/12	15 ± 4	14 ± 4	15 ± 4	16 ± 4	13 ± 4	16 ± 4	15 ± 4	14 ± 4	14 ± 4
03/29/12 - 04/05/12	10 ± 4	12 ± 4	12 ± 4	12 ± 4	11 ± 4	10 ± 4	12 ± 4	12 ± 4	13 ± 4
04/05/12 - 04/12/12	13 ± 4	13 ± 4	17 ± 4	15 ± 4	12 ± 4	13 ± 4	(1) 19 ± 4	14 ± 4	15 ± 4
04/12/12 - 04/19/12	20 ± 4	16 ± 4	18 ± 4	19 ± 4	19 ± 4	17 ± 4	16 ± 4	14 ± 4	21 ± 4
04/19/12 - 04/26/12	14 ± 4	16 ± 4	15 ± 4	18 ± 5	15 ± 4	14 ± 4	15 ± 4	13 ± 4	15 ± 4
04/26/12 - 05/03/12	17 ± 5	20 ± 5	17 ± 5	18 ± 5	20 ± 5	17 ± 5	< 5	18 ± 5	22 ± 5
05/03/12 - 05/10/12	6 ± 3	12 ± 4	(1) 12 ± 3	< 9	(1) 14 ± 6	(1) 6 ± 3	10 ± 4	(1) 10 ± 3	9 ± 3
05/10/12 - 05/17/12	12 ± 4	14 ± 6	(1) 15 ± 4	19 ± 5	13 ± 4	15 ± 4	13 ± 4	14 ± 4	11 ± 4
05/17/12 - 05/24/12	17 ± 4	19 ± 4	25 ± 5	16 ± 4	21 ± 4	19 ± 4	20 ± 4	16 ± 4	24 ± 5
05/24/12 - 05/31/12	16 ± 4	13 ± 4	(1) 21 ± 5	15 ± 4	17 ± 4	20 ± 4	16 ± 4	17 ± 4	17 ± 4
05/31/12 - 06/07/12	11 ± 4	13 ± 4	8 ± 3	14 ± 4	14 ± 4	8 ± 4	16 ± 4	12 ± 4	12 ± 4
06/07/12 - 06/14/12	15 ± 4	15 ± 4	17 ± 4	17 ± 4	16 ± 4	18 ± 4	17 ± 4	17 ± 4	13 ± 4
06/14/12 - 06/21/12	15 ± 4	15 ± 4	16 ± 4	18 ± 4	17 ± 4	17 ± 4	18 ± 4	16 ± 4	16 ± 4
06/21/12 - 06/28/12	14 ± 4	15 ± 4	(1) 14 ± 4	19 ± 4	18 ± 4	16 ± 4	16 ± 4	18 ± 4	17 ± 4
06/28/12 - 07/05/12	28 ± 5	28 ± 5	31 ± 6	(1) 10 ± 4	25 ± 5	31 ± 5	35 ± 5	25 ± 5	27 ± 5
07/05/12 - 07/12/12	18 ± 4	15 ± 4	22 ± 5	18 ± 4	20 ± 4	20 ± 4	19 ± 4	18 ± 4	20 ± 4
07/12/12 - 07/19/12	19 ± 5	15 ± 5	17 ± 5	22 ± 5	20 ± 5	19 ± 5	18 ± 5	17 ± 5	20 ± 5
07/19/12 - 07/26/12	21 ± 5	14 ± 4	24 ± 5	18 ± 5	23 ± 5	20 ± 5	21 ± 5	18 ± 5	20 ± 5
07/26/12 - 08/02/12	22 ± 5	21 ± 5	25 ± 5	21 ± 4	19 ± 4	25 ± 5	21 ± 4	18 ± 4	18 ± 4
08/02/12 - 08/09/12	27 ± 5	20 ± 4	25 ± 5	24 ± 5	27 ± 5	28 ± 5	26 ± 5	29 ± 5	26 ± 5
08/09/12 - 08/16/12	17 ± 4	19 ± 4	21 ± 5	22 ± 5	17 ± 4	21 ± 5	18 ± 4	22 ± 5	25 ± 5
08/16/12 - 08/23/12	16 ± 4	17 ± 4	17 ± 4	15 ± 4	24 ± 5	18 ± 4	19 ± 4	19 ± 4	22 ± 5
08/23/12 - 08/30/12	25 ± 5	26 ± 5	31 ± 5	30 ± 5	31 ± 5	35 ± 6	28 ± 5	26 ± 5	31 ± 5
08/30/12 - 09/06/12	21 ± 4	22 ± 4	23 ± 4	25 ± 5	24 ± 5	24 ± 5	23 ± 4	20 ± 4	20 ± 4
09/06/12 - 09/13/12	21 ± 5	18 ± 4	23 ± 5	22 ± 5	17 ± 4	25 ± 5	23 ± 5	18 ± 4	22 ± 5
09/13/12 - 09/20/12	21 ± 4	22 ± 4	21 ± 4	22 ± 4	19 ± 4	23 ± 4	28 ± 5	25 ± 5	22 ± 4
09/20/12 - 09/27/12	20 ± 4	25 ± 5	23 ± 5	19 ± 4	18 ± 4	19 ± 4	20 ± 4	22 ± 5	25 ± 5
09/27/12 - 10/04/12	18 ± 5	19 ± 5	24 ± 5	26 ± 5	19 ± 5	20 ± 5	22 ± 5	24 ± 5	27 ± 5
10/04/12 - 10/11/12	17 ± 4	20 ± 5	17 ± 4	19 ± 5	13 ± 4	13 ± 4	17 ± 4	14 ± 4	13 ± 4
10/11/12 - 10/18/12	25 ± 5	24 ± 5	24 ± 5	29 ± 5	27 ± 5	27 ± 5	32 ± 6	26 ± 5	24 ± 5
10/18/12 - 10/25/12	21 ± 5	20 ± 5	17 ± 5	22 ± 5	16 ± 5	20 ± 5	20 ± 5	20 ± 5	24 ± 5
10/25/12 - 11/01/12	14 ± 4	17 ± 4	16 ± 4	13 ± 4	13 ± 4	13 ± 4	14 ± 4	14 ± 4	14 ± 4
11/01/12 - 11/08/12	15 ± 4	17 ± 4	17 ± 5	14 ± 4	14 ± 4	20 ± 5	17 ± 4	14 ± 4	18 ± 5
11/08/12 - 11/15/12	21 ± 5	24 ± 5	25 ± 5	21 ± 5	23 ± 5	22 ± 5	23 ± 5	24 ± 5	23 ± 5
11/15/12 - 11/21/12	35 ± 6	40 ± 6	44 ± 7	48 ± 7	39 ± 6	46 ± 7	43 ± 6	45 ± 7	44 ± 7
11/21/12 - 11/29/12	36 ± 5	38 ± 5	41 ± 5	34 ± 5	31 ± 5	36 ± 5	38 ± 5	29 ± 5	36 ± 5
11/29/12 - 12/06/12	30 ± 5	32 ± 5	32 ± 5	31 ± 5	30 ± 5	37 ± 5	28 ± 5	30 ± 5	32 ± 5
12/06/12 - 12/13/12	25 ± 5	25 ± 5	22 ± 5	25 ± 5	24 ± 5	27 ± 5	23 ± 5	24 ± 5	28 ± 5
12/13/12 - 12/20/12	34 ± 6	33 ± 6	37 ± 6	35 ± 6	31 ± 5	36 ± 6	40 ± 6	34 ± 6	34 ± 6
12/20/12 - 12/27/12	23 ± 5	22 ± 5	26 ± 5	20 ± 5	26 ± 5	28 ± 5	24 ± 5	22 ± 5	24 ± 5
12/27/12 - 01/03/13	43 ± 6	44 ± 6	47 ± 6	43 ± 6	43 ± 6	44 ± 6	47 ± 6	40 ± 6	49 ± 6
MEAN	20 ± 14	20 ± 14	22 ± 15	21 ± 14	20 ± 14	21 ± 16	22 ± 15	20 ± 14	21 ± 16

* THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

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, 2012

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

GROUP I - NEAR-SITE LOCATIONS				GROUP II - FAR-FIELD 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
12/29/11 - 02/02/12	16	27	21 ± 8	12/29/11 - 02/02/12	18	28	22 ± 7	12/29/11 - 02/02/12	14	27	21 ± 8	12/29/11 - 02/02/12	14	27	21 ± 11
02/02/12 - 03/01/12	15	24	18 ± 6	02/02/12 - 03/01/12	15	22	19 ± 4	02/02/12 - 03/01/12	11	25	18 ± 7	02/02/12 - 03/01/12	18	22	20 ± 4
03/01/12 - 03/29/12	11	22	16 ± 7	03/01/12 - 03/29/12	13	21	17 ± 5	03/01/12 - 03/29/12	12	20	16 ± 5	03/01/12 - 03/29/12	13	22	16 ± 8
03/29/12 - 05/03/12	10	20	15 ± 7	03/29/12 - 05/03/12	12	19	16 ± 5	03/29/12 - 05/03/12	10	20	15 ± 6	03/29/12 - 05/03/12	13	22	17 ± 8
05/03/12 - 05/31/12	6	19	14 ± 8	05/03/12 - 05/31/12	12	25	18 ± 9	05/03/12 - 05/31/12	6	21	15 ± 8	05/03/12 - 05/31/12	9	24	15 ± 13
05/31/12 - 06/28/12	11	15	14 ± 3	05/31/12 - 06/28/12	8	19	15 ± 7	05/31/12 - 06/28/12	8	18	16 ± 5	05/31/12 - 06/28/12	12	17	15 ± 5
06/28/12 - 08/02/12	14	28	20 ± 10	06/28/12 - 08/02/12	10	31	21 ± 11	06/28/12 - 08/02/12	17	35	22 ± 9	06/28/12 - 08/02/12	18	27	21 ± 7
08/02/12 - 08/30/12	16	27	21 ± 9	08/02/12 - 08/30/12	15	31	23 ± 11	08/02/12 - 08/30/12	17	35	24 ± 11	08/02/12 - 08/30/12	22	31	26 ± 8
08/30/12 - 09/27/12	18	25	21 ± 4	08/30/12 - 09/27/12	19	25	22 ± 4	08/30/12 - 09/27/12	17	28	22 ± 6	08/30/12 - 09/27/12	20	25	22 ± 4
09/27/12 - 11/01/12	14	25	20 ± 7	09/27/12 - 11/01/12	13	29	21 ± 10	09/27/12 - 11/01/12	13	32	19 ± 11	09/27/12 - 11/01/12	13	27	20 ± 13
11/01/12 - 11/29/12	15	40	28 ± 20	11/01/12 - 11/29/12	14	48	31 ± 26	11/01/12 - 11/29/12	14	46	29 ± 22	11/01/12 - 11/29/12	18	44	30 ± 24
11/29/12 - 01/03/13	22	44	31 ± 16	11/29/12 - 01/03/13	20	47	32 ± 17	11/29/12 - 01/03/13	22	47	32 ± 15	11/29/12 - 01/03/13	24	49	33 ± 19
12/29/11 - 01/03/13	6	44	20 ± 14	12/29/11 - 01/03/13	8	48	21 ± 15	12/29/11 - 01/03/13	6	47	21 ± 15	12/29/11 - 01/03/13	9	49	21 ± 16

* THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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	12/29/11 - 03/29/12	< 2	< 6	< 20	< 3	< 7	< 6	< 11	< 4	< 3	< 848	< 242
	03/29/12 - 06/28/12	< 2	< 4	< 14	< 3	< 7	< 5	< 7	< 2	< 2	< 435	< 190
	06/28/12 - 09/27/12	< 4	< 5	< 21	< 4	< 11	< 10	< 11	< 3	< 3	< 1629	< 780
	09/27/12 - 01/03/13	< 2	< 4	< 14	< 2	< 4	< 4	< 7	< 2	< 2	< 364	< 117
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-03	12/29/11 - 03/29/12	< 3	< 6	< 11	< 3	< 7	< 6	< 8	< 2	< 2	< 444	< 215
	03/29/12 - 06/28/12	< 3	< 3	< 13	< 2	< 6	< 5	< 9	< 2	< 2	< 461	< 168
	06/28/12 - 09/27/12	< 4	< 6	< 15	< 4	< 11	< 11	< 12	< 4	< 4	< 2153	< 766
	09/27/12 - 01/03/13	< 2	< 4	< 14	< 3	< 4	< 4	< 9	< 3	< 3	< 430	< 117
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-04	12/29/11 - 03/29/12	< 2	< 5	< 12	< 3	< 7	< 5	< 8	< 2	< 2	< 505	< 98
	03/29/12 - 06/28/12	< 3	< 4	< 15	< 3	< 7	< 5	< 10	< 3	< 2	< 485	< 174
	06/28/12 - 09/27/12	< 3	< 7	< 24	< 3	< 6	< 5	< 10	< 3	< 2	< 1248	< 475
	09/27/12 - 01/03/13	< 3	< 4	< 10	< 3	< 7	< 4	< 8	< 1	< 3	< 331	< 176
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-05	12/29/11 - 03/29/12	< 3	< 7	< 18	< 2	< 8	< 6	< 10	< 3	< 3	< 551	< 229
	03/29/12 - 06/28/12	< 3	< 5	< 17	< 3	< 7	< 5	< 9	< 3	< 2	< 382	< 84
	06/28/12 - 09/27/12	< 4	< 5	< 20	< 4	< 13	< 8	< 13	< 4	< 3	< 1975	< 830
	09/27/12 - 01/03/13	< 3	< 4	< 11	< 2	< 6	< 4	< 9	< 2	< 2	< 417	< 166
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-06	12/29/11 - 03/29/12	< 4	< 6	< 16	< 3	< 10	< 7	< 13	< 4	< 3	< 819	< 246
	03/29/12 - 06/28/12	< 3	< 6	< 15	< 2	< 6	< 4	< 8	< 2	< 3	< 276	< 180
	06/28/12 - 09/27/12	< 3	< 8	< 25	< 4	< 8	< 10	< 14	< 4	< 3	< 2170	< 639
	09/27/12 - 01/03/13	< 3	< 6	< 13	< 3	< 6	< 5	< 9	< 2	< 3	< 523	< 167
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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	12/29/11 - 03/29/12	< 2	< 4	< 12	< 2	< 6	< 3	< 9	< 2	< 2	< 336	< 178
	03/29/12 - 06/28/12	< 3	< 4	< 12	< 3	< 7	< 5	< 12	< 2	< 3	< 491	< 178
	06/28/12 - 09/27/12	< 3	< 6	< 22	< 3	< 6	< 5	< 9	< 3	< 2	< 1509	< 831
	09/27/12 - 01/03/13	< 2	< 5	< 12	< 3	< 6	< 5	< 9	< 3	< 2	< 460	< 185
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-08	12/29/11 - 03/29/12	< 1	< 3	< 9	< 2	< 5	< 4	< 6	< 2	< 2	< 567	< 90
	03/29/12 - 06/28/12	< 2	< 5	< 15	< 3	< 6	< 7	< 10	< 2	< 2	< 362	< 105
	06/28/12 - 09/27/12	< 3	< 5	< 22	< 2	< 6	< 6	< 12	< 3	< 2	< 1510	< 386
	09/27/12 - 01/03/13	< 2	< 3	< 12	< 2	< 5	< 4	< 7	< 2	< 2	< 370	< 205
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-10	12/29/11 - 03/29/12	< 4	< 6	< 15	< 4	< 9	< 7	< 11	< 4	< 3	< 837	< 295
	03/29/12 - 06/28/12	< 2	< 5	< 15	< 2	< 5	< 6	< 7	< 2	< 2	< 490	< 111
	06/28/12 - 09/27/12	< 2	< 7	< 25	< 4	< 11	< 6	< 11	< 3	< 3	< 1695	< 800
	09/27/12 - 01/03/13	< 2	< 3	< 14	< 2	< 7	< 5	< 8	< 3	< 2	< 368	< 84
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-11	12/29/11 - 03/29/12	< 2	< 5	< 22	< 3	< 5	< 6	< 11	< 3	< 2	< 619	< 226
	03/29/12 - 06/28/12	< 3	< 5	< 15	< 3	< 9	< 5	< 10	< 3	< 3	< 487	< 166
	06/28/12 - 09/27/12	< 4	< 5	< 18	< 3	< 9	< 7	< 11	< 3	< 2	< 1874	< 605
	09/27/12 - 01/03/13	< 2	< 3	< 11	< 2	< 4	< 4	< 7	< 2	< 2	< 354	< 166
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012

