



Entergy

Entergy Operations, Inc.

River Bend Station
5485 U.S. Highway 61N
St. Francisville, LA 70775
Tel 225-378-3305

Kristi Huffstatler

Acting Manager-Regulatory Assurance

May 2, 2016

U. S. Nuclear Regulatory Commission
Document Control Desk
11555 Rockville Pike
Rockville, MD 20852-2738

RBG-47682
RBF1-16-0056

Subject: Annual Radioactive Effluent Release Report
River Bend Station – Unit 1
License No. NPF-47
Docket No. 50-458

Dear Sir or Madam,

Enclosed is the River Bend Station (RBS) Annual Radioactive Effluent Release Report for 2015 for the period January 1, 2015 through December 31, 2015. This report is submitted in accordance with the RBS Technical Specifications, Section 5.6.2.

Should you have any questions regarding the enclosed, please contact Kristi Huffstatler, at (225) 378-3305.

Sincerely,

KRH/tjb
enclosure

IE48
NRR

Annual Radioactive Effluent Release Report
RBG-47682
Page 2 of 2

cc: U.S. Nuclear Regulatory Commission
Region IV
1600 E. Lamar Blvd.
Arlington, TX 76011-4511

NRC Resident Inspector (w/o)
PO Box 1050
St. Francisville, LA 70775

Records Clerk (w/o)
Public Utility Commission of Texas
1701 N. Congress Ave.
Austin Texas 78711-13326

Mr. Stephen S. Koenick, Project Manager (w/o)
U.S. Nuclear Regulatory Commission
MS 8 B1A
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

RIVER BEND STATION

**2015 ANNUAL RADIOLOGICAL EFFLUENT RELEASE
REPORT**

REVIEWED BY: Wn Spell
William H. Spell / Senior HP/Chem Specialist

REVIEWED BY: Adrainne J. Wilson 4-27-16
Adrainne J. Wilson / Manager – Chemistry

REVIEWED BY: Shannon C. Peterkin
Shannon C. Peterkin / Radiation Protection Manager

APPROVED BY: Carl E. Rich, Jr 4-30-16
Carl E. Rich, Jr / General Manager Plant Operations

Table of Contents

I.	SUPPLEMENTAL INFORMATION.....	4
II.	GASEOUS EFFLUENT SUMMARY INFORMATION	12
III.	LIQUID EFFLUENT SUMMARY INFORMATION.....	12
IV.	SOLID WASTE	12
V.	RADIOLOGICAL IMPACT ON MAN (40CFR190).....	12
VI.	METEOROLOGICAL DATA.....	13
VII.	RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION OPERABILITY	14
VIII.	RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION OPERABILITY	14
IX.	LIQUID HOLD UP TANKS.....	14
X.	RADIOLOGICAL ENVIRONMENTAL MONITORING.....	14
XI.	LAND USE CENSUS.....	14
XII.	OFFSITE DOSE CALCULATION MANUAL (ODCM).....	14
XIII.	MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS.....	15
XIV.	PROCESS CONTROL PROGRAM (PCP).....	16
XV.	INDUSTRY GROUND WATER PROTECTION INITIATIVE (GPI) – FINAL GUIDANCE DOCUMENT (NEI 07-07) OBJECTIVE ANNUAL REPORTING.....	17
TABLE 1A	GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES	19
TABLE 1B	GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE	20
TABLE 1C	GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE	21
TABLE 1D	GASEOUS EFFLUENTS - MIXED MODE RELEASES - CONTINUOUS MODE	22
TABLE 1E	SUPPLEMENTAL INFORMATION GASEOUS EFFLUENTS - BATCH MODE.....	23
TABLE 1F	RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM.....	24
TABLE 1G	2015 GASEOUS ANNUAL DOSE SUMMARY REPORT.....	25
TABLE 2A	LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES	26
TABLE 2B	LIQUID EFFLUENTS - CONTINUOUS MODE	27
TABLE 2C	LIQUID EFFLUENTS - BATCH MODE.....	28
TABLE 2E	RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM	30
TABLE 2F	LIQUID ANNUAL DOSE SUMMARY REPORT	31
TABLE 3	EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2015 YEAR.....	32
TABLE 4	MEMBERS OF THE PUBLIC ON SITE DOSE	34
TABLE 5	2015 YEAR METEOROLOGICAL DATA - JOINT FREQUENCY TABLES	36

TABLE 6	ATMOSPHERIC DISPERSION AND DEPOSITION RATES FOR THE MAXIMUM INDIVIDUAL DOSE CALCULATIONS.....	53
TABLE 7	GROUNDWATER MONITORING WELL SAMPLE RESULTS.....	54
ATTACHMENT 1 - 2013 TABLE 3 REVISED		69

This is the Annual Radioactive Effluent Release Report for the period of January 1, 2015, through December 31, 2015. This report is submitted in accordance with Technical Specification 5.6.3 of Appendix A to River Bend Station (RBS) License Number NPF-47.

A corrected Solid Waste and Irradiated Fuel Shipments table from the 2013 Annual Radioactive Effluent Release Report is included in Attachment 1.

I. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. 10CFR50, Appendix I Limits

a) Fission and Activation Gases

In accordance with Technical Requirement (TR) 3.11.2.2, the air dose due to noble gases released in gaseous effluent to areas at and beyond the SITE BOUNDARY shall be limited to:

$D_{\text{Gamma-Air}}$ = gamma air dose from radioactive noble gases in millirad (mrad)

$$= 3.17\text{E-}8 \sum_{i=1}^n M_i \overline{(X/Q)} Q_i \begin{matrix} \leq 5 \text{ mrad/qtr} \\ \leq 10 \text{ mrad/yr} \end{matrix}$$

$D_{\text{Beta-Air}}$ = beta air dose from radioactive noble gases in millirad (mrad)

$$= 3.17\text{E-}8 \sum_{i=1}^n N_i \overline{(X/Q)} Q_i \begin{matrix} \leq 10 \text{ mrad/qtr} \\ \leq 20 \text{ mrad/yr} \end{matrix}$$

b) Radioiodines (I-131 & I-133) and Particulate

In accordance with Technical Requirement 3.11.2.3, the dose to a MEMBER OF THE PUBLIC from radioiodines (I-131 and I-133), tritium (H-3) and all radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluent releases to areas at and beyond the SITE BOUNDARY shall be limited to:

$D_{\text{I\&8DP}\tau}$ = Dose in mrem to the organ (τ) for the age group of interest from radioiodine (I-131, I-133, tritium, and 8 day particulate via the

pathway of interest.)

$$= 3.17\text{E-}08 (F_o) \sum_{i=1}^n P_{it} (X/Q) Q_i \quad \text{and}$$

$$= 3.17\text{E-}08 (F_o) \sum_{i=1}^n R_{it} (D/Q) Q_i \quad \text{and}$$

$$D_{\tau} = \sum_{z=1}^n D_{I\&8DP\tau} \leq 7.5 \text{ mrem/qtr}$$

$$\leq 15 \text{ mrem/yr}$$

(above terms defined in the RBS ODCM)

c) Liquid Effluent

In accordance with Technical Requirement 3.11.1.2, the dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluent released to UNRESTRICTED AREAS shall be limited to:

$$D_{it} = \frac{A_{it} \Delta t Q_i}{(DF) D_w}$$

and

$$D_{TOTAL\tau} = \sum_{i=1}^n D_{it}$$

$D_{TOTAL\tau}$ = Total dose commitment to the organ (τ) due to all releases during the desired time interval in mrem

and

$$D_{TOTAL} \quad \text{Total Body} \leq 1.5 \text{ mrem/qtr}$$

$$\leq 3 \text{ mrem/yr}$$

$$D_{TOTAL} \quad \text{Any Organ} \leq 5 \text{ mrem/qtr}$$

$$\leq 10 \text{ mrem/yr}$$

(above terms defined in RBS ODCM)

2. 40CFR190 Limits

In accordance with Technical Requirement 3.11.4, the annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC, due to releases of radioactivity and to radiation from uranium fuel cycle sources, shall be limited to:

\leq 25 mrem to the total body or any organ (except the thyroid)

\leq 75 mrem to the thyroid

3. Miscellaneous Limits

a. Technical Requirement 3.11.2.1 - Fission and Activation Gases

In accordance with Technical Requirement 3.11.2.1, the dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be less than or equal to 500 millirems/year (mrem/yr) to the total body and less than or equal to 3000 mrem/yr to the skin:

DR_{TB} = Dose rate to the total body in mrem/yr

$$= \sum_{i=1}^n K_i \frac{(X/Q)}{Q_i} \leq 500 \text{ mrem/yr and}$$

DR_{SKIN} = Dose rate to the skin in mrem/yr

$$= \sum_{i=1}^n L_i + 1.1M_i \frac{(X/Q)}{Q_i} \leq 3000 \text{ mrem/yr}$$

(above terms defined in RBS ODCM)

b. Technical Requirement 3.11.2.1 - Radioiodine (I-131 & I-133) and Particulate

In accordance with Technical Requirement 3.11.2.1, the dose rate due to radioiodines, tritium, and all radionuclides in particulate form with half-lives greater than 8 days released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be limited to less than or equal to 1500 mrem/yr to any organ:

$DR_{I\&8DP\tau}$ = Dose rate to the organ τ for the age pathway group

of interest from Radioiodines (I-131 & I-133), tritium, and 8 day particulate via the inhalation pathway in mrem/yr.

$$DR_{I\&8DP\tau} = \sum_{i=1}^n P_i \overline{(X/Q)} \cdot Q_i \leq 1500 \text{ mrem/yr}$$

(above terms defined in RBS ODCM)

c. Technical Requirement 3.11.1.1 - Liquid Effluent

In accordance with Technical Requirement 3.11.1.1, the concentration of radioactive material released in liquid effluent to UNRESTRICTED AREAS shall be limited to ten times the concentrations specified in 10CFR20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-04 microcuries/milliliter total concentration.

d. Technical Requirement 3.11.2.5 - Ventilation Exhaust Treatment

In accordance with Technical Requirement 3.11.2.5, the VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses, due to gaseous effluent releases to areas and beyond the SITE BOUNDARY would exceed 0.3 mrem to any organ in a 31-day period.

e. Technical Requirement 3.11.1.3 - Liquid Radwaste Treatment System

In accordance with Technical Requirement 3.11.1.3, the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid waste prior to their discharge when the projected doses, due to the liquid effluent, to UNRESTRICTED AREAS would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31-day period.