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-11	L-10
12/29/11 - 01/05/12	< 44	< 42	< 44	< 55	< 44	< 55	< 23	< 53	< 55
01/05/12 - 01/12/12	< 58	< 58	< 31	< 58	< 58	< 55	< 54	< 54	< 54
01/12/12 - 01/19/12	< 63	< 63	< 62	< 59	< 63	< 64	< 64	< 59	< 34
01/19/12 - 01/26/12	< 40	< 40	< 17	< 40	< 40	< 33	< 33	< 33	< 33
01/26/12 - 02/02/12	< 19	< 19	< 19	< 20	< 19	< 20	< 20	< 8	< 20
02/02/12 - 02/09/12	< 37	< 37	< 14	< 37	< 37	< 34	< 35 (1)	< 35	< 35
02/09/12 - 02/16/12	< 60	< 60	< 23	< 60	< 60	< 67	< 67	< 67	< 67
02/16/12 - 02/23/12	< 18	< 18	< 7	< 18	< 18	< 34	< 34	< 34	< 34
02/23/12 - 03/01/12	< 35 (1)	< 34	< 33	< 34	< 15	< 27	< 27	< 27 (1)	< 27
03/01/12 - 03/08/12	< 54	< 55	< 32	< 54	< 54	< 67	< 66	< 66	< 66
03/08/12 - 03/15/12	< 52	< 21	< 52	< 54	< 52	< 70	< 70	< 69	< 69
03/15/12 - 03/22/12	< 49	< 49	< 21	< 49	< 49	< 34	< 34	< 34	< 34
03/22/12 - 03/29/12	< 47	< 47	< 47	< 17	< 47	< 58	< 58	< 58	< 58
03/29/12 - 04/05/12	< 62	< 60	< 62	< 23	< 62	< 65	< 65	< 65	< 65
04/05/12 - 04/12/12	< 50	< 50	< 50	< 30	< 50	< 31 (1)	< 16	< 30	< 30
04/12/12 - 04/19/12	< 32	< 32	< 13	< 32	< 32	< 3	< 31	< 31	< 31
04/19/12 - 04/26/12	< 30	< 30	< 30	< 40	< 30	< 40	< 40	< 40	< 22
04/26/12 - 05/03/12	< 45	< 45	< 45	< 27	< 45	< 60	< 60	< 59	< 60
05/03/12 - 05/10/12	< 27	< 63 (1)	< 26	< 68 (1)	< 55 (1)	< 33	< 65 (1)	< 14	< 32
05/10/12 - 05/17/12	< 22	< 33 (1)	< 10	< 21	< 21	< 18	< 18	< 18	< 18
05/17/12 - 05/24/12	< 64	< 69	< 28	< 64	< 63	< 65	< 64	< 64	< 64
05/24/12 - 05/31/12	< 60	< 59 (1)	< 59	< 49	< 59	< 49	< 49	< 19	< 49
05/31/12 - 06/07/12	< 23	< 61	< 58	< 60	< 60	< 68	< 68	< 67	< 68
06/07/12 - 06/14/12	< 61	< 61	< 25	< 63	< 60	< 66	< 65	< 65	< 65
06/14/12 - 06/21/12	< 32	< 32	< 31	< 32	< 12	< 52	< 51	< 51	< 51
06/21/12 - 06/28/12	< 61	< 62 (1)	< 30	< 59	< 59	< 55	< 54	< 54	< 54
06/28/12 - 07/05/12	< 61	< 28	< 65 (1)	< 62	< 62	< 53	< 53	< 53	< 53
07/05/12 - 07/12/12	< 69	< 69	< 28	< 68	< 68	< 61	< 59	< 60	< 60
07/12/12 - 07/19/12	< 60	< 27	< 58	< 26	< 59	< 62	< 62	< 62	< 62
07/19/12 - 07/26/12	< 40	< 40	< 15	< 40	< 40	< 51	< 51	< 50	< 50
07/26/12 - 08/02/12	< 57	< 57	< 57	< 24	< 57	< 53	< 53	< 53	< 53
08/02/12 - 08/09/12	< 43	< 44	< 18	< 43	< 43	< 50	< 49	< 49	< 49
08/09/12 - 08/16/12	< 25	< 25	< 25	< 39	< 25	< 17	< 39	< 39	< 39
08/16/12 - 08/23/12	< 43	< 43	< 18	< 43	< 43	< 33	< 33	< 32	< 32
08/23/12 - 08/30/12	< 58	< 58	< 57	< 61	< 57	< 62	< 26	< 61	< 61
08/30/12 - 09/06/12	< 69	< 69	< 26	< 69	< 68	< 53	< 52	< 52	< 52
09/06/12 - 09/13/12	< 58	< 58	< 58	< 50	< 58	< 50	< 50	< 50	< 21
09/13/12 - 09/20/12	< 32	< 32	< 17	< 32	< 32	< 46	< 49	< 49	< 49
09/20/12 - 09/27/12	< 46	< 47	< 47	< 66	< 46	< 69	< 68	< 26	< 68
09/27/12 - 10/04/12	< 53	< 51	< 28	< 52	< 53	< 49	< 48	< 47	< 47
10/04/12 - 10/11/12	< 55	< 55	< 30	< 55	< 54	< 56	< 56	< 55	< 55
10/11/12 - 10/18/12	< 34	< 34	< 34	< 13	< 34	< 33	< 33	< 33	< 33
10/18/12 - 10/25/12	< 29	< 56	< 56	< 56	< 56	< 40	< 40	< 40	< 40
10/25/12 - 11/01/12	< 46	< 46	< 18	< 46	< 46	< 70	< 69	< 69	< 69
11/01/12 - 11/08/12	< 62	< 62	< 62	< 62	< 24	< 54	< 53	< 53	< 53
11/08/12 - 11/15/12	< 64	< 64	< 25	< 63	< 63	< 63	< 63	< 63	< 63
11/15/12 - 11/21/12	< 68	< 27	< 68	< 68	< 68	< 49	< 48	< 48	< 48
11/21/12 - 11/29/12	< 50	< 50	< 50	< 38	< 50	< 37	< 38	< 38	< 38
11/29/12 - 12/06/12	< 49	< 49	< 49	< 19	< 49	< 31	< 31	< 31	< 31
12/06/12 - 12/13/12	< 44	< 44	< 24	< 44	< 44	< 45	< 45	< 45	< 45
12/13/12 - 12/20/12	< 46	< 46	< 46	< 41	< 46	< 17	< 40	< 40	< 40
12/20/12 - 12/27/12	< 49	< 50	< 21	< 50	< 50	< 44	< 44	< 44	< 44
12/27/12 - 01/03/13	< 67	< 67	< 68	< 56	< 66	< 52	< 24	< 51	< 51
MEAN	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	CONTROL FARM L-42
01/05/12	< 0.6
02/02/12	< 0.6
03/01/12	< 0.5
04/05/12	< 0.4
05/03/12	< 0.5
05/17/12	< 0.5
05/31/12	< 0.5
06/14/12	< 0.8
06/26/12	< 0.5
07/12/12	< 0.7
07/26/12	< 0.8
08/09/12	< 0.7
08/23/12	< 0.7
09/06/12	< 0.8
09/20/12	< 0.6
10/04/12	< 0.8
10/18/12	< 0.7
11/01/12	< 0.7
12/07/12	< 0.5
MEAN	-

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012

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	01/05/12	< 9	< 9	< 23	< 12	< 20	< 11	< 16	< 9	< 9	< 43	< 13
	02/02/12	< 6	< 6	< 14	< 8	< 12	< 7	< 9	< 5	< 6	< 39	< 11
	03/01/12	< 4	< 4	< 11	< 5	< 10	< 4	< 8	< 4	< 4	< 24	< 8
	04/05/12	< 7	< 7	< 18	< 9	< 16	< 7	< 14	< 6	< 7	< 44	< 13
	05/03/12	< 9	< 7	< 13	< 5	< 17	< 9	< 15	< 7	< 8	< 52	< 12
	05/17/12	< 5	< 5	< 13	< 5	< 12	< 5	< 9	< 4	< 5	< 26	< 9
	05/31/12	< 5	< 5	< 14	< 7	< 13	< 5	< 8	< 4	< 5	< 31	< 10
	06/14/12	< 5	< 6	< 12	< 6	< 12	< 6	< 8	< 5	< 5	< 33	< 9
	06/26/12	< 6	< 7	< 17	< 8	< 15	< 7	< 12	< 6	< 6	< 31	< 10
	07/12/12	< 5	< 6	< 14	< 7	< 12	< 6	< 8	< 5	< 6	< 38	< 12
	07/26/12	< 6	< 6	< 15	< 8	< 14	< 7	< 12	< 5	< 6	< 50	< 13
	08/09/12	< 4	< 5	< 10	< 5	< 10	< 4	< 8	< 4	< 5	< 19	< 7
	08/23/12	< 5	< 5	< 14	< 7	< 12	< 7	< 11	< 4	< 6	< 38	< 12
	09/06/12	< 5	< 5	< 12	< 6	< 11	< 5	< 9	< 5	< 5	< 30	< 10
	09/20/12	< 8	< 8	< 17	< 8	< 15	< 8	< 14	< 6	< 8	< 42	< 13
	10/04/12	< 6	< 6	< 13	< 6	< 13	< 6	< 11	< 6	< 6	< 36	< 11
	10/18/12	< 6	< 5	< 13	< 7	< 13	< 6	< 10	< 5	< 6	< 37	< 11
	11/01/12	< 6	< 6	< 14	< 7	< 12	< 5	< 10	< 5	< 6	< 41	< 12
	12/07/12	< 5	< 4	< 13	< 6	< 10	< 5	< 10	< 4	< 5	< 29	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VIII.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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-CONTROL													
Beet greens	09/15/12	< 16	< 14	< 44	< 22	< 34	< 14	< 29	< 39	< 14	< 17	< 94	< 21
Beets	09/15/12	< 10	< 11	< 26	< 15	< 27	< 12	< 20	< 23	< 10	< 11	< 59	< 13
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 1													
Cabbage	09/15/12	< 11	< 12	< 30	< 16	< 28	< 12	< 21	< 28	< 10	< 13	< 68	< 20
Radishes	09/20/12	< 14	< 16	< 40	< 19	< 33	< 17	< 32	< 50	< 13	< 15	< 101	< 26
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 2													
Broccoli	09/15/12	< 20	< 20	< 44	< 22	< 44	< 19	< 34	< 45	< 18	< 18	< 111	< 28
Sweet potatoes	09/22/12	< 18	< 18	< 46	< 22	< 40	< 21	< 32	< 58	< 17	< 17	< 116	< 32
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 3													
Cauliflower	09/15/12	< 8	< 10	< 29	< 13	< 24	< 11	< 17	< 21	< 9	< 10	< 56	< 15
Beets	09/22/12	< 16	< 16	< 35	< 19	< 34	< 17	< 27	< 40	< 13	< 14	< 104	< 30
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 4													
Cabbage	09/15/12	< 12	< 12	< 29	< 15	< 25	< 14	< 23	< 27	< 11	< 13	< 64	< 16
Beets	09/20/12	< 16	< 16	< 40	< 22	< 39	< 17	< 25	< 45	< 13	< 13	< 91	< 26
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IX.1 QUARTERLY OSLD RESULTS FOR LASALLE COUNTY STATION, 2012

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
L-01-1	24.1 ± 9.0	17.8	26.4	28.0	24.0
L-01-2	23.4 ± 9.6	16.2	25.7	26.4	25.2
L-03-1	21.8 ± 7.7	16.2	23.4	25.0	22.7
L-03-2	22.7 ± 8.2	17.0	24.7	26.4	22.5
L-04-1	21.4 ± 8.0	15.5	24.2	23.4	22.4
L-04-2	22.2 ± 10.1	14.7	24.2	25.8	24.0
L-05-1	20.5 ± 11.6	13.9	(1)	24.5	23.2
L-05-2	23.3 ± 8.5	17.0	24.9	26.5	24.6
L-06-1	22.4 ± 8.6	16.2	23.6	26.1	23.7
L-06-2	22.1 ± 9.1	15.5	24.1	25.7	23.1
L-07-1	22.7 ± 9.2	16.2	26.1	25.8	22.6
L-07-2	22.9 ± 9.0	16.2	25.2	25.6	24.6
L-08-1	22.2 ± 8.3	16.2	24.1	25.6	22.9
L-08-2	23.1 ± 8.2	17.0	25.3	25.6	24.4
L-10-1	20.4 ± 7.7	14.7	21.9	22.9	22.2
L-10-2	20.4 ± 8.9	13.9	24.0	22.4	21.2
L-11-1	20.0 ± 9.6	13.1	22.7	23.8	20.5
L-11-2	20.8 ± 8.5	14.7	24.1	23.3	21.1
L-101-1	23.8 ± 8.5	17.8	27.1	26.6	23.7
L-101-2	21.6 ± 10.4	13.9	24.8	24.3	23.5
L-102-1	24.2 ± 8.5	17.8	26.0	26.8	26.0
L-102-2	23.5 ± 12.0	14.6	26.9	27.2	25.3
L-103-1	21.1 ± 9.6	13.9	23.0	23.4	24.0
L-103-2	21.5 ± 10.2	13.9	24.7	24.2	23.0
L-104-1	21.0 ± 9.5	13.9	23.8	23.5	22.8
L-104-2	21.0 ± 9.6	13.9	24.3	23.8	21.8
L-105-1	27.2 ± 5.0	(1)	29.8	27.0	24.8
L-105-2	22.6 ± 7.6	17.0	24.2	25.4	23.9
L-106-1	21.6 ± 8.1	15.5	23.8	23.1	23.9
L-106-2	21.8 ± 7.9	16.2	23.3	25.4	22.2
L-107-1	22.6 ± 10.5	14.7	25.2	25.2	25.2
L-107-2	21.8 ± 6.6	17.0	22.7	24.6	22.7
L-108-1	22.4 ± 10.3	14.7	24.8	25.9	24.1
L-108-2	18.9 ± 9.1	12.3	22.4	21.0	20.0
L-109-1	22.5 ± 7.7	17.0	24.8	25.4	22.9
L-109-2	23.3 ± 6.8	18.5	26.2	25.0	23.3
L-110-1	21.4 ± 9.0	14.6	23.8	23.9	23.1
L-110-2	22.5 ± 8.0	17.0	25.3	25.6	22.0
L-112-1	23.8 ± 1.6	(1)	24.6	23.9	23.0
L-112-2	22.7 ± 8.8	17.8	(1)	26.3	23.9
L-114-1	23.3 ± 7.6	17.8	24.7	26.5	24.1
L-114-2	22.9 ± 11.3	14.7	25.6	27.4	24.0
L-115-1	20.5 ± 10.0	13.1	21.9	24.0	22.9
L-115-2	22.3 ± 1.7	(1)	21.9	23.3	21.8

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.1 QUARTERLY OSLD RESULTS FOR LASALLE COUNTY STATION, 2012

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC	
L-116-1	18.9 ± 8.7	13.9	22.0	(2)	20.8	
L-116-2	20.7 ± 9.2	13.9	22.3	24.3	22.1	
L-201-3	19.6 ± 7.7	13.9	21.6	22.4	20.3	
L-201-4	22.7 ± 10.8	14.7	25.5	26.4	24.2	
L-202-3	21.8 ± 7.6	16.2	23.8	24.5	22.6	
L-202-4	19.7 ± 9.7	12.4	21.7	22.5	22.1	
L-203-1	22.5 ± 11.3	14.2	25.1	26.8	23.8	
L-203-2	22.0 ± 7.8	16.2	23.2	24.8	23.6	
L-204-1	22.0 ± 9.8	14.7	24.1	25.4	23.6	
L-204-2	23.6 ± 8.5	17.8	23.4	27.9		(1)
L-205-1	21.6 ± 5.3	17.8	22.5	24.0	22.0	
L-205-2	22.3 ± 8.4	16.2	24.1	25.7	23.1	
L-205-3	22.1 ± 10.1	14.7	23.1	25.7	24.9	
L-205-4	20.9 ± 9.7	13.9	21.4	24.8	23.4	
L-206-1	21.4 ± 9.2	14.7	23.6	24.9	22.5	
L-206-2	22.7 ± 8.0	17.0	25.8	25.2	22.7	
L-207-1	22.4 ± 7.3	17.0	23.8	25.3	23.3	
L-207-2	23.4 ± 2.4	(1)	24.8	22.6	22.9	
L-208-1	21.8 ± 7.8	16.2	23.9	24.9	22.3	
L-208-2	24.6 ± 10.3	17.0	28.6	26.7	26.0	
L-209-1	23.4 ± 9.7	16.2	26.3	26.2	25.0	
L-209-2	22.9 ± 10.9	14.7	25.4	26.4	24.9	
L-210-1	23.0 ± 7.3	17.8	24.2	26.3	23.5	
L-210-2	23.5 ± 8.7	17.0	26.3	25.5	25.0	
L-211-1	23.2 ± 8.7	17.0	25.1	27.0	23.6	
L-211-2	23.2 ± 9.3	17.0	25.5	27.7	22.5	
L-212-1	22.5 ± 10.7	14.7	24.9	26.8	23.6	
L-212-2	23.5 ± 10.4	16.2	27.8	26.6	23.5	
L-213-3	22.3 ± 9.5	15.5	26.0	25.2	22.5	
L-213-4	21.5 ± 7.3	16.2	24.3	23.6	21.8	
L-214-3	21.3 ± 10.2	13.9	23.7	25.3	22.4	
L-214-4	21.0 ± 8.6	14.7	24.5	22.6	22.2	
L-215-3	22.5 ± 10.9	14.7	27.3	24.6	23.5	
L-215-4	23.5 ± 10.3	16.2	26.5	27.7	23.7	
L-216-3	25.2 ± 3.8	(1)	23.0	26.5	26.1	
L-111B-1	23.1 ± 8.4	17.0	26.6	24.1	24.6	
L-111B-2	22.6 ± 9.6	15.5	26.2	24.6	24.1	
L-113A-1	23.7 ± 9.2	17.0	27.2	26.2	24.5	
L-113A-2	22.6 ± 7.8	17.0	24.4	25.8	23.1	

(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, 2012

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	15.6 ± 3.5	15.7 ± 2.7	15.8 ± 2.5	14.3 ± 1.1
APR-JUN	24.7 ± 3.6	24.6 ± 3.4	24.6 ± 2.1	23.0 ± 3.0
JUL-SEP	25.0 ± 2.9	25.4 ± 3.0	25.5 ± 2.5	22.7 ± 0.7
OCT-DEC	23.3 ± 2.6	23.4 ± 2.5	23.2 ± 2.6	21.7 ± 1.4

TABLE C-IX.2 MEAN QUARTERLY OSLD RESULTS FOR THE INNER RING,OUTER RING, OTHER AND CONTROL LOCATIONS FOR LASALLE COUNTY STATION, 2012

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	123	12.3	29.8	22.3 ± 8.2
OUTER RING	130	12.4	28.6	22.4 ± 8.2
OTHER	63	13.1	28.0	22.2 ± 8.1
CONTROL	8	13.9	24.0	20.4 ± 7.7

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, L-109-1, L-109-2, L-110-1, L-110-2, L-111B-1, L-111B-2, L-112-1, L-112-2, L-113A-1, L-113A-2, L-114-1, L-114-2, L-115-1, L-115-2, L-116-1, L-116-2

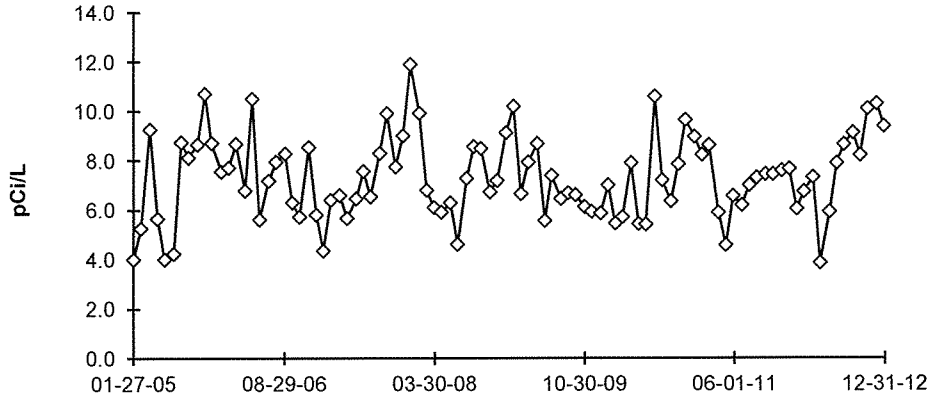
OUTER RING STATIONS - L-201-3, L-201-4, L-202-3, L-202-4, L-203-1, L-203-2, L-204-1, L-204-2, L-205-1, L-205-2, L-205-3, L-205-4, L-206-1, L-206-2, L-207-1, L-207-2, L-208-1, L-208-2, L-209-1, L-209-2, L-210-1, L-210-2, L-211-1, L-211-2, L-212-1, L-212-2, L-213-3, L-213-4, L-214-3, L-214-4, L-215-3, L-215-4, L-216-3

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-11-1, L-11-2

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 - 2012

L-21 (C) Illinois River at Seneca



L-40 Illinois River Downstream

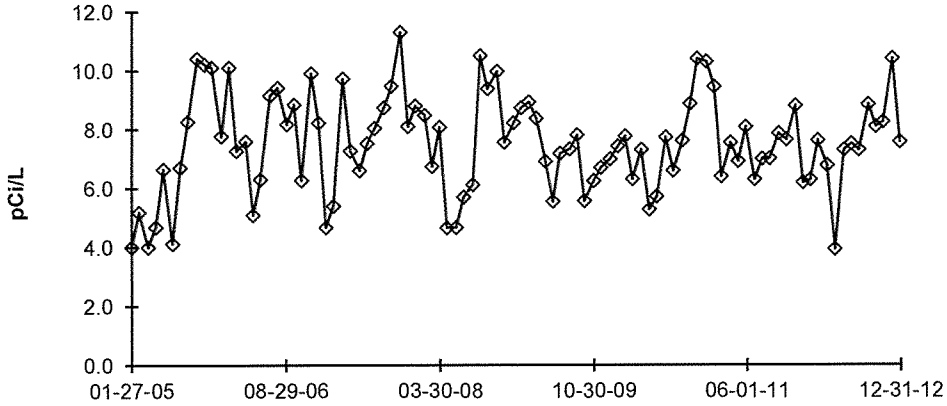
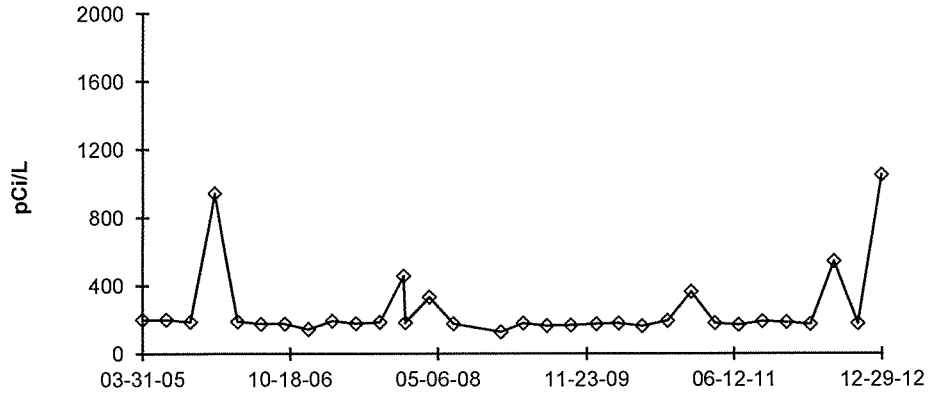


FIGURE C-2
Surface Water - Tritium - Stations L-21 (C) and L-40 Collected in the Vicinity of LSCS, 2005 - 2012

L-21 Illinois River at Seneca



L-40 Illinois River Downstream

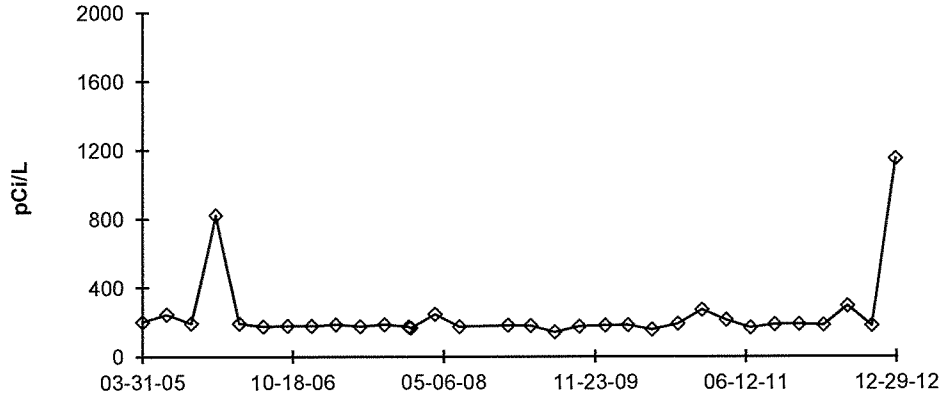
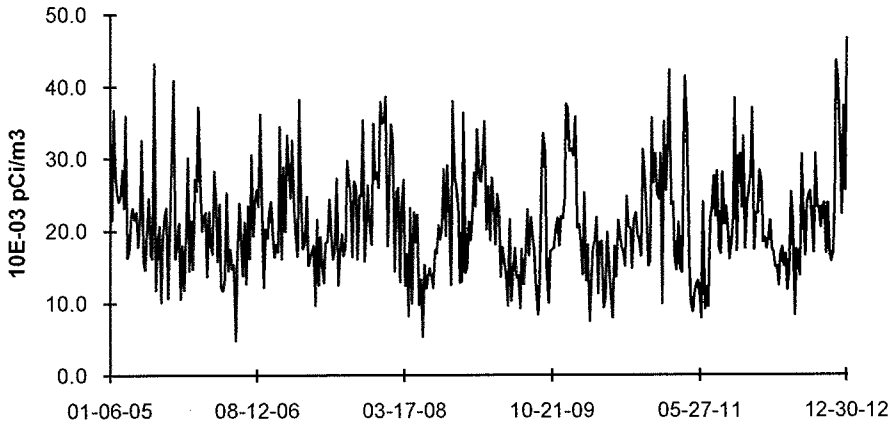


FIGURE C-3
Air Particulate - Gross Beta - Stations L-01 and L-03 Collected in the Vicinity of LSCS, 2005 - 2012

L-01 Nearsite No. 1



L-03 Onsite No. 3

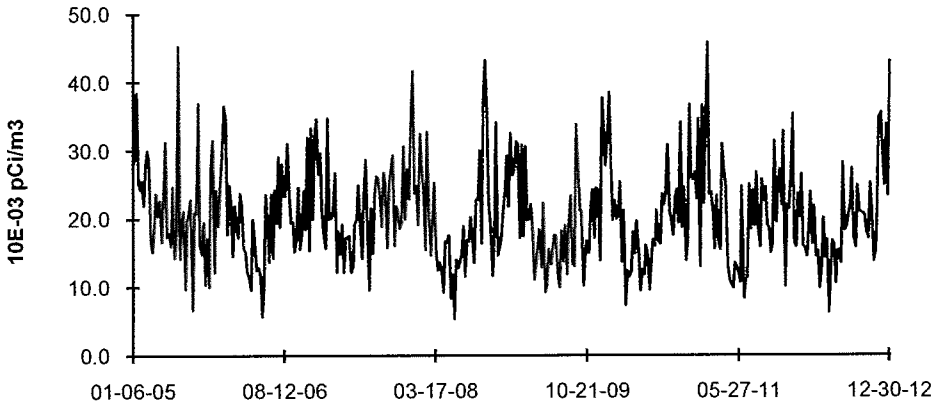
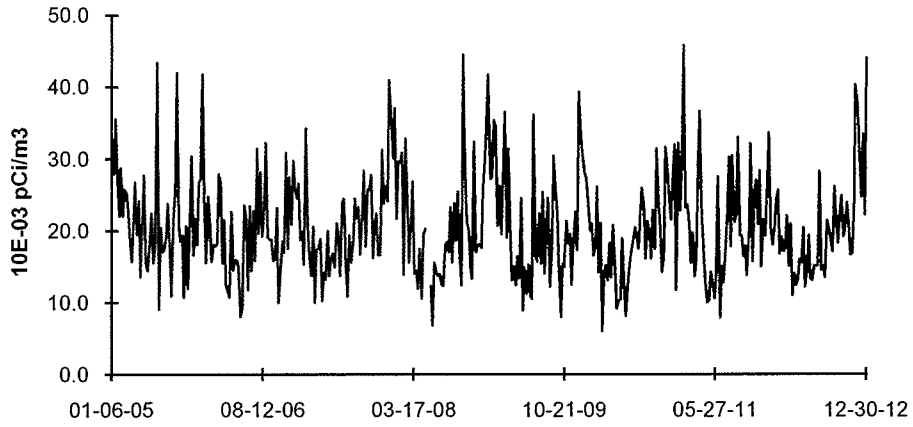


FIGURE C-4
Air Particulate - Gross Beta - Stations L-05 and L-06 Collected in the Vicinity of LSCS, 2005 - 2012

L-05 Onsite No. 5



L-06 Nearsite No. 6

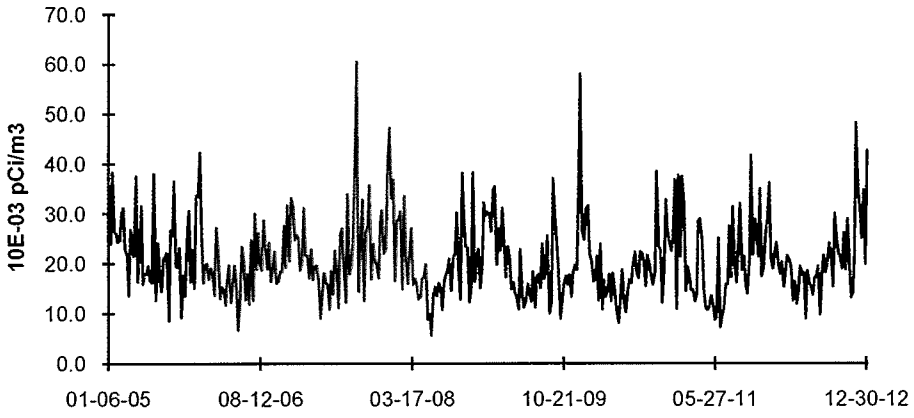


FIGURE C-5
Air Particulate - Gross Beta - Station L-10 (C)
Collected in the Vicinity of LSCS, 2005 - 2012

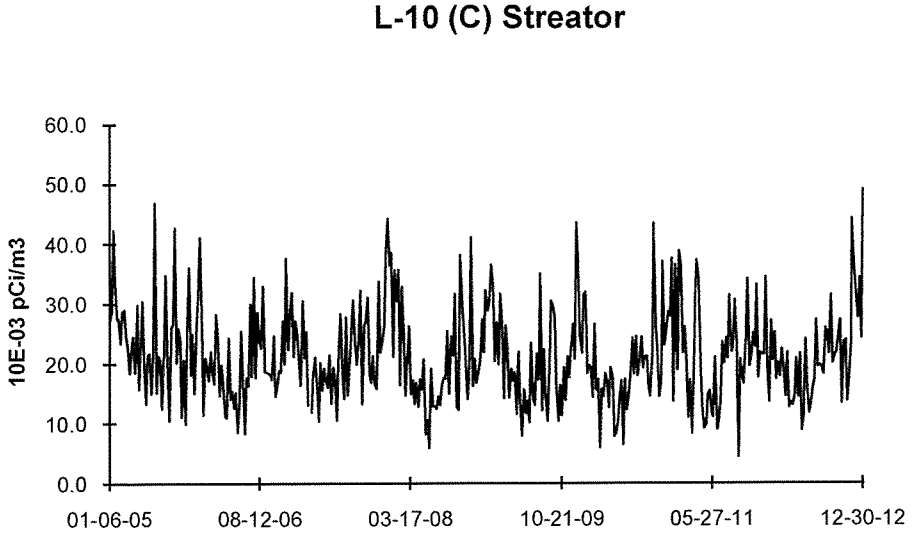
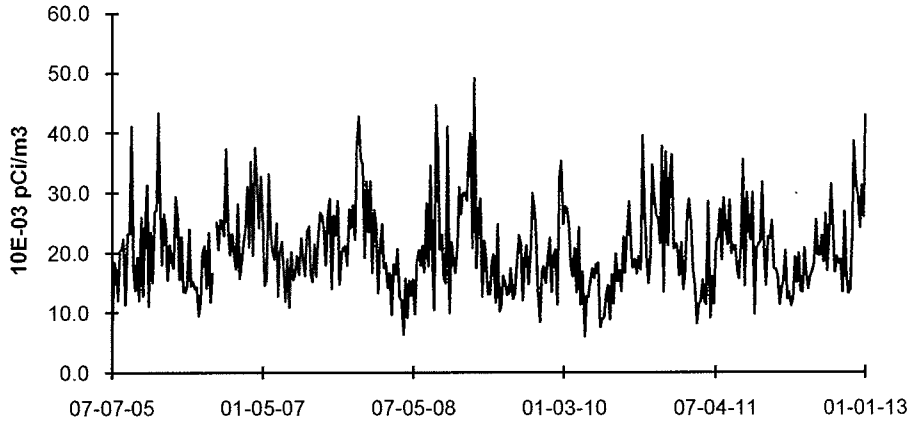


FIGURE C-6
Air Particulate - Gross Beta - Stations L-04 and L-07 Collected in the Vicinity of LSCS, 2005 - 2012

L-04 Rte. 170



L-07 Seneca

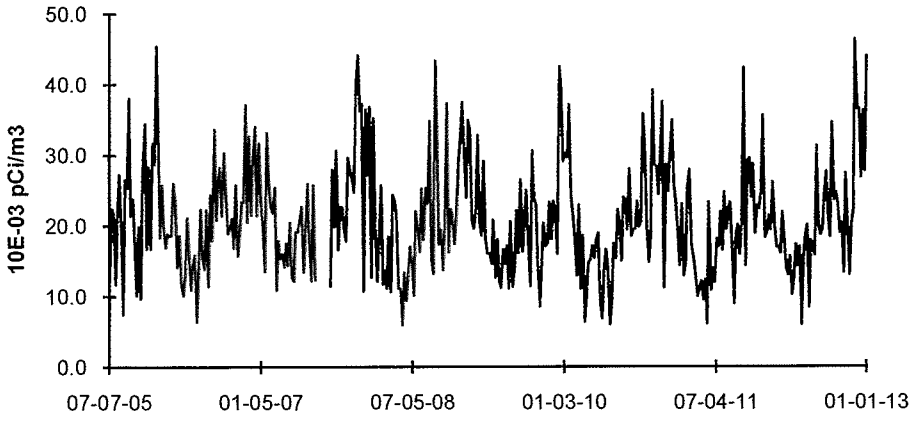
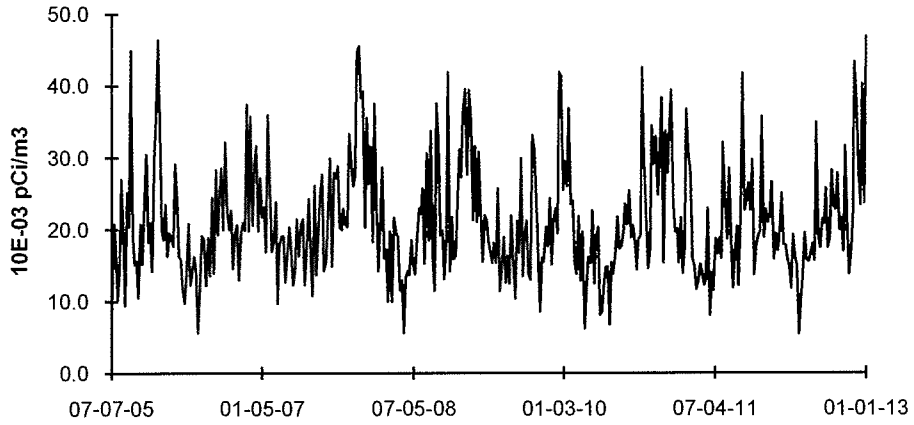
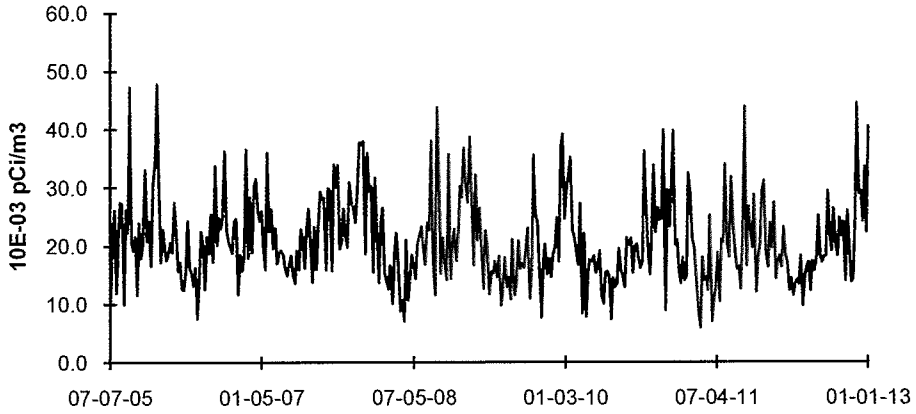