B. Effluent Concentration Limits

1. Gaseous Releases

The concentrations of radioactive gaseous releases are based on the dose rate restrictions in RBS Technical Requirements, rather than the Effluent Concentration Limits (ECL) listed in 10CFR20 Appendix B, Table 2, Column 1.

2. Liquid Releases

The Effluent Concentration Limits of radioactive materials in liquid effluents are limited to ten times 10CFR20, Appendix B, Table 2, Column 2.

C. Measurements and Approximations of Total Radioactivity

1. Gaseous Effluent

a. Fission and Activation Gases

Periodic grab samples are obtained from the Main Plant Exhaust Duct, Fuel Building Exhaust Vent and Radwaste Building Exhaust Vent. These samples are analyzed using high purity germanium detectors coupled to computerized pulse height analyzers. The sampling and analysis frequencies are described in Table 1F.

Sampling and analysis of these effluent streams provide noble gas radionuclide relative abundance that can then be applied to the noble gas gross activity and gross activity release rate to obtain nuclide specific activities and release rates. The noble gas gross activity released within a specific time period is determined by integrating the stack monitor release rate over the considered time period. If no activity was detected between the stack grab sample and a significant increase in hourly averages was recorded, the nuclide relative abundance of the last sample (or the last similar event), which indicated the presence of activity, was used to obtain nuclide specific activities. Correction factors for the monitors are derived and applied for each sampling period whenever noble gas radionuclides are detected in the effluent stream.

b. Particulate and Radioiodine (I-131 & I-133)

Particulates, Iodine-131 and Iodine-133 are continuously sampled from the three release points using a particulate filter and charcoal cartridge in line with a sample pump (stack monitor pump). These filters and charcoal cartridges are removed and analyzed in accordance with the frequencies specified in Table 1F. Analysis is performed to identify and quantify radionuclides using high purity germanium detectors coupled to computerized pulse height analyzers. Given the nuclide specific activity concentrations, process flow rate, and duration of the sample, the nuclide specific activity released to the environment can be obtained. Due to the continuous sampling process, it is assumed that the radioactive material is released to the environment at a constant rate within the sampling period. Strontium-89 and Strontium-90 (Sr-89 and Sr-90) are quantitatively analyzed by counting by gas flow proportional counting. Gross alpha analysis is performed using a zinc sulfide scintillation counter.

c. Tritium

Tritium grab samples are obtained from the three gaseous release points at the specified frequencies listed in Table 1F using an ice bath condensation collection method. The collected sample is then analyzed using a liquid scintillation counter. Given the tritium concentration, process flow rate, and time period for which the sample is obtained, the tritium activity released to the environment can be determined. Due to the frequency of sampling, it is assumed that the tritium is released to the environment at a constant rate within the time period for which the sample is obtained.

d. Carbon-14 (C-14)

C-14 release details are discussed in Section VI.

e. Nickel-63

No Nickel-63 was quantified in 2015.

2. Liquid Effluent

Representative grab samples are obtained from the appropriate sample recovery tank and analyzed prior to release of the tank in accordance with the frequencies listed in Table 2E. Analysis for gamma emitting nuclides (including dissolved and entrained noble gases) is performed using a high purity germanium detector coupled to a computerized pulse height analyzer. Tritium concentration is determined using a liquid scintillation counter. Strontium-89 and Strontium-90 are quantitatively analyzed by scintillation techniques (Cherenkov counting). Iron-55 is counted with a liquid scintillation counter after digestion of the iron. Gross alpha analysis is performed using a zinc sulfide scintillation counter. The activity of each nuclide released to the environment is determined from the nuclide specific concentration and total tank volume released.

D. Batch Releases

1. Liquid Effluents

Batch releases and receiving stream flow from River Bend Station during the reporting period of January 1, 2015, through December 31, 2015 are shown in Table 2D.

The Mississippi River stream flow is obtained by averaging data from the U. S. Army Corp of Engineers website using flow gauge data at Tarbert Landing.

2. Gaseous Effluents

There were no routine batch releases of gaseous effluents from River Bend Station during the reporting period of January 1, 2015, through December 31, 2015.

E. Abnormal Releases

There were no abnormal releases in 2015.

F. Estimate of Total Error

1. Liquid

The maximum error associated with sample collection, laboratory analysis, and discharge volume is collectively estimated to be:

Fission and Activation Products	$\pm 14.2\%$
Tritium	$\pm 14.2\%$
Dissolved and Entrained Noble Gases	$\pm 14.2\%$
Gross Alpha Radioactivity	$\pm 14.2\%$

2. Gaseous

The maximum error (not including sample line loss) associated with sample flow, process flow, sample collection, monitor accuracy and laboratory analysis are collectively estimated to be:

Noble Gases	$\pm 37.0\%$
Iodines	$\pm 18.6\%$
Particulate	$\pm 18.6\%$
Tritium	$\pm 18.2\%$

3. Determination of Total Error

The total error (i.e., collective error due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.) is calculated using the following equation:

$$E_T = \sqrt{((E_1)^2 + (E_2)^2 + \dots (E_n)^2)}$$

where:

E_T = total error

$E_1, E_2 \dots E_n$ = individual errors due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.

II. GASEOUS EFFLUENT SUMMARY INFORMATION

Refer to the Table 1 series for the summation of gaseous releases. It should be noted that an entry of "0.00E+00" Curie (Ci) or microcurie/second (uCi/sec) in this section indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 1F. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

III. LIQUID EFFLUENT SUMMARY INFORMATION

Refer to the Table 2 series for the summation of liquid releases. It should be noted that an entry of "0.00E+00" Ci or uCi/ml in this section indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 2E. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

IV. SOLID WASTE

Refer to Table 3, for Solid Waste and Irradiated Fuel Shipments.

V. RADIOLOGICAL IMPACT ON MAN (40CFR190)

An assessment (see summary below) was made of radiation doses to the likely most-exposed member of the public from River Bend and other nearby uranium fuel cycle sources (none within five miles). The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC, due to releases of radioactivity and to radiation from uranium fuel cycle sources, shall be limited to less than or equal to 25 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

Carbon-14 (C-14)

The bounding annual dose from C-14 was calculated using guidance from Regulatory Guide 1.21, Revision 2, NUREG-0016, and the methodology in Regulatory Guide 1.109. The C-14 source term of 11 curies was taken from the site calculation PR(C)-359-3A, Gaseous Releases per NUREG-0016 Revision 1. Carbon-14 does not have dose factors associated with standing on contaminated ground; therefore, no ground plane dose was calculated. There is no milk pathway within five miles of River Bend Station so this pathway is not evaluated. RBS does not take credit for decay in the X/Q. This calculation assumes the inhalation, meat and vegetation pathways are at the site boundary in the sector with the highest X/Q.

The dose from liquid effluents is not calculated as the dose contribution from C-14 is considered to be insignificant as indicated in Regulatory Guide 1.21, Revision 2. According to EPRI 1021106, Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents, 95% of the carbon released is in the form of carbon dioxide and this contributes the highest dose to man. The ingestion pathway, specifically vegetation, is the most likely route of intake for man. An assumption has been made for gaseous releases that plants obtain all of their C-14 from carbon dioxide.

Dose not including C-14:

Organ	mrem
Total Body	4.53E-01
Thyroid	6.53E-01
Other Organ	4.53E-01
Skin	6.53E-01

Bounding Dose from C-14 only:

Organ	mrem
Total Body	9.39E-01
Skin	0.00E+00
Thyroid	9.39E-01
Other Organ (bone)	4.70E+00

In addition, an assessment of doses was made for members of the public due to their activities inside the site boundary can be found in Table 4. The maximally exposed member of the public was an employee staying at RBS during the week and is conservatively calculated to have stayed at least four days per week for 34 weeks. It should be noted that liquid effluent pathway dose was not considered since these individuals would not engage in activities that would allow exposure to this pathway.

VI. METEOROLOGICAL DATA

See Tables 5 and 6 for the cumulative joint frequency distributions and annual average data for continuous releases. The meteorological recovery for 2015 was 91.4%.

VII. RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION OPERABILITY

The minimum number of channels required to be OPERABLE as described in Table 3.3.11.2-1 of Technical Requirement 3.3.11.2 were, if inoperable at any time in the period January 1, 2015, through December 31, 2015, restored to operable status within the required time.

VIII. RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION OPERABILITY

The minimum number of channels required to be OPERABLE as described in Table 3.3.11.3-1 of Technical Requirement 3.3.11.3 were, if inoperable at any time in the period January 1, 2015, through December 31, 2015, restored to operable status within the required time.

IX. LIQUID HOLD UP TANKS

The maximum quantity of radioactive material, excluding tritium and dissolved or entrained noble gases, contained in any unprotected outdoor tank during the period of January 1, 2015, through December 31, 2015 was less than or equal to the 10 curie limit as required by Technical Specification 5.5.8.b.

X. RADIOLOGICAL ENVIRONMENTAL MONITORING

There were no changes to the Radiological Environmental Monitoring Program during the reporting period January 1, 2015, through December 31, 2015.

XI. LAND USE CENSUS

No land use census was performed in 2015.

XII. OFFSITE DOSE CALCULATION MANUAL (ODCM)

There were no changes to the ODCM in 2015.

XIII. MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS

Engineering has performed a review of the Asset Suite database to evaluate non-administrative design changes completed or partially completed during 2015 involving the subject systems (i.e. changes classified as evaluations or nuclear changes). These design changes were then reviewed to determine if there have been any major changes to the subject systems. The review was based on a major change being defined as a modification which affected the method of processing or the effluent from the system. Also, to be a "major change" the change must have affected the Updated Safety Analysis Report (USAR).

The Engineering Changes (EC's) to liquid, solid or gaseous radwaste systems implemented during this time period were:

EC-45515 TMOD Rev. 1 – A revision was created to EC-45515 as it expired on 4/15/15. This TMOD provides the needed information to cross-connect the Reactor Plant Component Cooling Water (RPCCW) system to the Liquid Radioactive Waste (LWS) system. TMOD EC-45515 Rev. 0 was documented in the 2013 Engineering Annual Effluent Report input and determined that this change does not constitute a major change to either the liquid, solid, or gaseous radwaste treatment systems. This TMOD has been removed and the EC closed on 7/6/15.