FIGURE C-7
Air Particulate - Gross Beta - Stations L-08 and L-11 Collected in the Vicinity of LSCS, 2005 - 2012

L-08 Marseilles



L-11 Ransom



APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

TABLE D-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2012	E10066	Milk	Sr-89	pCi/L	101	94.8	1.07	A
			Sr-90	pCi/L	11.7	13.5	0.87	A
	E10067	Milk	I-131	pCi/L	87.5	92.5	0.95	A
			Ce-141	pCi/L	247	260	0.95	A
			Cr-51	pCi/L	435	436	1.00	A
			Cs-134	pCi/L	133	149	0.89	A
			Cs-137	pCi/L	156	159	0.98	A
			Co-58	pCi/L	127	132	0.96	A
			Mn-54	pCi/L	190	195	0.97	A
			Fe-59	pCi/L	179	168	1.07	A
			Zn-65	pCi/L	327	333	0.98	A
			Co-60	pCi/L	274	279	0.98	A
	E10069	AP	Ce-141	pCi	167	164	1.02	A
			Cr-51	pCi	310	276	1.12	A
			Cs-134	pCi	107	94.5	1.13	A
			Cs-137	pCi	109	101	1.08	A
			Co-58	pCi	87.6	83.5	1.05	A
			Mn-54	pCi	133	123	1.08	A
			Fe-59	pCi	113	106	1.07	A
			Zn-65	pCi	226	210	1.08	A
			Co-60	pCi	185	176	1.05	A
	E10068	Charcoal	I-131	pCi	92.8	94.2	0.99	A
	E10070	Water	Fe-55	pCi/L	1800	1570	1.15	A
June 2012	E10198	Milk	Sr-89	pCi/L	86.1	99.8	0.86	A
			Sr-90	pCi/L	9.2	12.7	0.72	W
	E10199	Milk	I-131	pCi/L	88.9	99.7	0.89	A
			Ce-141	pCi/L	72.8	82.2	0.89	A
			Cr-51	pCi/L	394	402	0.98	A
			Cs-134	pCi/L	159	174	0.91	A
			Cs-137	pCi/L	206	212	0.97	A
			Co-58	pCi/L	89.5	92.3	0.97	A
			Mn-54	pCi/L	129	132	0.98	A
			Fe-59	pCi/L	129	128	1.01	A
			Zn-65	pCi/L	193	199	0.97	A
			Co-60	pCi/L	342	355	0.96	A
	E10201	AP	Ce-141	pCi	73.2	75.1	0.97	A
			Cr-51	pCi	367	366	1.00	A
			Cs-134	pCi	165	159	1.04	A
			Cs-137	pCi	205	193	1.06	A
			Co-58	pCi	84.7	84.2	1.01	A
			Mn-54	pCi	118	121	0.98	A
			Fe-59	pCi	125	117	1.07	A
			Zn-65	pCi	181	182	0.99	A
			Co-60	pCi	338	324	1.04	A
	E10200	Charcoal	I-131	pCi	101	96.6	1.05	A

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2012	E10202	Water	Fe-55	pCi/L	1890	1580	1.20	A
September 2012	E10296	Milk	Sr-89	pCi/L	106	99.6	1.06	A
			Sr-90	pCi/L	13.6	16.0	0.85	A
	E10297	Milk	I-131	pCi/L	89.8	99.6	0.90	A
			Ce-141	pCi/L	160	164	0.98	A
			Cr-51	pCi/L	230	248	0.93	A
			Cs-134	pCi/L	101	108	0.94	A
			Cs-137	pCi/L	174	174	1.00	A
			Co-58	pCi/L	97.2	100	0.97	A
			Mn-54	pCi/L	188	196	0.96	A
			Fe-59	pCi/L	159	152	1.05	A
			Zn-65	pCi/L	195	192	1.02	A
			Co-60	pCi/L	155	152	1.02	A
	E10299	AP	Ce-141	pCi	145	135	1.07	A
			Cr-51	pCi	219	205	1.07	A
			Cs-134	pCi	94.1	89.4	1.05	A
			Cs-137	pCi	140	144	0.97	A
			Co-58	pCi	88.3	83.0	1.06	A
			Mn-54	pCi	173	162	1.07	A
			Fe-59	pCi	136	125	1.09	A
			Zn-65	pCi	165	159	1.04	A
			Co-60	pCi	133	125	1.06	A
	E10298	Charcoal	I-131	pCi	95.5	97.2	0.98	A
	E10300	Water	Fe-55	pCi/L	1630	1900	0.86	A
December 2012	E10334	Milk	Sr-89	pCi/L	101	96.6	1.05	A
			Sr-90	pCi/L	11.3	13.8	0.82	A
	E10335	Milk	I-131	pCi/L	93.1	90.0	1.03	A
			Ce-141	pCi/L	52.5	51.0	1.03	A
			Cr-51	pCi/L	373	348	1.07	A
			Cs-134	pCi/L	157	165	0.95	A
			Cs-137	pCi/L	113	117	0.97	A
			Co-58	pCi/L	94.1	98.5	0.96	A
			Mn-54	pCi/L	116	116	1.00	A
			Fe-59	pCi/L	124	116	1.07	A
			Zn-65	pCi/L	190	186	1.02	A
			Co-60	pCi/L	172	170	1.01	A
	E10337A	AP	Ce-141	pCi	51.8	49.6	1.04	A
			Cr-51	pCi	372	338	1.10	A
			Cs-134	pCi	165	161	1.02	A
			Cs-137	pCi	113	114	0.99	A
			Co-58	pCi	96.5	95.8	1.01	A
			Mn-54	pCi	118	112	1.05	A
			Fe-59	pCi	105	112	0.94	A
			Zn-65	pCi	166	181	0.92	A
			Co-60	pCi	179	165	1.08	A

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2012	E10336	Charcoal	I-131	pCi	73.1	72.7	1.01	A
	E10333	Water	Fe-55	pCi/L	1550	1750	0.89	A

(a) Teledyne Brown Engineering reported result.

(b) 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.

(c) Ratio of Teledyne Brown Engineering to Analytics results.

(d) 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 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Limits	Evaluation (c)
May 2012	RAD-89	Water	Sr-89	pCi/L	63.4	58.5	46.9 - 66.3	A
			Sr-90	pCi/L	33.5	37.4	27.4 - 43.1	A
			Ba-133	pCi/L	89.2	82.3	69.1 - 90.5	A
			Cs-134	pCi/L	66.5	74.2	60.6 - 81.6	A
			Cs-137	pCi/L	152	155	140 - 172	A
			Co-60	pCi/L	73.3	72.9	65.6 - 82.6	A
			Zn-65	pCi/L	109	105	94.5 - 125	A
			Gr-A	pCi/L	82.4	62.9	33.0 - 78.0	N (1)
			Gr-B	pCi/L	43.6	44.2	29.6 - 51.5	A
			I-131	pCi/L	25.9	27.1	22.5 - 31.9	A
			H-3	pCi/L	15433	15800	13800 - 17400	A
	MRAD-16	Filter	Gr-A	pCi/filter	39.5	77.8	26.1 - 121	A
November, 2012	RAD-91	Water	Sr-89	pCi/L	46.5	39.1	29.7 - 46.1	N (2)
			Sr-90	pCi/L	16.6	20.1	14.4 - 23.8	A
			Ba-133	pCi/L	85.2	84.8	71.3 - 93.3	A
			Cs-134	pCi/L	76.9	76.6	62.6 - 84.3	A
			Cs-137	pCi/L	177	183	165 - 203	A
			Co-60	pCi/L	77.4	78.3	70.5 - 88.5	A
			Zn-65	pCi/L	209	204	184 - 240	A
			Gr-A	pCi/L	50.6	58.6	30.6 - 72.9	A
			Gr-B	pCi/L	59.3	39.2	26.0 - 46.7	N (2)
			I-131	pCi/L	22.9	24.8	20.6 - 29.4	A
			H-3	pCi/L	5020	4890	4190 - 5380	A
	MRAD-17	Filter	Gr-A	pCi/filter	59.6	87.5	29.3 - 136	A

(1) Detector G1 is slightly biased high for Th-230 based measurements used only for ERA Gross Alpha samples. NCR 12-05

(2) The Sr-89 found to known ratio was 1.19, which TBE considers acceptable. It appears the aliquot was entered incorrectly for the Gross Beta NCR 12-13

(a) Teledyne Brown Engineering reported result.

(b) 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.

(c) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for Error. Reported result falls within the Control Limits and outside of the Warning Limit.

TABLE D-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2012	12-MaW26	Water	Cs-134	Bq/L	-0.0045		(1)	A
			Cs-137	Bq/L	37.5	39.9	27.9 - 51.9	A
			Co-57	Bq/L	30.8	32.9	23.0 - 42.8	A
			Co-60	Bq/L	22.4	23.72	16.60 - 30.84	A
			H-3	Bq/L	456	437	306 - 568	A
			Mn-54	Bq/L	31.0	31.8	22.3 - 41.3	A
			K-40	Bq/L	144	142	99 - 185	A
			Sr-90	Bq/L	-0.0084		(1)	A
			Zn-65	Bq/L	-0.369		(1)	A
	12-GrW26	Water	Gr-A	Bq/L	2.06	2.14	0.64 - 3.64	A
			Gr-B	Bq/L	7.48	6.36	3.18 - 9.54	A
	12-MaS26	Soil	Cs-134	Bq/kg	831	828	580 - 1076	A
			Cs-137	Bq/kg	0.145		(1)	A
			Co-57	Bq/kg	1270	1179	825 - 1533	A
			Co-60	Bq/kg	7.61	1.56	(2)	N (3)
			Mn-54	Bq/kg	634	558	391 - 725	A
			K-40	Bq/kg	1690	1491	1044 - 1938	A
			Sr-90	Bq/kg	328	392	274 - 540	A
			Zn-65	Bq/kg	753	642	449 - 835	A
	12-RdF26	AP	Cs-134	Bq/sample	2.31	2.38	1.67 - 3.09	A
			Cs-137	Bq/sample	2.15	1.79	1.25 - 2.33	W
			Co-57	Bq/sample	-0.0701		(1)	A
			Co-60	Bq/sample	2.62	2.182	1.527 - 2.837	W
			Mn-54	Bq/sample	4.13	3.24	2.27 - 4.21	W
			Sr-90	Bq/sample	0.0185		(1)	A
			Zn-65	Bq/sample	4.19	2.99	2.09 - 3.89	N (3)
	12-GrF26	AP	Gr-A	Bq/sample	0.365	1.2	0.4 - 2.0	A
			Gr-B	Bq/sample	2.31	2.4	1.2 - 3.6	A
	12-RdV26	Vegetation	Cs-134	Bq/sample	8.72	8.43	5.90 - 10.96	A
			Cs-137	Bq/sample	0.0424		(1)	A
			Co-57	Bq/sample	15.5	12.0	8.4 - 15.6	W
			Co-60	Bq/sample	6.80	6.05	4.24 - 7.87	A
			Mn-54	Bq/sample	0.0057		(1)	A
			Sr-90	Bq/sample	2.24	2.11	1.48 - 2.74	A
			Zn-65	Bq/sample	10.5	8.90	6.23 - 11.57	A
September 2012	12-MaW27	Water	Cs-134	Bq/L	21.4	23.2	16.2 - 30.2	A
			Cs-137	Bq/L	17.0	16.7	11.7 - 21.7	A
			Co-57	Bq/L	28.7	29.3	20.5 - 38.1	A
			Co-60	Bq/L	0.179		(1)	A
			H-3	Bq/L	387	334	234 - 434	A
			Mn-54	Bq/L	18.1	17.8	12.5 - 23.1	A
			K-40	Bq/L	139	134	94 - 174	A
			Sr-90	Bq/L	19.6	12.2	8.5 - 15.9	N (4)
			Zn-65	Bq/L	27.2	25.9	18.1 - 33.7	A
	12-GrW27	Water	Gr-A	Bq/L	0.966	1.79	0.54 - 3.04	A
			Gr-B	Bq/L	10.0	9.1	4.6 - 13.7	A

TABLE D-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
September 2012	12-MaS27	Soil	Cs-134	Bq/kg	880	939	657 - 1221	A
			Cs-137	Bq/kg	1220	1150	805 - 1495	A
			Co-57	Bq/kg	1330	1316	921 - 1711	A
			Co-60	Bq/kg	552	531	372 - 690	A
			Mn-54	Bq/kg	1000	920	644 - 1196	A
			K-40	Bq/kg	674	632	442 - 822	A
			Sr-90	Bq/kg	528	508	356 - 660	A
			Zn-65	Bq/kg	665	606	424 - 788	A
	12-RdF27	AP	Cs-134	Bq/sample	2.760	2.74	1.92 - 3.56	A
			Cs-137	Bq/sample	0.0415		(1)	A
			Co-57	Bq/sample	2.00	191.00	1.34 - 2.48	A
			Co-60	Bq/sample	1.78	1.728	1.210 - 2.246	A
			Mn-54	Bq/sample	2.40	2.36	1.65 - 3.07	A
			Sr-90	Bq/sample	0.931	1.03	0.72 - 1.34	A
			Zn-65	Bq/sample	-0.688		(1)	A
	12-GrF27	AP	Gr-A	Bq/sample	0.434	0.97	0.29 - 1.65	A
			Gr-B	Bq/sample	1.927	1.92	0.96 - 2.88	A
	12-RdV27	Vegetation	Cs-134	Bq/sample	6.28	6.51	4.56 - 8.46	A
			Cs-137	Bq/sample	4.62	4.38	3.07 - 5.69	A
			Co-57	Bq/sample	6.51	5.66	3.96 - 7.36	A
			Co-60	Bq/sample	5.32	5.12	3.58 - 6.66	A
			Mn-54	Bq/sample	3.59	3.27	2.29 - 4.25	A
			Sr-90	Bq/sample	0.0012		(1)	A
			Zn-65	Bq/sample	-0.046		(1)	A

(1) False positive test.

(2) Sensitivity evaluation

(3) No cause was found for the failed high soil Co-60 sensitivity test or the high Zn-65 in AP, which TBE considers an anomaly. NCR 12-08

(4) Sr-90 in water high due to incorrect aliquot entered in LIMS. 12-11

(a) Teledyne Brown Engineering reported result.

(b) 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.

(c) DOE/MAPEP evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

TABLE D-4 **ERA (a) STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM[a]**
ENVIRONMENTAL, INC., 2012

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result [b]	ERA Result [c]	Control Limits	Acceptance
ERW-1783	04/09/12	Sr-89	62.2 ± 6.0	58.5	46.9 - 66.3	Pass
ERW-1783	04/09/12	Sr-90	33.7 ± 2.1	37.4	27.4 - 43.1	Pass
ERW-1786	04/09/12	Ba-133	75.7 ± 4.1	82.3	69.1 - 90.5	Pass
ERW-1786	04/09/12	Co-60	71.9 ± 4.0	72.9	65.6 - 82.6	Pass
ERW-1786	04/09/12	Cs-134	70.0 ± 4.3	74.2	60.6 - 81.6	Pass
ERW-1786	04/09/12	Cs-137	151.5 ± 6.1	155.0	140.0 - 172.0	Pass
ERW-1786	04/09/12	Zn-65	108.3 ± 89.0	105.0	94.5 - 125.0	Pass
ERW-1789	04/09/12	Gr. Alpha	55.0 ± 2.4	62.9	33.0 - 78.0	Pass
ERW-1789 [d]	04/09/12	Gr. Beta	76.2 ± 1.8	44.2	29.6 - 51.5	Fail
ERW-1798	04/09/12	H-3	16023 ± 355	15800	13800 - 17400	Pass
ERW-6283	10/05/12	Sr-89	41.5 ± 4.1	39.1	29.7 - 46.1	Pass
ERW-6283	10/05/12	Sr-90	19.7 ± 1.6	20.1	14.4 - 23.8	Pass
ERW-6286	10/05/12	Ba-133	82.7 ± 4.4	84.8	71.3 - 93.3	Pass
ERW-6286	10/05/12	Co-60	77.2 ± 3.7	78.3	70.5 - 88.5	Pass
ERW-6286	10/05/12	Cs-134	74.4 ± 1.5	76.6	62.6 - 84.3	Pass
ERW-6286	10/05/12	Cs-137	183.0 ± 6.2	183.0	165.0 - 203.0	Pass
ERW-6286	10/05/12	Zn-65	211.0 ± 9.9	204.0	184.0 - 240.0	Pass
ERW-6288	10/05/12	Gr. Alpha	47.0 ± 2.3	58.6	30.6 - 72.9	Pass
ERW-6288	10/05/12	Gr. Beta	33.4 ± 1.2	39.2	26.0 - 46.7	Pass
ERW-6290	10/05/12	I-131	23.3 ± 1.0	24.8	20.6 - 29.4	Pass

[a] Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing in drinking water conducted by Environmental Resources Associates (ERA).

[b] Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

[c] Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination) and control limits as provided by ERA.

[d] Result of reanalysis: 38.3 ± 1.3 pCi/L. Sample dilution problem suspected. A new dilution was prepared.

TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP) ENVIRONMENTAL, INC., 2012

			Concentration [a]			
Lab Code [b]	Date	Analysis	oratory result	Known Activity	Control Limits [c]	Acceptance
STSO-1766	02/01/12	Co-57	1352.10 ± 4.00	1179.00	825.00 - 1533.00	Pass
STSO-1766	02/01/12	Co-60	1.70 ± 0.70	1.56	1.00 - 2.00	Pass
STSO-1766	02/01/12	Cs-134	842.20 ± 4.30	828.00	580.00 - 1076.00	Pass
STSO-1766	02/01/12	Cs-137	0.40 ± 0.90	0.00	0.00 - 1.00	Pass
STSO-1766	02/01/12	K-40	1729.60 ± 22.20	1491.00	1044.00 - 1938.00	Pass
STSO-1766	02/01/12	Mn-54	647.60 ± 4.20	558.00	391.00 - 725.00	Pass
STSO-1766	02/01/12	Sr-90	383.20 ± 15.30	392.00	274.00 - 510.00	Pass
STSO-1766	02/01/12	Zn-65	766.70 ± 6.70	642.00	449.00 - 835.00	Pass
STAP-1772	02/01/12	Co-57	0.010 ± 0.01	0.00	0.000 - 1.00	Pass
STAP-1772	02/01/12	Co-60	2.40 ± 0.08	2.18	1.53 - 2.84	Pass
STAP-1772	02/01/12	Cs-134	2.33 ± 0.13	2.38	1.67 - 3.09	Pass
STAP-1772	02/01/12	Cs-137	2.07 ± 0.10	1.79	1.25 - 2.33	Pass
STAP-1772	02/01/12	Mn-54	3.77 ± 0.14	3.24	2.27 - 4.21	Pass
STAP-1772	02/01/12	Sr-90	-0.010 ± 0.060	0.000	-0.10 - 0.13	Pass
STAP-1772	02/01/12	Zn-65	3.67 ± 0.20	2.99	2.09 - 3.89	Pass
STAP-1773	02/01/12	Gr. Alpha	0.51 ± 0.05	1.20	0.40 - 2.00	Pass
STAP-1773	02/01/12	Gr. Beta	2.75 ± 0.10	2.40	1.20 - 3.60	Pass
STVE-1776	02/01/12	Co-57	14.57 ± 0.28	12.00	8.40 - 15.60	Pass
STVE-1776	02/01/12	Co-60	6.45 ± 0.23	6.05	4.24 - 7.87	Pass
STVE-1776	02/01/12	Cs-134	8.39 ± 0.29	8.43	5.90 - 10.96	Pass
STVE-1776	02/01/12	Cs-137	0.01 ± 0.09	0.00	0.00 - 0.10	Pass
STVE-1776	02/01/12	Mn-54	0.03 ± 0.08	0.00	0.00 - 0.10	Pass
STVE-1776	02/01/12	Zn-65	10.31 ± 0.67	8.90	6.23 - 11.57	Pass
STW-1960	02/01/12	Gr. Alpha	1.68 ± 0.09	2.14	0.64 - 3.64	Pass
STW-1960	02/01/12	Gr. Beta	6.33 ± 0.10	6.36	3.18 - 9.54	Pass
STW-1964	02/01/12	Co-57	33.30 ± 0.40	32.90	23.00 - 42.80	Pass
STW-1964	02/01/12	Co-60	23.20 ± 0.40	23.72	16.60 - 30.84	Pass
STW-1964	02/01/12	Cs-134	0.30 ± 3.00	0.00	0.00 - 1.00	Pass
STW-1964	02/01/12	Cs-137	40.10 ± 0.60	39.90	27.90 - 51.90	Pass
STW-1964	02/01/12	H-3	460.00 ± 12.10	437.00	306.00 - 568.00	Pass
STW-1964	02/01/12	K-40	153.00 ± 4.20	142.00	99.00 - 185.00	Pass
STW-1964	02/01/12	Mn-54	32.70 ± 0.60	31.80	22.30 - 41.30	Pass
STW-1964	02/01/12	Sr-90	0.10 ± 0.20	0.00	0.00 - 1.00	Pass
STW-1964	02/01/12	Zn-65	0.01 ± 0.20	0.00	0.00 - 1.00	Pass

TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP) ENVIRONMENTAL, INC., 2012

			Concentration [a]			
Lab Code [b]	Date	Analysis	oratory result	Known Activity	Control Limits [c]	Acceptance
STSO-5392	08/01/12	Sr-90	483.52 ± 16.47	508.00	356.00 - 660.00	Pass
STSO-5394	08/01/12	Co-57	1528.00 ± 4.10	1316.00	921.00 - 1711.00	Pass
STSO-5394	08/01/12	Co-60	592.00 ± 3.20	531.00	372.00 - 690.00	Pass
STSO-5394	08/01/12	Cs-134	933.60 ± 5.82	939.00	657.00 - 1221.00	Pass
STSO-5394	08/01/12	Cs-137	1319.80 ± 5.50	1150.00	805.00 - 1495.00	Pass
STSO-5394	08/01/12	K-40	737.30 ± 17.70	632.00	442.00 - 822.00	Pass
STSO-5394	08/01/12	Mn-54	1083.20 ± 5.20	920.00	644.00 - 1196.00	Pass
STSO-5394	08/01/12	Zn-65	696.10 ± 7.00	606.00	424.00 - 788.00	Pass
STVE-5395 [d]	08/01/12	Co-57	7.44 ± 0.17	5.66	3.96 - 7.36	Fail
STVE-5395	08/01/12	Co-60	5.90 ± 0.15	5.12	3.58 - 6.66	Pass
STVE-5395	08/01/12	Cs-134	7.40 ± 0.31	6.51	4.56 - 8.46	Pass
STVE-5395	08/01/12	Cs-137	5.45 ± 0.18	4.38	3.07 - 5.69	Pass
STVE-5395	08/01/12	Mn-54	4.06 ± 0.21	3.27	2.29 - 4.25	Pass
STAP-5398	08/01/12	Gr. Alpha	0.41 ± 0.05	0.97	0.29 - 1.65	Pass
STAP-5398	08/01/12	Gr. Beta	2.11 ± 0.09	1.92	0.96 - 2.88	Pass
STAP-5403	08/01/12	Co-57	1.96 ± 0.05	1.91	1.34 - 2.48	Pass
STAP-5403	08/01/12	Co-60	1.76 ± 0.07	1.73	1.21 - 2.25	Pass
STAP-5403	08/01/12	Cs-134	2.74 ± 0.18	2.74	1.92 - 3.56	Pass
STAP-5403	08/01/12	Cs-137	0.00 ± 0.03	0.00	-0.01 - 0.01	Pass
STAP-5403	08/01/12	Mn-54	2.52 ± 0.10	2.36	1.65 - 3.07	Pass
STAP-5403	08/01/12	Zn-65	0.01 ± 0.06	0.00	-0.010 - 0.010	Pass

[a] Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

[b] Laboratory codes as follows: STW (water), STAP (air filter), STSO (soil), STVE (vegetation).

[c] MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP. A known value of "zero" indicates an analysis was included in the testing series as a "false positive". MAPEP does not provide control limits.

[d] Result of reanalysis; 6.74 ± 0.15 Bq/sample. Gamma emitters for the vegetation matrix exhibited a high bias, only Co-57 exceeded acceptance limits. Recounted using a geometry more closely matched to the MAPEP sample size.

APPENDIX E

EFFLUENT DATA

TABLE OF CONTENTS

Table of Contents (cont.)

INTRODUCTION

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

Liquid effluents, while no longer 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 to permit decay of short-lived (noble) gases. Releases to the atmosphere are calculated on the basis of analyses of routine grab samples of noble gases and tritium as well as continuously collected composite samples of iodine and particulate radioactivity sampled during the course of the year. 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 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 releases to the atmosphere represented the critical pathway for the period with a maximum individual total dose estimated to be 1.09E+00 mrem for the year, where a shielding and occupancy factor of 0.7 is assumed. 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 10CFR50 Appendix I, 10CFR20 and 40CFR190.

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 3.68E+03 curies of fission and activation gases were released with an average release rate of 1.17E+02 µCi/sec.

A total of 6.18E-02 curies of I-131 were released during the year with an average release rate of 1.96E-03µCi/sec.

A total of 1.09E-02 curies of beta-gamma emitters were released as airborne particulate matter with an average release rate of 3.46E-04 µCi/sec. Alpha-emitting radionuclides were below the lower limit of detection (LLD). Carbon-14 released in 2012 was calculated separately with a total of 3.41E+01 curies released with an average release rate of 1.08E+00 µCi/sec.

A total of 1.27E+01curies of tritium were released with an average release rate of 4.02E-01 µCi/sec.

1.2 Liquids Released to Illinois River

There were no liquid batch releases in 2012. 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 2012 Radioactive Effluent Release Report. This report was submitted to the USNRC by the required date of May 1st, 2013.

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 2.84E-02 mrem (Table 3.1-1) for the year, with an occupancy or shielding factor of 0.7 included. The maximum total body dose based on measured effluents and concurrent meteorological data would be 1.86E-02 mrem (Table 3.4-1).

The maximum gamma air dose was 4.26E-02 mrad from Table 3.1-1, and the maximum gamma air dose from concurrent meterorological data was 4.97E-03 mrad (Table 3.4-1).

3.1.1.2 Beta Air and Skin 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 4.78E-02 from Table 3.1-1, and the skin dose from concurrent meteorological data was 5.09E-03 mrem (Table 3.4-1). The maximum offsite beta dose for the

year was 1.98E-03 mrad from Table 3.1-1, and the maximum offsite beta dose from concurrent meteorological data was1.78E-03 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 3.05E-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 2012, 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 mrads 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 10CFR20 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 99.8% during 2012.

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

APPENDIX E-1

DATA TABLES AND FIGURES

Table 2.1-1

SOLID RADWASTE ANNUAL REPORT

LaSalle County Station

Table 2.1-1 deliberately deleted. For solid waste disposal detail, refer to the LaSalle County Station 2012 Effluent Report.

Table 1.1-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2012)
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	6.91E+02	8.30E+02	1.13E+03	1.03E+03	2.50E+01
2. Average release rate for the period	µCi/sec	8.77E+01	1.05E+02	1.43E02	1.31E+02	
3. Percent of ODCM limit	%	*	*	*	*	
B. Iodine						
1. Total Iodine – 131.	Ci	9.77E-03	1.03E-02	1.69E-02	2.48E-02	1.50E+01
2. Average release rate for the period	µCi/sec	1.24E-03	1.30E-03	2.14E-03	3.15E-03	
3. Percent of ODCM limit	%	*	*	*	*	
C. Particulates						
1. Particulates with half-lives > 8 days	Ci	2.47E-03	1.32E-03	4.74E-03	2.37E-03	3.50E+01
2. Average release rate for the period	µCi/sec	3.14E-04	1.68E-04	6.03E-04	3.02E-04	
3. Percent of ODCM limit	%	*	*	*	*	
D. Tritium						
1. Total Release	Ci	1.03E+01	1.79E+00	4.66E-01	1.30E-01	1.50E+01
2. Average release rate for the period	µCi/sec	1.30E+00	2.27E-01	5.91E-02	1.65E-02	
3. Percent of ODCM limit	%	*	*	*	*	
E. Gross Alpha						
1. Total Release	Ci	<1.00E-11	<1.00E-11	<1.00E-11	<1.00E-11	3.50E+01
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	8.45E+00	8.52E+00	8.58E+00	8.57E+00	
2. Average release rate for the period	µCi/sec	1.07E+00	1.08E+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

Table1.2-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2012)
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 3.1-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2012)
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	6.42E-03	0.13	9.00E-03	0.18	1.39E-02	0.28	1.33E-02	0.27	1.00E+01	0.85
Beta Air	1.00E+01	mRad	3.64E-04	0.004	4.30E-04	0.00	6.09E-04	0.01	5.74E-04	0.01	2.00E+01	0.02
NG Total Body	2.50E+00	mRem	4.28E-03	0.17	6.00E-03	0.24	9.28E-03	0.37	8.87E-03	0.35	5.00E+00	1.14
NG Skin	7.50E+00	mRem	7.24E-03	0.10	1.01E-02	0.13	1.56E-02	0.21	1.49E-02	0.20	1.50E+01	0.64
NNG Organ	7.50E+00	mRem	4.84E-02	0.64	5.10E-02	0.68	8.35E-02	1.11	1.22E-01	1.63	1.50E+01	4.07

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	6.42E-03	0.13	9.00E-03	0.18	1.39E-02	0.28	1.33E-02	0.27	1.00E+01	0.85
Beta Air	1.00E+01	mRad	3.64E-04	0.004	4.30E-04	0.00	6.09E-04	0.01	5.74E-04	0.01	2.00E+01	0.02
NG Total Body	2.50E+00	mRem	4.28E-03	0.17	6.00E-03	0.24	9.28E-03	0.37	8.87E-03	0.35	5.00E+00	1.14
NG Skin	7.50E+00	mRem	7.24E-03	0.10	1.01E-02	0.13	1.56E-02	0.21	1.49E-02	0.20	1.50E+01	0.64
NNG Organ	7.50E+00	mRem	2.01E-02	0.27	2.12E-02	0.28	3.46E-02	0.46	5.06E-02	0.67	1.50E+01	1.69

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	6.42E-03	0.13	9.00E-03	0.18	1.39E-02	0.28	1.33E-02	0.27	1.00E+01	0.85
Beta Air	1.00E+01	mRad	3.64E-04	0.004	4.30E-04	0.00	6.09E-04	0.01	5.74E-04	0.01	2.00E+01	0.02
NG Total Body	2.50E+00	mRem	4.28E-03	0.17	6.00E-03	0.24	9.28E-03	0.37	8.87E-03	0.35	5.00E+00	1.14
NG Skin	7.50E+00	mRem	7.24E-03	0.10	1.01E-02	0.13	1.56E-02	0.21	1.49E-02	0.20	1.50E+01	0.64
NNG Organ	7.50E+00	mRem	1.01E-02	0.14	1.07E-02	0.14	1.74E-02	0.23	2.55E-02	0.34	1.50E+01	0.85

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	6.42E-03	0.13	9.00E-03	0.18	1.39E-02	0.28	1.33E-02	0.27	1.00E+01	0.85
Beta Air	1.00E+01	mRad	3.64E-04	0.004	4.30E-04	0.00	6.09E-04	0.01	5.74E-04	0.01	2.00E+01	0.02
NG Total Body	2.50E+00	mRem	4.28E-03	0.17	6.00E-03	0.24	9.28E-03	0.37	8.87E-03	0.35	5.00E+00	1.14
NG Skin	7.50E+00	mRem	7.24E-03	0.10	1.01E-02	0.13	1.56E-02	0.21	1.49E-02	0.20	1.50E+01	0.64
NNG Organ	7.50E+00	mRem	6.41E-03	0.09	6.74E-03	0.09	1.10E-02	0.15	1.61E-02	0.21	1.50E+01	0.54

Table 3.2-1

LASALLE COUNTY NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2012)
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 (2012)
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}	7.69E-02	1.03E-01	1.06E-01	1.08E-01	3.93E-01	25	1.57
						10CFR20 Compliance	
U1 D^{Tot}	1.25E-01	1.54E-01	1.89E-01	2.30E-01	6.98E-01	100	0.70
						40CFR190 Compliance	
Bone	7.04E-03	7.60E-03	7.28E-03	7.33E-03	2.93E-02	25	0.12
Liver	1.68E-03	1.67E-03	1.76E-03	1.89E-03	7.00E-03	25	0.03
Thyroid	4.84E-02	5.10E-02	8.35E-02	1.22E-01	3.05E-01	75	0.41
Kidney	1.70E-03	1.69E-03	1.80E-03	1.96E-03	7.15E-03	25	0.03
Lung	1.52E-03	1.51E-03	1.50E-03	1.52E-03	6.05E-03	25	0.02
GI-LLI	1.54E-03	1.52E-03	1.52E-03	1.53E-03	6.11E-03	25	0.02
Unit 2							
						40CFR190 Compliance	
U2 D^{Ex}	9.75E-02	9.65E-02	9.60E-02	9.79E-02	3.88E-01	25	1.55
						10CFR20 Compliance	
U2 D^{Tot}	9.75E-02	9.65E-02	9.60E-02	9.79E-02	3.88E-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 (2012)
RADIOLOGICAL IMPACT ON MAN
MAXIMUM GAMMA AIR DOSE

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]	4.970×10^{-3} mrad	North-Northeast
beta air [2]	1.780×10^{-3} mrad	North-Northeast
whole body [3]	1.857×10^{-2} mrem	North-Northeast
skin [4]	5.090×10^{-3} mrem	North-Northeast
organ [5] (infant-thyroid)	$1.356 \times 10^{+0}$ mrem	North-Northeast

Compliance Status

10 CFR 50 Appendix I	Yearly Objective		% of Appendix I
gamma air	10.0	mrad	0.05
beta air	20.0	mrad	0.01
whole body	5.0	mrem	0.37
skin	15.0	mrem	0.03
organ	15.0	mrem	9.04

[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

APPENDIX F

METEOROLOGICAL DATA

LaSalle County Generating Station

Period of Record: January - March 2012
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	1	9	2	0	0	0	12
NNE	0	2	2	0	0	0	4
NE	0	0	4	9	0	0	13
ENE	0	1	5	15	1	0	22
E	0	3	12	2	0	0	17
ESE	0	2	1	0	3	0	6
SE	0	1	1	3	4	0	9
SSE	0	0	0	0	1	0	1
S	0	0	1	5	1	0	7
SSW	0	1	2	2	1	0	6
SW	2	5	8	2	1	0	18
WSW	2	2	7	1	1	2	15
W	1	0	12	1	1	1	16
WNW	1	1	8	7	3	0	20
NW	0	1	3	2	2	2	10
NNW	0	2	1	2	5	0	10
Variable	0	0	0	0	0	0	0
Total	7	30	69	51	24	5	186