EC-58746 Rev. 0 – This design change replaces an obsolete analog temperature indicating controller (TIC) N64-TICR032A with a digital controller. The TIC is designed to provide control of the temperature of the Offgas Dryer regeneration process from 0 to 500°F.

EC-57673 TMOD Rev. 0 – This TMOD allowed the temporary disconnecting of heating elements in OFG-H2A, Off-gas Building Dryer Heater that were causing ground faults. This mod was installed on 5/21/15 and removed on 7/1/15.

EC-58382 EVAL Rev. 0 – This EC provides an "Accept As-Is" determination of fan bearing tolerances based upon the short term period that the degraded OFG-FN3A will remain in service until scheduled replacement with a new blower skid per EC-58276.

No EC was identified as being completed during this time period that modified any radioactive waste system major component such that the processing method or effluent was changed. Also no changes were identified affecting the method of processing solid, liquid or gaseous waste or the isotopic composition or the quantity of liquid, solid, or gaseous waste as described in the USAR.

In conclusion, no design changes were completed during the specified time period that constituted a major change to either the liquid, solid or gaseous radwaste treatment systems.

XIV. PROCESS CONTROL PROGRAM (PCP)

Changes to the Process Control Program (PCP) and supporting procedures in 2015 are summarized below:

EN-RW-105, "Process Control Program", Revision 5:

The primary purpose of this revision is to clarify waste ownership in Step 5.1[1](b) and added a new step 5.9[2] (same as step 5.1[1](b)).

Other changes included removing references to Vermont Yankee from the procedure because fleet procedures no longer apply to Vermont Yankee, reformatted table and updated the cross references in Section 8 for compliance with the procedure writer's manual (EN-AD-101-01).

EN-RW-102, "Radioactive Shipping Procedure", Revision 12:

This revision is to add reference to 10 CFR 37 and IER 11-i. Reword Step 5.1.2 for clarity, add step 5.1.3 regarding additional lead time for category 1 and 2 materials. Add step 5.2 for interface with EN-RW-106 updated section 8.0 to reflect insertion of new step and subsequent renumbering of steps. Edited attachments for clarity and statements about special nuclear material and finally removed VY from coversheet

EN-RW-102, "Radioactive Shipping Procedure", Revision 13:

The primary purpose of this revision is to improve the process regarding the notification of Reactor Engineering of non-waste shipments containing special nuclear material. In Attachments 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, and 9.9, the reference to NRC Form 540/541 was replaced with "the manifest." Also updated various site specific commitments (Section 8) as follows:

- Updated information provided by the GGNS Commitment Review
- Added missing document numbers for W3 and RBS
- Added commitment number for GGNS entry in section 8 regarding GNRI-92/00195
- Deleted W3 commitment P-11757 from section 8 per W3 Commitment Review response

EN-RW-104, "Scaling Factors", Revision 11:

Revised step 5.2[2](a) 2nd bullet adding a W3 waste stream sampling method.

EN-RW-104, "Scaling Factors", Revision 12:

This revision was an editorial revision to remove reference to a specific version number of RADMAN software and instead reference the current RADMAN software version. In addition, references to Vermont Yankee were removed from the coversheet

EN-RW-106, "Integrated Transportation Security Plan", Revision 4:

The changes in EN-RW-106 involves administrative changes that deletes an old attachment and creates three additional attachments for each type of category of shipment class (Class 1 2 and 3) and subsequent steps changed to reflect the new attachments. The change also added responsibility for the training manager to ensure proper development and implementation for the key elements of hazardous material and 10CFR37.43(c) requirements. EN-RW-106 does not impact the program described in the Nuclear Security safeguards information, as defined in 10CFR37. A new step requiring an annual review of transportation security plans for carriers under contract was added. Two steps in the responsibilities section were deleted to clarify that Plant Security was not responsible for transportation security.

XV. INDUSTRY GROUND WATER PROTECTION INITIATIVE (GPI) – FINAL GUIDANCE DOCUMENT (NEI 07-07) OBJECTIVE ANNUAL REPORTING

Ground water samples were taken in support of the GPI. These samples are not part of the Radiological Environmental Monitoring Program. The sample results for 2015 are located in Table 7.

River Bend Station made one NEI 07-07 voluntary notification in August 2015, which is included here per NEI 07-07 Objective 2.4.c. This notification was made based on a spill inside the Turbine Building with the potential to reach groundwater. A valving error caused an estimated spill of 60,000 gallons inside the Turbine Building on the 67-foot elevation. Some floor joints in the Turbine Building are thought to be deteriorated to a point where some liquid could seep through to the soil and subsequently to the groundwater. If any water seeped through these joints our geologist estimates that due to decay, dilution and dispersion the activity present is not likely to be detected in the Mississippi River if it were to infiltrate to the Upland Terrace Aquifer and migrate offsite.

The potential offsite impact was reviewed. The Upland Terrace Aquifer is the closest aquifer beneath the site. The Upland Terrace Aquifer is hydrologically

connected to the Mississippi River Alluvial aquifer, and then to the Mississippi River, approximately two miles west of the facility. The site conceptual hydrology model indicates a down-gradient flow generally to the southwest from the Turbine Building to the Mississippi River is entirely on River Bend Station property. River Bend Station site does not utilize ground water for drinking water use, and the nearest known drinking water user from the Mississippi River is many miles downstream below Baton Rouge, Louisiana. The most recent information River Bend Station has is all neighbors surrounding the station use the parish water supply for their primary source of drinking water. Intakes in the Mississippi River for the parish water supply are not downgradient of River Bend Station. Due to the significant dilution volume of the Mississippi River, there would not be any meaningful dose impact offsite.

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Gases						
1. Total Release	Ci	2.91E+01	4.67E+02	3.16E+02	2.79E+01	8.40E+02
2. Avg. Release Rate	uCi/sec	3.75E+00	5.94E+01	3.97E+01	3.51E+00	2.66E+01
3. % Applicable Limit % (1)		1.24E-01	5.94E+00	2.64E+00	3.15E+00	4.51E+00
Iodine-131						
1. Total Release	Ci	7.13E-04	8.60E-05	4.57E-04	8.30E-04	2.09E-03
2. Avg. Release Rate	uCi/sec	9.17E-05	1.09E-05	5.75E-05	1.04E-04	6.62E-05
3. % Applicable Limit % (2)		3.04E-01	3.66E-02	1.97E-01	3.73E-01	4.56E-01
Particulates Half Life >= 8 days						
1. Total Release	Ci	5.06E-06	3.88E-05	5.29E-05	2.70E-05	1.24E-04
2. Avg. Release Rate	uCi/sec	6.51E-07	4.94E-06	6.66E-06	3.40E-06	3.93E-06
3. % Applicable Limit % (2)		2.32E-02	8.30E-03	7.72E-03	1.78E-03	2.86E-02
Tritium						
1. Total Release	Ci	4.64E+00	2.64E+00	2.41E+00	2.15E+00	1.18E+01
2. Avg. Release Rate	uCi/sec	5.97E-01	3.36E-01	3.03E-01	2.71E-01	3.76E-01
3. % Applicable Limit % (2)		1.27E-01	5.39E-02	3.64E-02	2.97E-02	1.23E-01

- 1) Either the gamma air dose limit of 5 mrads/qtr or beta air dose limit of 10 mrads/qtr (T.R. 3.11.2.2.a), whichever is most limiting.
- 2) The % of applicable limit is determined by comparing the dose contribution to the critical organ limits of TRM 3.11.2.3.

TABLE 1B
GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Gases						
XE-133	Ci	2.38E-02	2.00E+00	5.54E-01	0.00E+00	2.57E+00
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	1.61E-01	0.00E+00	0.00E+00	9.92E-01	1.15E+00
XE-135M	Ci	2.81E-01	0.00E+00	0.00E+00	1.09E+00	1.38E+00
		-----	-----	-----	-----	-----
Totals for Period...	Ci	4.65E-01	2.00E+00	5.54E-01	2.09E+00	5.10E+00
Iodines						
I-131	Ci	1.11E-06	0.00E+00	2.99E-06	2.03E-05	2.44E-05
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period...	Ci	1.11E-06	0.00E+00	2.99E-06	2.03E-05	2.44E-05
Particulates Half Life >= 8 days						
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-57	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	5.56E-07	4.18E-06	0.00E+00	0.00E+00	4.73E-06
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-63	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-106	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period...	Ci	5.56E-07	4.18E-06	0.00E+00	0.00E+00	4.73E-06
Tritium						
H-3	Ci	1.67E+00	6.51E-01	3.86E-01	2.99E-01	3.01E+00
		-----	-----	-----	-----	-----

TABLE 1C
GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Gases						
XE-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period...	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodines						
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period...	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Particulates Half Life >= 8 days						
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period...	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tritium						
H-3	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----

TABLE 1D
GASEOUS EFFLUENTS - MIXED MODE RELEASES - CONTINUOUS MODE

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR

Fission and Activation Gases						
AR-41	Ci	3.56E-01	1.97E+01	5.64E-01	0.00E+00	2.06E+01
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85M	Ci	6.25E-01	7.06E+01	6.53E+01	2.27E+00	1.39E+02
KR-87	Ci	3.75E-01	3.76E+01	5.82E+00	1.35E+00	4.52E+01
KR-88	Ci	4.91E-01	1.43E+02	7.04E+01	1.42E+00	2.16E+02
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-133	Ci	1.66E+01	1.55E+02	1.72E+02	2.18E+00	3.45E+02
XE-133M	Ci	0.00E+00	9.96E-01	6.50E-01	0.00E+00	1.65E+00
XE-135	Ci	7.80E+00	3.32E+01	8.14E-01	1.30E+01	5.48E+01
XE-135M	Ci	2.48E+00	4.29E+00	0.00E+00	5.24E+00	1.20E+01
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	0.00E+00	8.79E-01	0.00E+00	3.12E-01	1.19E+00