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: January - March 2012
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	2	1	0	0	0	3
NNE	0	1	1	0	0	0	2
NE	1	0	1	2	0	0	4
ENE	0	0	1	2	0	0	3
E	0	4	0	0	0	0	4
ESE	0	4	0	0	0	0	4
SE	0	0	1	4	1	0	6
SSE	0	0	2	0	3	0	5
S	0	0	1	4	1	0	6
SSW	0	0	1	8	0	0	9
SW	0	0	0	1	4	0	5
WSW	0	0	4	1	0	0	5
W	0	0	5	1	0	1	7
WNW	0	1	3	5	2	0	11
NW	0	0	1	1	1	0	3
NNW	0	2	2	1	0	0	5
Variable	0	0	0	0	0	0	0
Total	1	14	24	30	12	1	82

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: January - March 2012
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	1	4	9	0	0	0	14
NNE	0	2	0	1	0	0	3
NE	0	0	0	4	0	0	4
ENE	0	2	2	4	0	0	8
E	1	0	4	0	0	0	5
ESE	0	2	4	0	0	0	6
SE	0	2	3	2	0	0	7
SSE	0	0	1	6	3	0	10
S	0	1	11	4	0	2	18
SSW	0	0	4	5	2	1	12
SW	0	0	1	1	2	0	4
WSW	0	0	4	1	0	0	5
W	0	1	6	1	0	0	8
WNW	0	0	10	8	2	1	21
NW	0	3	6	3	0	0	12
NNW	0	2	4	2	0	0	8
Variable	0	0	0	0	0	0	0
Total	2	19	69	42	9	4	145

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: January - March 2012
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	5	15	1	2	1	24
NNE	0	14	12	4	0	0	30
NE	0	8	13	7	3	0	31
ENE	0	4	16	26	1	0	47
E	0	7	11	8	0	0	26
ESE	0	6	9	6	0	0	21
SE	1	5	4	10	6	0	26
SSE	1	2	8	7	5	3	26
S	0	7	13	20	7	3	50
SSW	1	4	16	9	6	12	48
SW	0	8	14	14	14	4	54
WSW	0	9	24	18	5	2	58
W	0	11	22	50	5	2	90
WNW	1	6	25	37	18	10	97
NW	0	9	14	14	5	1	43
NNW	0	8	33	23	23	0	87
Variable	0	0	0	0	0	0	0
Total	4	113	249	254	100	38	758

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: January - March 2012
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	5	14	0	0	0	0	19
NNE	2	7	0	0	0	0	9
NE	1	1	3	0	0	0	5
ENE	0	4	7	1	0	0	12
E	0	16	7	3	0	0	26
ESE	0	6	3	11	2	0	22
SE	1	3	7	9	8	0	28
SSE	0	7	12	20	6	0	45
S	0	7	13	22	8	2	52
SSW	0	3	7	21	10	1	42
SW	1	2	14	23	4	1	45
WSW	2	4	15	10	3	2	36
W	3	7	26	15	38	7	96
WNW	0	11	16	16	9	18	70
NW	1	10	3	3	0	0	17
NNW	1	8	0	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	17	110	133	154	88	31	533

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: 4

LaSalle County Generating Station

Period of Record: January - March 2012
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	0	0	0	0	0	0
NNE	1	1	0	0	0	0	2
NE	2	1	1	0	0	0	4
ENE	0	3	0	0	0	0	3
E	0	11	6	0	0	0	17
ESE	0	9	6	1	0	0	16
SE	0	9	10	1	0	0	20
SSE	0	4	9	4	1	0	18
S	0	8	28	14	1	0	51
SSW	2	4	13	7	14	0	40
SW	1	12	10	14	0	0	37
WSW	1	9	17	10	0	0	37
W	0	16	24	7	2	0	49
WNW	1	14	13	0	0	0	28
NW	1	4	0	0	0	0	5
NNW	1	2	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	10	107	137	58	18	0	330

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: January - March 2012
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	2	0	0	0	0	2
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	0	1	0	0	0	0	1
ESE	0	5	2	1	0	0	8
SE	0	12	6	0	0	0	18
SSE	0	2	10	0	0	0	12
S	0	6	15	2	0	0	23
SSW	0	6	19	5	0	0	30
SW	0	8	6	12	0	0	26
WSW	0	2	10	2	0	0	14
W	0	0	5	0	0	0	5
WNW	0	1	2	0	0	0	3
NW	0	1	0	0	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	1	47	75	22	0	0	145

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: January - March 2012
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	1	0	0	0	1
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	1	1	0	2
NW	0	0	0	0	0	3	3
NNW	0	0	0	0	0	1	1
Variable	0	0	0	0	0	0	0
Total	0	0	1	1	1	4	7

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: January - March 2012
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	2	1	0	0	3
NE	0	0	0	1	0	0	1
ENE	0	0	1	0	2	1	4
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	1	1
W	1	0	1	1	0	0	3
WNW	0	0	0	2	2	1	5
NW	0	0	0	2	0	3	5
NNW	0	0	0	0	0	2	2
Variable	0	0	0	0	0	0	0
Total	1	0	4	7	4	8	24

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: January - March 2012
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	3	0	0	0	3
NNE	0	0	0	0	0	0	0
NE	0	0	0	3	1	0	4
ENE	0	0	1	4	10	0	15
E	0	0	0	3	0	0	3
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	4	0	2	6
SSW	0	1	0	1	1	2	5
SW	0	2	1	2	0	2	7
WSW	0	0	4	1	0	1	6
W	0	0	1	3	1	0	5
WNW	0	0	0	2	0	2	4
NW	0	0	0	2	2	4	8
NNW	0	2	0	0	1	0	3
Variable	0	0	0	0	0	0	0
Total	0	5	10	25	16	13	69

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: January - March 2012
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	8	22	17	0	5	52
NNE	2	6	17	16	1	0	42
NE	1	3	14	13	14	8	53
ENE	0	1	19	30	32	3	85
E	0	0	12	9	4	0	25
ESE	0	3	11	8	3	4	29
SE	0	3	5	11	10	11	40
SSE	0	3	3	13	9	9	37
S	0	7	7	28	27	20	89
SSW	0	2	10	23	14	29	78
SW	2	7	7	17	17	17	67
WSW	0	6	12	30	12	6	66
W	0	4	15	39	20	25	103
WNW	0	4	11	40	50	39	144
NW	0	9	25	25	22	26	107
NNW	0	2	13	35	8	18	76
Variable	0	0	0	0	0	0	0
Total	5	68	203	354	243	220	1093

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: January - March 2012
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	0	7	4	0	0	11
NNE	0	4	7	2	0	0	13
NE	1	4	4	4	0	0	13
ENE	0	0	5	6	0	0	11
E	0	5	8	12	6	0	31
ESE	0	3	3	8	3	6	23
SE	1	0	4	10	11	11	37
SSE	2	4	3	4	10	32	55
S	1	1	4	7	20	41	74
SSW	1	0	8	7	14	58	88
SW	1	3	8	6	17	22	57
WSW	1	1	8	2	19	10	41
W	1	8	10	14	21	40	94
WNW	0	5	10	10	33	57	115
NW	1	4	10	12	18	4	49
NNW	1	2	4	1	0	0	8
Variable	0	0	0	0	0	0	0
Total	11	44	103	109	172	281	720

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: January - March 2012
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	4	1	0	0	7
NNE	0	1	1	0	0	0	2
NE	0	2	1	0	0	0	3
ENE	1	0	2	0	0	0	3
E	0	0	1	1	0	0	2
ESE	0	0	3	2	2	3	10
SE	0	1	1	8	1	2	13
SSE	0	1	1	1	7	7	17
S	0	2	2	3	12	13	32
SSW	0	1	3	5	10	21	40
SW	0	2	8	11	2	6	29
WSW	1	2	3	4	1	8	19
W	0	1	3	8	8	4	24
WNW	0	0	1	1	11	4	17
NW	0	0	1	4	2	0	7
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	3	14	36	49	56	68	226

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: January - March 2012
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	1	0	0	0	1
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	9	3	12
S	0	0	0	3	3	2	8
SSW	0	0	0	1	2	5	8
SW	0	0	1	0	0	0	1
WSW	0	0	1	0	0	8	9
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
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	0	4	5	14	18	41

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 2012
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	1	0	3	0	0	4
NNE	0	1	0	1	0	0	2
NE	0	0	0	3	0	0	3
ENE	0	0	0	0	0	0	0
E	0	0	1	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	1	0	0	0	1
S	0	0	0	3	3	7	13
SSW	0	0	1	11	4	0	16
SW	0	0	0	4	7	1	12
WSW	0	0	0	8	0	0	8
W	0	0	0	4	0	0	4
WNW	0	0	0	1	0	0	1
NW	0	0	0	3	0	0	3
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	2	3	42	14	8	69

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: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	1	1	1	0	0	3
NNE	0	2	0	3	0	0	5
NE	0	0	2	11	1	0	14
ENE	0	0	2	1	0	0	3
E	0	0	1	0	1	0	2
ESE	0	0	0	2	2	0	4
SE	0	0	0	0	0	0	0
SSE	0	0	2	4	0	0	6
S	0	0	2	1	2	1	6
SSW	0	0	8	11	1	0	20
SW	0	1	3	5	3	0	12
WSW	0	0	1	4	0	0	5
W	0	0	1	0	0	0	1
WNW	0	0	3	2	0	0	5
NW	0	0	0	5	0	0	5
NNW	0	0	1	3	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	4	27	53	10	1	95

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	2	0	0	7
NNE	0	3	7	0	0	0	10
NE	0	0	14	8	2	0	24
ENE	0	0	5	1	0	0	6
E	0	0	0	3	2	0	5
ESE	0	0	2	0	1	0	3
SE	0	0	1	0	0	0	1
SSE	0	0	4	3	1	0	8
S	0	0	0	3	3	0	6
SSW	0	1	17	7	1	0	26
SW	0	1	5	9	1	0	16
WSW	0	0	3	9	0	0	12
W	0	1	6	1	0	0	8
WNW	0	0	5	6	0	0	11
NW	0	0	4	4	1	0	9
NNW	0	0	4	8	2	0	14
Variable	0	0	0	0	0	0	0
Total	0	8	80	64	14	0	166

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 4
Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	13	20	7	0	0	41
NNE	1	19	17	7	0	0	44
NE	2	24	32	39	7	0	104
ENE	1	11	22	33	10	0	77
E	0	7	22	28	12	0	69
ESE	0	4	10	11	5	0	30
SE	0	7	9	13	2	0	31
SSE	0	1	10	8	2	0	21
S	0	6	14	14	4	2	40
SSW	0	2	23	16	3	1	45
SW	0	15	15	19	3	0	52
WSW	0	9	16	8	1	2	36
W	0	21	19	10	0	1	51
WNW	1	12	20	8	1	1	43
NW	2	7	17	9	6	0	41
NNW	0	9	26	30	4	1	70
Variable	0	0	0	0	0	0	0
Total	8	167	292	260	60	8	795

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 6
Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	0	18	16	1	0	0	35
NNE	1	16	16	4	0	0	37
NE	1	6	14	13	0	0	34
ENE	0	3	25	21	1	0	50
E	0	10	35	5	2	0	52
ESE	0	8	9	7	0	0	24
SE	0	4	4	3	0	0	11
SSE	0	6	9	5	0	0	20
S	0	3	20	6	2	0	31
SSW	0	5	31	26	6	0	68
SW	0	3	16	8	3	1	31
WSW	1	9	10	3	1	0	24
W	1	7	13	2	3	3	29
WNW	1	4	24	3	0	6	38
NW	0	11	23	5	1	0	40
NNW	0	13	23	2	0	0	38
Variable	0	0	0	0	0	0	0
Total	5	126	288	114	19	10	562

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 3
Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	9	1	0	0	0	10
NNE	1	5	0	0	0	0	6
NE	0	0	0	0	0	0	0
ENE	0	4	1	0	0	0	5
E	1	21	23	1	0	0	46
ESE	0	18	12	0	0	0	30
SE	0	9	4	1	0	0	14
SSE	0	5	16	1	0	0	22
S	1	6	21	3	0	0	31
SSW	0	2	21	1	0	0	24
SW	1	6	8	0	0	0	15
WSW	0	11	13	0	0	0	24
W	1	7	10	1	0	0	19
WNW	0	10	8	0	0	0	18
NW	1	4	0	0	0	0	5
NNW	1	4	2	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	7	121	140	8	0	0	276

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 4
Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	4	3	0	0	0	7
ESE	1	17	3	0	0	0	21
SE	0	23	13	0	0	0	36
SSE	0	18	8	0	0	0	26
S	0	12	13	0	0	0	25
SSW	0	12	13	0	0	0	25
SW	0	10	5	0	0	0	15
WSW	2	14	11	0	0	0	27
W	0	8	1	0	0	0	9
WNW	0	2	1	0	0	0	3
NW	0	2	0	0	0	0	2
NNW	1	2	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	4	124	71	0	0	0	199

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 2
Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	4	4
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	4	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: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	1	0	1
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	3	4	7
SSW	0	0	0	0	2	1	3
SW	0	0	0	0	2	6	8
WSW	0	0	0	1	1	0	2
W	0	0	0	1	1	0	2
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	0	4	10	11	25

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: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	1	3	0	4
NNE	0	0	0	0	0	1	1
NE	0	0	0	0	5	0	5
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	1	6	0	0	7
S	0	0	0	0	2	2	4
SSW	0	0	1	8	9	4	22
SW	0	0	0	4	5	5	14
WSW	0	0	0	4	2	0	6
W	0	0	0	2	5	0	7
WNW	0	0	1	1	0	0	2
NW	0	0	0	5	0	0	5
NNW	0	0	0	0	3	0	3
Variable	0	0	0	0	0	0	0
Total	0	0	4	32	34	12	82

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: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	12	26	12	0	60
NNE	1	10	21	17	10	5	64
NE	3	7	21	48	62	29	170
ENE	0	6	19	36	44	10	115
E	0	5	18	16	21	17	77
ESE	1	3	7	15	12	9	47
SE	0	4	5	13	8	2	32
SSE	0	0	7	11	11	1	30
S	0	2	8	19	9	16	54
SSW	0	1	5	39	35	21	101
SW	1	6	18	21	24	6	76
WSW	0	6	17	17	9	3	52
W	0	7	17	20	6	4	54
WNW	0	8	11	28	11	8	66
NW	0	7	15	21	14	15	72
NNW	0	4	18	12	28	1	63
Variable	0	0	0	0	0	0	0
Total	6	86	219	359	316	147	1133

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: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	11	8	4	30
NNE	0	1	6	14	3	0	24
NE	0	1	8	22	7	1	39
ENE	0	0	10	29	5	1	45
E	0	2	4	21	16	0	43
ESE	0	3	5	12	9	0	29
SE	0	1	7	9	6	4	27
SSE	0	0	1	9	6	2	18
S	0	0	6	6	22	12	46
SSW	0	0	5	8	26	45	84
SW	0	2	5	9	23	9	48
WSW	0	0	5	7	3	0	15
W	0	1	8	10	7	4	30
WNW	0	4	3	21	12	3	43
NW	0	0	4	8	18	4	34
NNW	0	2	7	12	20	1	42
Variable	0	0	0	0	0	0	0
Total	0	19	89	208	191	90	597

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: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	0	2	2	2	6
NNE	2	0	2	4	0	0	8
NE	1	1	1	1	0	0	4
ENE	0	1	0	0	0	0	1
E	1	0	1	4	2	0	8
ESE	0	4	3	14	3	2	26
SE	1	0	2	24	14	2	43
SSE	0	0	3	7	11	0	21
S	0	0	4	10	14	13	41
SSW	0	4	4	7	20	10	45
SW	0	2	1	7	1	0	11
WSW	0	1	1	6	2	0	10
W	0	1	8	8	10	3	30
WNW	0	0	5	6	0	0	11
NW	2	0	4	2	7	0	15
NNW	1	1	1	0	2	0	5
Variable	0	0	0	0	0	0	0
Total	8	15	40	102	88	32	285

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: 2

LaSalle County Generating Station

Period of Record: April - June 2012
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	2	3	0	5
SSE	0	0	2	15	9	0	26
S	0	0	0	1	6	4	11
SSW	0	0	0	0	0	0	0
SW	0	0	0	3	1	0	4
WSW	0	0	1	0	6	0	7
W	0	0	2	0	1	0	3
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	5	21	26	4	56

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: 2

LaSalle County Generating Station

Period of Record: July - September 2012
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	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	0	0	0	1
SE	0	0	2	0	0	0	2
SSE	0	0	3	0	0	0	3
S	0	0	0	2	1	0	3
SSW	0	0	1	3	0	0	4
SW	0	0	8	3	0	0	11
WSW	0	0	14	3	0	0	17
W	0	0	4	2	0	0	6
WNW	0	0	0	8	0	0	8
NW	0	0	1	2	0	0	3
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	35	23	1	0	59

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 2012
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	1	3	0	0	4
NNE	0	0	4	0	0	0	4
NE	0	0	2	1	0	0	3
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	0	1	8	1	0	0	10
SSE	0	1	0	0	0	0	1
S	0	0	5	2	1	0	8
SSW	0	3	7	5	0	0	15
SW	0	2	3	2	0	0	7
WSW	0	2	12	4	0	0	18
W	0	3	16	1	0	0	20
WNW	0	1	2	1	0	0	4
NW	0	0	0	1	0	0	1
NNW	0	0	3	3	0	0	6
Variable	0	0	0	0	0	0	0
Total	0	14	63	24	1	0	102

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 2012
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	3	0	0	8
NNE	0	0	5	0	0	0	5
NE	0	0	4	2	0	0	6
ENE	0	0	2	0	0	0	2
E	0	1	0	0	0	0	1
ESE	0	0	2	0	0	0	2
SE	0	1	2	0	0	0	3
SSE	0	4	5	0	0	0	9
S	0	2	4	2	0	0	8
SSW	0	9	6	2	0	0	17
SW	0	7	5	4	0	0	16
WSW	0	3	14	1	0	0	18
W	0	9	9	3	0	0	21
WNW	0	4	5	2	0	0	11
NW	0	1	6	4	2	0	13
NNW	0	0	7	10	0	0	17
Variable	0	0	0	0	0	0	0
Total	0	42	80	33	2	0	157