Totals for Period...	Ci	2.87E+01	4.65E+02	3.15E+02	2.58E+01	8.35E+02
Iodines						
I-131	Ci	7.12E-04	8.60E-05	4.54E-04	8.10E-04	2.06E-03
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	1.92E-03	1.09E-04	3.47E-04	1.52E-03	3.89E-03
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Totals for Period...	Ci	2.63E-03	1.95E-04	8.02E-04	2.32E-03	5.95E-03
Particulates Half Life >= 8 days						
BA-140	Ci	0.00E+00	0.00E+00	3.97E-06	0.00E+00	3.97E-06
CE-139	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	3.45E-06	5.08E-06	0.00E+00	8.53E-06
CO-60	Ci	4.51E-06	3.12E-05	2.28E-05	1.67E-06	6.02E-05
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	2.10E-05	2.53E-05	4.63E-05
SR-90	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Totals for Period...	Ci	4.51E-06	3.47E-05	5.29E-05	2.70E-05	1.19E-04
Tritium						
H-3	Ci	2.97E+00	1.99E+00	2.02E+00	1.85E+00	8.84E+00
Carbon-14						
C-14	Ci	2.73E+00	2.73E+00	2.77E+00	2.77E+00	1.10E+01

TABLE 1E
SUPPLEMENTAL INFORMATION
GASEOUS EFFLUENTS - BATCH MODE

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Number of releases		0	0	0	0	0
Total release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Maximum release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Average release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Minimum release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1F
RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) uCi/ml
A. Main Plant Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
			H-3	1.00E-06
B. Fuel Building Ventilation Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
			H-3	1.00E-06
C. Radwaste Building Ventilation Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
D. All Release Types as listed in A, B, & C above	Continuous	W Charcoal Sample	I-131	1.00E-12
			I-133	1.00E-10
	Continuous	W Particulate Sample	Principal Gamma Emitters (I-131, Others)	1.00E-11
	Continuous	M Composite Particulate Sample	Gross Alpha	1.00E-11
	Continuous	Q Composite Particulate Sample	Sr-89, Sr-90	1.00E-11
	Continuous	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1.00E-06

W = At least once per 7 days

M = At least once per 31 days

Q = At least once per 92 days

TABLE 1G

2015 GASEOUS ANNUAL DOSE SUMMARY REPORT

=== I&P DOSE LIMIT ANALYSIS =====

Period-Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit

Q1 - T.Spec Any Organ	CHILD	THYROID	3.41E-02	7.50E+00	4.55E-01
Q2 - T.Spec Any Organ	CHILD	THYROID	7.41E-03	7.50E+00	9.88E-02
Q3 - T.Spec Any Organ	CHILD	THYROID	1.81E-02	7.50E+00	2.42E-01
Q4 - T.Spec Any Organ	CHILD	THYROID	3.15E-02	7.50E+00	4.21E-01
Yr - T.Spec Any Organ	CHILD	THYROID	9.12E-02	1.50E+01	6.08E-01

Carbon-14 (Bounding calculation)=====

Q1 - T.Spec Any Organ	CHILD	BONE	1.17E+00	7.50E+00	1.56E+01
Q2 - T.Spec Any Organ	CHILD	BONE	1.17E+00	7.50E+00	1.56E+01
Q3 - T.Spec Any Organ	CHILD	BONE	1.18E+00	7.50E+00	1.58E+01
Q4 - T.Spec Any Organ	CHILD	BONE	1.18E+00	7.50E+00	1.58E+01
Yr - T.Spec Any Organ	CHILD	BONE	4.70E+00	1.50E+01	3.13E+01

=== NG DOSE LIMIT ANALYSIS =====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit

Q1 - T.Spec Gamma	6.19E-03	5.00E+00	1.24E-01
Q1 - T.Spec Beta	5.67E-03	1.00E+01	5.67E-02
Q2 - T.Spec Gamma	2.97E-01	5.00E+00	5.94E+00
Q2 - T.Spec Beta	1.35E-01	1.00E+01	1.35E+00
Q3 - T.Spec Gamma	1.32E-01	5.00E+00	2.64E+00
Q3 - T.Spec Beta	6.16E-02	1.00E+01	6.16E-01
Q4 - T.Spec Gamma	1.57E-02	5.00E+00	3.15E-01
Q4 - T.Spec Beta	1.09E-02	1.00E+01	1.09E-01
Yr - T.Spec Gamma	4.51E-01	1.00E+01	4.51E+00
Yr - T.Spec Beta	2.14E-01	2.00E+01	1.07E+00

TABLE 2A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Products						
1. Total Release	Ci	3.03E-04	8.62E-04	1.27E-03	5.28E-04	2.96E-03
2. Avg. Diluted Conc. uCi/ml		3.37E-10	6.23E-10	8.98E-10	4.01E-10	5.91E-10
3. % Applicable Limit % (1)		1.04E-03	2.04E-03	3.67E-03	4.20E-04	7.05E-04
Tritium						
1. Total Release	Ci	8.89E+00	1.74E+01	2.39E+01	1.42E+01	6.44E+01
2. Avg. Diluted Conc. uCi/ml		9.89E-06	1.26E-05	1.69E-05	1.08E-05	1.29E-05
3. % Applicable Limit % (1)		1.50E-04	3.50E-04	7.62E-04	2.28E-04	7.05E-04
Dissolved and Entrained Gases						
1. Total Release	Ci	5.36E-05	4.19E-04	7.87E-04	2.28E-03	3.54E-03
2. Avg. Diluted Conc. uCi/ml		5.97E-11	3.03E-10	5.57E-10	1.73E-09	7.06E-10
3. % Applicable Limit % (2)		2.99E-05	1.52E-04	2.79E-04	8.70E-04	3.54E-04
Gross Alpha Radioactivity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Volume of liquid waste liters						
		1.30E+06	2.34E+06	3.74E+06	1.73E+06	9.12E+06
Volume of dil. water liters						
		8.97E+08	1.38E+09	1.41E+09	1.31E+09	5.00E+09

(1) The most limiting dose compared to the total body and critical organ limits of TRM 3.11.1.2.a.