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 2012
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	15	36	9	0	0	62
NNE	3	13	14	1	0	0	31
NE	1	19	23	14	0	0	57
ENE	0	24	20	17	0	0	61
E	2	10	10	4	0	0	26
ESE	0	11	7	1	0	0	19
SE	1	21	4	1	0	0	27
SSE	0	19	7	2	0	0	28
S	2	24	23	2	1	0	52
SSW	1	15	13	0	0	0	29
SW	2	21	18	6	0	0	47
WSW	1	19	21	6	0	0	47
W	1	25	14	6	0	0	46
WNW	2	17	15	2	1	0	37
NW	0	6	26	3	3	0	38
NNW	1	19	45	32	0	0	97
Variable	0	0	0	0	0	0	0
Total	19	278	296	106	5	0	704

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 2012
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	0	26	5	1	0	0	32
NNE	2	21	13	0	0	0	36
NE	0	4	29	6	0	0	39
ENE	2	2	21	5	0	0	30
E	1	8	14	0	0	0	23
ESE	0	9	3	0	0	0	12
SE	2	2	2	0	0	0	6
SSE	2	9	4	1	0	0	16
S	1	11	7	4	0	0	23
SSW	2	6	9	3	0	0	20
SW	1	11	9	5	0	0	26
WSW	1	7	11	2	0	0	21
W	3	16	7	1	0	0	27
WNW	1	7	5	1	0	0	14
NW	0	13	16	0	0	0	29
NNW	1	16	3	2	0	0	22
Variable	0	0	0	0	0	0	0
Total	19	168	158	31	0	0	376

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 2012
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	8	0	0	0	0	10
NNE	1	4	0	0	0	0	5
NE	1	2	0	0	0	0	3
ENE	0	2	1	0	0	0	3
E	2	29	8	0	0	0	39
ESE	4	17	1	0	0	0	22
SE	2	14	4	0	0	0	20
SSE	4	8	2	0	0	0	14
S	5	11	8	0	0	0	24
SSW	2	13	19	2	0	0	36
SW	5	11	18	0	0	0	34
WSW	3	14	18	0	0	0	35
W	4	15	3	0	0	0	22
WNW	5	32	1	0	0	0	38
NW	2	13	1	0	0	0	16
NNW	6	12	3	0	0	0	21
Variable	0	0	0	0	0	0	0
Total	48	205	87	2	0	0	342

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: 0

LaSalle County Generating Station

Period of Record: July - September 2012
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	1	0	0	0	0	1
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	1	13	0	0	0	0	14
ESE	1	28	1	0	0	0	30
SE	0	45	4	0	0	0	49
SSE	0	42	3	0	0	0	45
S	2	42	23	1	0	0	68
SSW	0	48	15	0	0	0	63
SW	3	55	7	0	0	0	65
WSW	1	48	11	0	0	0	60
W	3	34	4	0	0	0	41
WNW	0	25	0	0	0	0	25
NW	1	1	0	0	0	0	2
NNW	1	0	0	0	0	0	1
Variable	0	1	0	0	0	0	1
Total	14	384	68	1	0	0	467

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 2012
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	1	0	0	1
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	1	0	0	1

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 2012
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	1	0	0	1
NE	0	0	0	1	0	0	1
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	1	0	0	1
SE	0	0	2	4	0	0	6
SSE	0	0	0	1	0	0	1
S	0	0	0	0	0	0	0
SSW	0	0	1	0	0	3	4
SW	0	0	4	0	0	0	4
WSW	0	0	0	3	1	0	4
W	0	0	0	2	0	0	2
WNW	0	0	0	2	1	0	3
NW	0	0	1	1	0	0	2
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	8	16	2	3	29

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 2012
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	1	2	0	3
NNE	0	0	2	1	0	0	3
NE	0	0	0	3	1	0	4
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	0	0	3	2	0	0	5
SSE	0	1	1	1	0	0	3
S	0	0	3	3	2	0	8
SSW	0	0	2	0	5	2	9
SW	0	1	4	1	1	0	7
WSW	0	0	6	7	0	0	13
W	0	1	17	5	0	0	23
WNW	0	0	0	2	2	0	4
NW	0	0	0	2	1	0	3
NNW	0	0	0	3	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	4	38	31	14	2	89

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 2012
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	19	42	22	2	95
NNE	1	6	10	15	2	0	34
NE	2	13	22	27	21	4	89
ENE	0	17	9	22	18	2	68
E	1	8	4	5	4	0	22
ESE	0	11	9	2	2	0	24
SE	0	11	10	2	1	0	24
SSE	1	16	12	4	0	0	33
S	0	21	17	14	2	0	54
SSW	0	17	17	15	5	2	56
SW	1	18	24	20	5	1	69
WSW	1	11	29	16	5	0	62
W	1	20	44	18	7	0	90
WNW	0	7	24	17	2	0	50
NW	0	7	25	31	9	6	78
NNW	2	6	20	23	20	1	72
Variable	0	0	0	0	0	0	0
Total	10	199	295	273	125	18	920

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 2012
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	1	5	12	18	7	0	43
NNE	1	5	5	16	0	0	27
NE	0	5	9	25	12	0	51
ENE	0	0	11	20	3	0	34
E	0	5	9	19	8	0	41
ESE	0	5	10	6	3	0	24
SE	0	3	6	3	4	0	16
SSE	1	1	4	1	1	0	8
S	1	5	7	6	3	1	23
SSW	0	2	6	9	7	14	38
SW	0	4	6	9	12	12	43
WSW	1	1	7	12	9	1	31
W	0	4	7	14	3	0	28
WNW	2	5	10	8	2	0	27
NW	1	11	8	19	4	0	43
NNW	0	1	10	6	9	1	27
Variable	0	0	0	0	0	0	0
Total	8	62	127	191	87	29	504

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 2012
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	2	1	6	4	0	13
NNE	1	1	3	2	2	0	9
NE	0	2	0	2	1	0	5
ENE	1	5	2	0	0	0	8
E	3	6	4	9	3	0	25
ESE	5	1	11	18	2	0	37
SE	1	2	9	21	6	0	39
SSE	0	3	10	14	4	1	32
S	1	5	14	9	16	0	45
SSW	2	4	16	23	16	11	72
SW	0	4	15	23	12	4	58
WSW	2	1	10	28	12	0	53
W	1	0	15	16	7	0	39
WNW	1	3	11	18	1	0	34
NW	3	3	9	7	1	0	23
NNW	0	2	11	6	2	0	21
Variable	0	0	1	0	0	0	1
Total	21	44	142	202	89	16	514

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 2012
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	1	0	1
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	0	1	0	0	0	0	1
ESE	1	0	0	0	0	0	1
SE	0	0	2	7	1	0	10
SSE	0	0	1	8	10	0	19
S	1	0	0	8	7	3	19
SSW	0	4	4	0	13	6	27
SW	0	1	8	11	2	1	23
WSW	0	1	7	9	0	0	17
W	1	0	8	9	0	0	18
WNW	0	1	2	6	1	0	10
NW	0	0	2	1	0	0	3
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	4	9	34	59	35	10	151

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 2012
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	1	0	0	1
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	1	0	0	1

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	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	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	5	1	0	6
SW	0	0	0	1	2	0	3
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	2	6	3	0	11

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	1	1	0	0	2
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	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	6	3	0	10
SW	0	0	0	3	2	0	5
WSW	0	0	0	0	1	0	1
W	0	0	1	0	1	0	2
WNW	0	0	1	2	1	0	4
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	6	12	8	0	26

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	40	11	0	0	77
NNE	0	16	23	6	0	0	45
NE	0	6	10	3	0	0	19
ENE	0	5	19	1	0	0	25
E	1	6	10	6	0	0	23
ESE	0	4	8	1	0	0	13
SE	0	1	9	4	2	0	16
SSE	0	6	18	8	3	2	37
S	0	10	29	12	7	7	65
SSW	0	14	20	27	24	0	85
SW	1	7	11	10	3	1	33
WSW	0	15	10	6	1	1	33
W	3	23	34	25	8	0	93
WNW	0	19	43	42	8	0	112
NW	2	10	37	22	6	3	80
NNW	1	24	51	24	12	2	114
Variable	0	0	0	0	0	0	0
Total	9	191	372	208	74	16	870

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	0	25	43	5	0	0	73
NNE	1	30	11	1	0	0	43
NE	0	6	12	1	0	0	19
ENE	1	4	16	3	0	0	24
E	0	5	9	10	6	0	30
ESE	1	4	3	3	1	0	12
SE	1	7	18	2	3	0	31
SSE	2	12	14	2	0	0	30
S	1	5	39	41	12	1	99
SSW	0	6	37	39	16	0	98
SW	1	17	15	18	2	0	53
WSW	3	9	26	13	0	0	51
W	2	22	34	8	2	1	69
WNW	0	23	35	5	11	23	97
NW	0	4	17	1	2	3	27
NNW	0	9	17	13	6	0	45
Variable	0	0	0	0	0	0	0
Total	13	188	346	165	61	28	801

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	1	9	0	0	0	0	10
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	2	1	0	0	0	0	3
E	1	5	5	0	0	0	11
ESE	0	10	3	0	0	0	13
SE	0	6	5	0	0	0	11
SSE	1	6	17	0	0	0	24
S	2	7	14	6	1	0	30
SSW	0	7	31	15	0	0	53
SW	0	8	10	0	0	0	18
WSW	1	4	6	0	0	0	11
W	0	11	6	0	0	0	17
WNW	0	1	7	0	0	0	8
NW	2	3	3	0	0	0	8
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	10	80	107	21	1	0	219

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	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	3	6	0	0	0	9
ESE	0	9	3	0	0	0	12
SE	1	44	6	0	0	0	51
SSE	1	36	21	0	0	0	58
S	0	27	15	0	0	0	42
SSW	0	23	30	3	0	0	56
SW	0	10	8	3	0	0	21
WSW	0	2	0	1	0	0	3
W	1	3	1	0	0	0	5
WNW	1	7	6	0	0	0	14
NW	0	0	2	0	0	0	2
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	5	164	98	7	0	0	274

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	0	0	1
NE	0	0	0	1	0	0	1
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	1	2
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	1	0	1
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	3	3	2	8

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	1	9	25	32	14	0	81
NNE	0	6	28	29	10	0	73
NE	0	1	19	15	3	0	38
ENE	0	1	13	20	4	0	38
E	0	2	7	6	12	7	34
ESE	1	2	11	2	1	2	19
SE	0	4	3	10	0	3	20
SSE	1	4	22	12	3	6	48
S	0	7	16	24	8	21	76
SSW	0	7	9	31	19	41	107
SW	0	6	15	6	15	11	53
WSW	1	6	18	3	9	4	41
W	1	10	26	26	21	10	94
WNW	0	6	26	34	33	37	136
NW	1	10	30	51	27	23	142
NNW	1	12	26	27	9	15	90
Variable	0	0	0	0	0	0	0
Total	7	93	294	328	188	180	1090

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 9
Hours of missing stability measurements in all stability classes: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	10	16	23	2	52
NNE	0	2	6	22	6	0	36
NE	0	1	9	11	3	0	24
ENE	0	0	0	12	0	0	12
E	0	0	2	9	5	1	17
ESE	0	1	5	3	0	2	11
SE	0	1	2	6	4	5	18
SSE	0	1	6	8	13	0	28
S	0	1	3	23	25	45	97
SSW	2	3	6	14	32	55	112
SW	0	3	14	18	18	13	66
WSW	0	1	8	19	12	8	48
W	0	3	6	15	10	7	41
WNW	1	2	12	19	26	12	72
NW	0	6	10	13	13	1	43
NNW	0	2	2	3	9	5	21
Variable	0	0	0	0	0	0	0
Total	3	28	101	211	199	156	698

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 12
Hours of missing stability measurements in all stability classes: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	2	2	0	0	0	5
NNE	0	1	2	0	0	0	3
NE	0	0	0	0	0	0	0
ENE	1	1	0	0	0	0	2
E	0	2	1	3	0	0	6
ESE	1	1	3	4	3	0	12
SE	0	0	9	7	3	0	19
SSE	0	0	2	20	9	3	34
S	0	3	5	16	17	8	49
SSW	0	0	9	13	13	23	58
SW	0	1	13	5	19	8	46
WSW	1	1	3	1	1	1	8
W	0	0	2	0	0	0	2
WNW	0	1	2	5	4	0	12
NW	0	0	0	1	10	2	13
NNW	0	1	0	1	0	0	2
Variable	0	0	0	0	0	0	0
Total	4	14	53	76	79	45	271

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: 6

LaSalle County Generating Station

Period of Record: October - December 2012
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	2	0	0	0	0	2
SE	0	0	0	2	3	0	5
SSE	0	0	1	14	2	0	17
S	0	0	4	17	9	5	35
SSW	1	0	4	4	4	12	25
SW	0	3	7	7	1	1	19
WSW	0	1	4	3	0	0	8
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	1	0	0	0	1	1	3
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	2	6	20	47	20	19	114

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: 6

APPENDIX G

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 2012

Prepared By

Teledyne Brown Engineering
Environmental Services

LaSalle County Station
Marseilles, IL 61341

May 2013

Table Of Contents

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 eighteen groundwater well sampling locations. The results for LaSalle's RGPP sampling efforts in 2012 are included in this report.

This is the seventh 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 2012. During that time period, 189 analyses were performed on 82 samples from 22 locations (4 surface water and 18 groundwater wells). 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 2012.

All gamma-emitting radionuclides attributable to licensed plant operations were not 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 10 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. Levels of tritium were detected at concentrations greater than the LLD of 200 pCi/L in 7 of 18 groundwater monitoring locations. The tritium concentrations ranged from <LLD to 379,000 ± 200 pCi/L. Elevated tritium levels (>200 pCi/L) observed are associated with the U1 CY tank leak, which occurred in June - July, 2010, and historic elevated tritium believed to be associated with the 2001 CY tank leak, as documented in the Station's 10CFR50.75(g) report.

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater samples during the first and fourth sampling in 2012. Gross Alpha (dissolved) was detected in one of the groundwater locations

at a concentration of 2.0 pCi/L. Gross Alpha (suspended) was detected in 2 of 11 samples affecting 2 of 10 groundwater locations analyzed. The concentrations ranged from 3.7 to 7.1 pCi/L. Gross Beta (dissolved) was detected in 10 of 12 samples affecting 8 of 10 groundwater locations analyzed. The concentrations ranged from 2.5 to 25.1 pCi/L. Gross Beta (suspended) was detected in 7 of 11 samples affecting 7 of 10 groundwater locations analyzed. The concentrations ranged from 3.7 to 17.9 pCi/L.

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on surface water samples during the fourth sampling in 2012. Gross Alpha (dissolved) was detected in one of the surface water locations at a concentration of 1.2 pCi/L. Gross Alpha (suspended) was detected in one of the four surface water locations analyzed at a concentration of 1.7 pCi/lL. Gross Beta (dissolved) was detected at all four of the surface water locations analyzed. The concentrations ranged from 9.2 to 23.7 pCi/L. Gross Beta (suspended) was detected at two of the four surface water locations analyzed. The concentrations ranged from 1.9 to 7.8 pCi/L.

Hard-To-Detect analyses were performed on two of the groundwater locations to establish background levels. The analyses for groundwater included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235, U-238. The isotopes of U-234 and U-238 was detected in one sample affecting 1 of 2 groundwater monitoring locations analyzed. The U-234 concentration range was 0.93 pCi/L and the U-238 concentration was 0.95 pCi/L. The levels detected are considered background.

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 No. 1 went critical on 16 March 1982. Unit No. 2 went critical on 02 December 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 2012.

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:

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.

1. 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.

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

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

4. 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 Table A–1, Appendix A.

Groundwater and Surface Water

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 2012. 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 and surface water.

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.

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 could be 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

Groundwater

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 18 locations were analyzed for tritium activity. Tritium values ranged from <LLD to 379,000 pCi/L at well MW-LS-104S. Based on the hyrogeological 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

Nine samples from 9 groundwater locations were analyzed for Strontium-89 and Strontium-90. The results were less than the required detection limit of 10 pCi/liter for Strontium-89 and less than the required detection limit of 1.0 pCi/liter for Strontium-90 (Table B-I.1, Appendix B).

Gross Alpha and Gross Beta (dissolved and suspended)

Gross Alpha (dissolved) was detected in one of the groundwater locations at a concentration of 2.0 pCi/L. Gross Alpha (suspended) was detected in 2 of 11 samples affecting 2 of 10 groundwater locations analyzed. The concentrations ranged from 3.7 to 7.1 pCi/L. Gross Beta (dissolved) was detected in 10 of 12 samples affecting 8 of 10 groundwater locations analyzed. The concentrations ranged from 2.5 to 25.1 pCi/L. Gross Beta (suspended) was detected in 7 of 11 samples affecting 7 of 10 groundwater locations analyzed. The concentrations ranged from 3.7 to 17.9 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

No 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 two groundwater locations to establish 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 was detected in one sample affecting 1 of 2 groundwater monitoring locations analyzed. The U-234 concentration was 0.93 pCi/L and the U-238 concentration was 0.95 pCi/L. The levels detected are considered background (Table B-I.3, Appendix B).

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

B. Surface Water Results

Surface Water

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 four locations were analyzed for tritium activity. Seven of 18 samples from 2 of 4 surface water locations did show activity above 200 pCi/L. The concentrations ranged from 291 to 2,740 pCi/L. Based on the hyrogeological 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. 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–II.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 surface water samples during the fourth sampling in 2012. Gross Alpha (dissolved) was detected in one of the surface water locations at a concentration of 1.2 pCi/L. Gross Alpha (suspended) was detected in one of the four surface water locations analyzed at a concentration of 1.7 pCi/lL. Gross Beta (dissolved) was detected at all four of the surface water locations analyzed. The concentrations ranged from 9.2 to 23.7 pCi/L. Gross Beta (suspended) was detected at two of the four surface water locations analyzed. The concentrations ranged from 1.9 to 7.8 pCi/L (Table B–II.1, Appendix B).

Gamma Emitters

No gamma emitting nuclides were detected in any of the samples analyzed. (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 2010 U1 CY tank leak is being trended per the LaSalle RGPP. The plume had been dispersing with groundwater flow, however, an extraction well has been installed to provide additional control of the plume migration (see Section H.3). 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

   Two additional monitoring wells (TW-LS-120 and TW-LS-121S) were installed in June 2012 to further evaluate the tritium plume in the area of the U1 CY tank.

3. Actions to Recover/Reverse Plumes

   An extraction well (RW-LS-100S), to control the migration of the tritium plume near the U1 CY tank, was installed and became operational in October 2012.

APPENDIX A

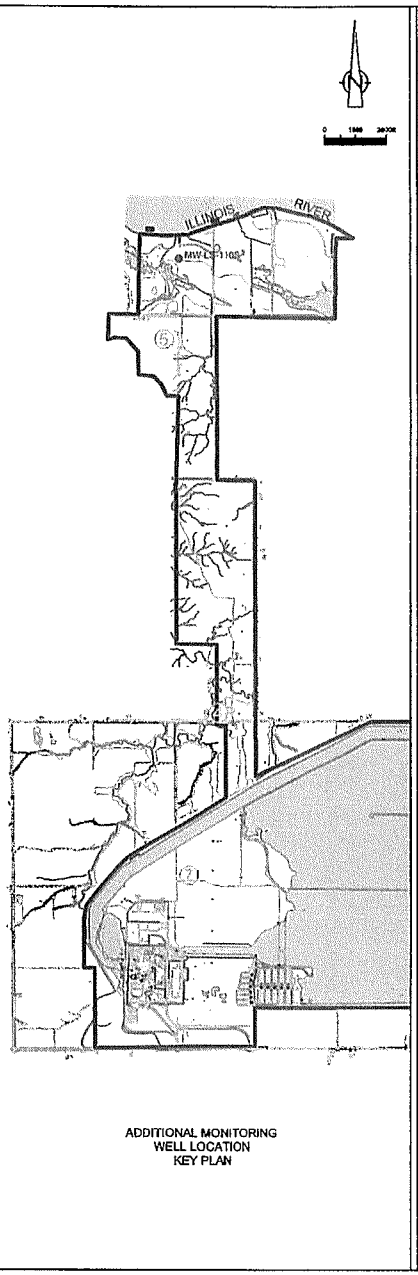
LOCATION DESIGNATION

TABLE A-1 **LaSalle County Station Groundwater Monitoring Sample Point List, 2012**

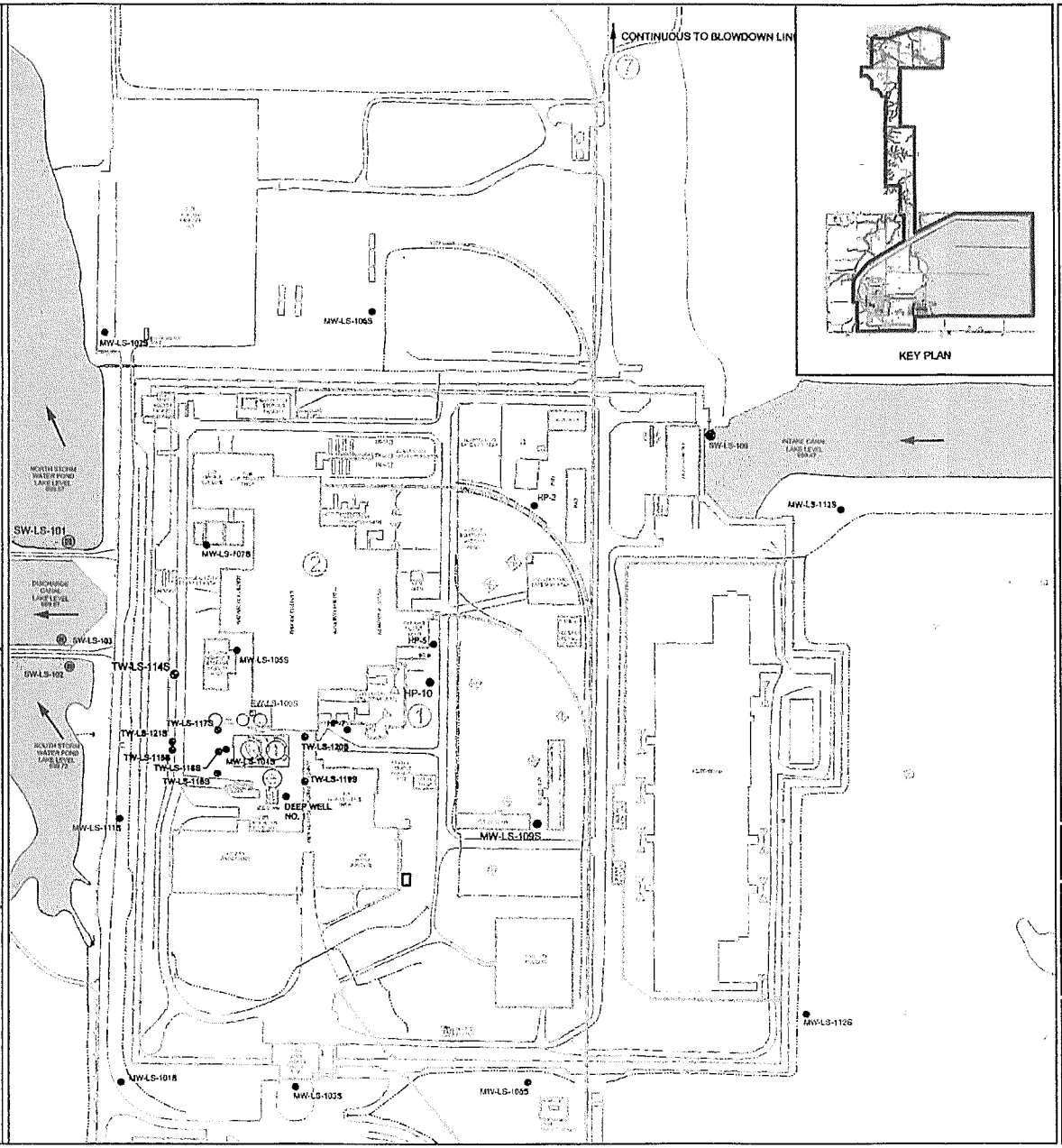
Site	Site Type
SW-LS-101	Surface Water
SW-LS-102	Surface Water
SW-LS-103	Surface Water
SW-LS-104	Surface Water
SW-LS-105	Surface Water
SW-LS-106	Surface Water
MW-LS-101S	Monitoring Well
MW-LS-102S	Monitoring Well
MW-LS-103S	Monitoring Well
MW-LS-104S	Monitoring Well
MW-LS-105S	Monitoring Well
MW-LS-106S	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
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

APPENDIX A-1

LASALLE COUNTY STATION MAP OF GROUNDWATER MONITORING SAMPLE LOCATIONS



ADDITIONAL MONITORING
WELL LOCATION
KEY PLAN



KEY PLAN

LEGEND

- EDGE OF WATER
- STORM WATER DITCH
- TRANSMISSION TOWER
- MONITORING WELL LOCATION
- (1) AREA FOR FURTHER EVALUATION (AFE LaSALLE)
- SURFACE WATER FLOW
- RECOVERY WELL LOCATION AND IDENTIFIER
- TW-1148 APPROXIMATE TEMPORARY MONITORING WELL LOCATION AND IDENTIFIER

AFE	DESCRIPTION
1	NPDES#1
2	REACTOR / TURBINE / AUXILIARY BUILDINGS
3	CY SYSTEM
4	VALVE PIT 3B
5	VALVE PIT 1SB
6	VALVE PIT 1SB
7	RAD WASTE LINE

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

EXELON GENERATION COMPANY, LLC

FLEETWIDE ASSESSMENT

MONITORING WELL LOCATIONS
LaSALLE GENERATING STATION
MARSEILLES, ILLINOIS

Exelon — CORNERSTONE-ROVERS & ASSOCIATES

Source Reference: BOUNDARY, TOPOGRAPHIC AND UTILITY SURVEY LASALLE NUCLEAR GENERATING STATION, 2008

Project Manager:	Reviewed By:	Date:
S. QUIGLEY	M. REILLY	JULY 2008
Scale:	Project No.:	Report No.: / Drawing No.:
AS SHOWN	71554-00	MART002 / figure 1

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APPENDIX B

DATA TABLES

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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-10	02/07/12		< 187	< 3.3	< 0.6	< 4.9	< 1.1	< 5.9	< 2.6
HP-10	06/11/12		< 197						
HP-10	09/20/12		< 170						
HP-10	12/03/12		< 189						
HP-2	02/06/12		< 186	< 2.8	< 0.5	< 2.3	< 5.7	25.1 ± 3.8	13.0 ± 2.2
HP-2	06/11/12		< 197						
HP-2	09/20/12		< 172						
HP-2	12/04/12		< 195						
HP-5	02/06/12		< 187	< 3.1	< 0.6	2.0 ± 1.2	7.1 ± 0.8	4.3 ± 1.2	4.2 ± 0.6
HP-5	06/11/12		< 198						
HP-5	09/20/12		< 173						
HP-5	12/03/12		< 194						
HP-7	03/22/12		< 188	< 2.8	< 0.6	< 4.1	< 1.1	12.3 ± 2.1	< 2.0
HP-7	06/21/12		< 199						
HP-7	09/20/12		< 172						
HP-7	12/04/12		< 191						
MW-LS-104S	02/06/12		245000 ± 24400	< 3.1	< 0.6	< 0.6	< 1.6	< 3.1	4.3 ± 0.7
MW-LS-104S	06/11/12		379000 ± 37700						
MW-LS-104S	09/14/12		292000 ± 28900						
MW-LS-104S	12/03/12		290000 ± 27000						
MW-LS-105S	02/07/12		328 ± 132	< 3.2	< 0.6	< 0.8	< 1.2	3.6 ± 0.9	17.9 ± 1.2
MW-LS-105S	06/11/12		< 200						
MW-LS-105S	09/20/12		604 ± 136						
MW-LS-105S	12/03/12		200 ± 128						
MW-LS-106S	02/08/12		< 190						
MW-LS-106S	12/05/12		< 172			< 1.5	3.7 ± 1.7	2.5 ± 1.1	16.4 ± 2.5
MW-LS-107S	02/07/12		< 187	< 1.8	< 0.6	< 1.6	< 1.2	3.0 ± 1.2	3.7 ± 0.9
MW-LS-107S	02/07/12	Recount						5.9 ± 3.1	
MW-LS-107S	06/11/12		< 198						
MW-LS-107S	09/21/12		< 171						
MW-LS-107S	12/03/12		< 191						
MW-LS-111S	02/08/12		< 160	< 2.0	< 0.6	< 4.2	< 1.9	14.5 ± 3.9	7.1 ± 2.0
MW-LS-111S	06/12/12		< 195						
MW-LS-111S	09/21/12		< 173						
MW-LS-111S	12/04/12		< 189						
RW-LS-100S	09/20/12		< 188						
RW-LS-100S	10/23/12			< 5.5	< 0.7				
RW-LS-100S	11/15/12		< 190			< 0.8	< 0.5	2.7 ± 0.8	< 1.7
RW-LS-100S	12/15/12		2020 ± 262			< 0.6	< 0.3	3.8 ± 0.9	< 1.7
RW-LS-100S	12/15/12	Reanalysis	1910 ± 257						
TW-LS-114S	02/07/12		< 161						
TW-LS-114S	06/21/12		< 148						
TW-LS-114S	09/20/12		< 171						
TW-LS-114S	12/03/12		< 195						
TW-LS-115S	02/07/12		< 161						
TW-LS-115S	06/11/12		< 179						
TW-LS-115S	09/20/12		< 173						
TW-LS-115S	12/03/12		< 190						
TW-LS-116S	02/06/12		17500 ± 1790						
TW-LS-116S	06/11/12		14100 ± 1440						
TW-LS-116S	09/21/12		20000 ± 2040						
TW-LS-116S	12/03/12		14600 ± 1510						
TW-LS-117S	02/07/12		< 157						
TW-LS-117S	06/11/12		< 152						

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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-117S	09/20/12		< 174						
TW-LS-117S	12/03/12		< 189						
TW-LS-118S	02/06/12		297000 ± 29100						
TW-LS-118S	06/11/12		260000 ± 25100						
TW-LS-118S	09/14/12		186000 ± 18300						
TW-LS-118S	12/03/12		171000 ± 17100						
TW-LS-119S	02/07/12		658 ± 133						
TW-LS-119S	06/20/12		31400 ± 3170						
TW-LS-119S	06/20/12	Recount	29400 ± 2980						
TW-LS-119S	06/20/12	Reanalysis	28900 ± 2930						
TW-LS-119S	09/21/12		842 ± 147						
TW-LS-119S	12/03/12		1700 ± 232						
TW-LS-119S	12/03/12	Recount	1830 ± 243						
TW-LS-119S	12/03/12	Reanalysis	1600 ± 228						
TW-LS-120S	09/20/12		1760 ± 230						
TW-LS-120S	12/03/12		11100 ± 1160						
TW-LS-120S	12/03/12	Recount	11900 ± 1230						
TW-LS-120S	12/03/12	Reanalysis	10600 ± 1110						
TW-LS-121S	09/20/12		< 176						
TW-LS-121S	12/07/12		< 186						

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

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-10	02/07/12	< 17	< 15	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 16	< 5
HP-2	02/06/12	< 20	< 35	< 2	< 2	< 7	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 20	< 7
HP-5	02/06/12	< 20	< 38	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 19	< 6
HP-7	03/22/12	< 31	< 48	< 3	< 3	< 5	< 3	< 7	< 4	< 6	< 5	< 3	< 3	< 15	< 5
MW-LS-104S	02/06/12	< 21	< 18	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 13	< 2	< 2	< 22	< 7
MW-LS-104S	09/14/12	< 14	< 10	< 1	< 1	< 3	< 1	< 2	< 2	< 2	< 12	< 1	< 1	< 18	< 5
MW-LS-105S	02/07/12	< 15	< 12	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 9	< 1	< 2	< 15	< 5
MW-LS-106S	12/05/12	< 42	< 23	< 3	< 4	< 11	< 3	< 6	< 5	< 8	< **529**	< 3	< 3	< **267**	< **81**
MW-LS-107S	02/07/12	< 18	< 15	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 17	< 5
MW-LS-111S	02/08/12	< 19	< 16	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 5
RW-LS-100S	11/15/12	< 29	< 24	< 1	< 2	< 8	< 1	< 3	< 3	< 5	< **1495**	< 1	< 1	< **373**	< **133**
RW-LS-100S	12/15/12	< 26	< 14	< 2	< 2	< 6	< 2	< 3	< 2	< 4	< **168**	< 1	< 2	< **96**	< **29**

BOLDED VALUES INDICATE MDC WAS NOT MET DUE TO VOLUME SUPPLIED AND AGE OF SAMPLE AND AT TIME OF RECEIPT

TABLE B-I.3 CONCENTRATIONS OF HARD TO DETECTS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012

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
MW-LS-104S	02/06/12	< 0.07	< 0.03	< 0.05	< 0.10	< 0.07	0.93 ± 0.31	< 0.11	0.95 ± 0.32	< 196	< 3.5
RW-LS-100S	10/23/12									< 136	< 3.3

TABLE B-II.1 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
SW-LS-101	02/08/12	< 190				
SW-LS-101	06/12/12	< 195				
SW-LS-101	09/21/12	< 169				
SW-LS-101	12/04/12	< 191	< 1.1	< 0.5	9.2 ± 1.3	< 1.6
SW-LS-102	02/08/12	639 ± 147				
SW-LS-102	06/12/12	2620 ± 329				
SW-LS-102	09/21/12	2740 ± 323				
SW-LS-102	12/04/12	1890 ± 241	< 2.2	1.7 ± 1.1	23.7 ± 1.9	7.8 ± 1.8
SW-LS-103	02/08/12	< 188				
SW-LS-103	06/12/12	< 200				
SW-LS-103	09/21/12	< 169				
SW-LS-103	12/05/12	291 ± 122	1.2 ± 0.7	< 0.4	12.0 ± 1.4	1.9 ± 1.1
SW-LS-103	12/05/12	370 ± 137				
SW-LS-103	12/05/12	320 ± 134				
SW-LS-106	02/08/12	< 189				
SW-LS-106	06/12/12	< 196				
SW-LS-106	09/21/12	< 174				
SW-LS-106	12/05/12	< 192	< 0.7	< 0.4	13.8 ± 1.5	< 1.5

TABLE B-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	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	12/04/12	< 41	< 22	< 2	< 4	< 11	< 2	< 5	< 4	< 7	< **525**	< 2	< 2	< **233**	< **77**
SW-LS-102	12/04/12	< 48	< 23	< 3	< 5	< 13	< 3	< 6	< 5	< 9	< **653**	< 3	< 3	< **296**	< **85**
SW-LS-103	12/05/12	< 33	< 18	< 2	< 3	< 10	< 2	< 5	< 4	< 7	< **401**	< 2	< 2	< **194**	< **77**
SW-LS-106	12/05/12	< 45	< 25	< 3	< 5	< 13	< 4	< 6	< 5	< 8	< **559**	< 2	< 3	< **262**	< **83**

BOLDED VALUES INDICATE MDC WAS NOT MET DUE TO VOLUME SUPPLIED AND AGE OF SAMPLE AND AT TIME OF RECEIPT