(2) Technical Requirement 3.11.1.1 limit of 2.00E-04 uCi/ml for dissolved and entrained noble gases in liquid effluent.

TABLE 2B
LIQUID EFFLUENTS - CONTINUOUS MODE

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Products						
** No Nuclide Activities **	
Tritium						
** No Nuclide Activities **	
Dissolved and Entrained Gases						
** No Nuclide Activities **	
Gross Alpha Radioactivity						
** No Nuclide Activities **	

TABLE 2C
LIQUID EFFLUENTS - BATCH MODE

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Gases						
CO-58	Ci	1.06E-06	1.98E-06	4.46E-06	2.91E-06	1.04E-05
CO-60	Ci	2.16E-04	7.13E-04	1.09E-03	4.87E-04	2.50E-03
CR-51	Ci	6.57E-06	0.00E+00	5.86E-06	0.00E+00	1.24E-05
CS-134	Ci	0.00E+00	3.03E-06	0.00E+00	0.00E+00	3.03E-06
CS-137	Ci	0.00E+00	2.75E-06	0.00E+00	0.00E+00	2.75E-06
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	1.76E-06	1.76E-06
MN-54	Ci	7.54E-05	1.14E-04	1.27E-04	2.56E-05	3.42E-04
ZN-65	Ci	3.21E-06	2.73E-05	4.33E-05	1.11E-05	8.49E-05
		-----	-----	-----	-----	-----
Totals for Period...	Ci	3.03E-04	8.62E-04	1.27E-03	5.28E-04	2.96E-03
Tritium						
H-3	Ci	8.89E+00	1.74E+01	2.39E+01	1.42E+01	6.44E+01
		-----	-----	-----	-----	-----
Totals for Period...	Ci	8.89E+00	1.74E+01	2.39E+01	1.42E+01	6.44E+01
Dissolved and Entrained Gases						
XE-133	Ci	3.49E-05	2.50E-04	4.53E-04	1.19E-03	1.93E-03
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	2.09E-05	2.09E-05
XE-135	Ci	1.87E-05	1.67E-04	3.33E-04	1.07E-03	1.59E-03
XE-135M	Ci	0.00E+00	2.40E-06	0.00E+00	0.00E+00	2.40E-06
		-----	-----	-----	-----	-----
Totals for Period...	Ci	5.36E-05	4.19E-04	7.87E-04	2.28E-03	3.54E-03
Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....
Totals for Period...	Ci	4.82E-04	7.88E-05	1.71E-03	5.56E-04	2.82E-03
Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 2D
EFFLUENT AND WASTE DISPOSAL REPORT
SUPPLEMENTAL INFORMATION
LIQUID EFFLUENTS - BATCH MODE

REPORT FOR 2015	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Number of releases		26	45	69	33	173
Total release time	minutes	6.61E+03	1.23E+04	1.97E+04	9.12E+03	4.77E+04
Maximum release time	minutes	3.92E+02	4.60E+02	3.38E+02	4.37E+02	4.60E+02
Average release time	minutes	2.54E+02	2.74E+02	2.85E+02	2.76E+02	2.76E+02
Minimum release time	minutes	7.70E+01	3.60E+01	2.80E+01	2.80E+01	2.80E+01
		<u>QTR 1</u>	<u>QTR 2</u>	<u>QTR 3</u>	<u>QTR 4</u>	
Average Mississippi River stream flow during periods of release of effluent into a flowing stream.	ft ³ /sec	521,844	835,791	649,685	450,989	

TABLE 2E
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) uCi/ml
A. Batch Waste Release (Liquid Radwaste Recovery Sample Tanks)	P Each Batch	P Each Batch	Principal Gamma Emitters: except for Ce-144	5.00E-07 _____ 5.00E-06 _____
			I-131	1.00E-06
			Dissolved and Entrained Gases (Gamma Emitters)	1.00E-05
			H-3 _____ Gross Alpha	1.00E-05 _____ 1.00E-07
	P Each Batch	M Composite	Sr-89, Sr-90 _____	5.00E-08 _____
			Fe-55	1.00E-06

P = Prior to each radioactive release

M = At least once per 31 days

Q = At least once per 92 days

TABLE 2F
LIQUID ANNUAL DOSE SUMMARY REPORT

Report for: 2015

Release ID: 10 All Liquid Release Points

Liquid Receptor

=== SITE DOSE LIMIT ANALYSIS =====

Period - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Qtr 1 - T.Spec Any Organ	ADULT	GILLI	5.41E-05	5.00E+00	1.08E-03
Qtr 1 - T.Spec Total Body	ADULT	TBODY	5.77E-06	1.50E+00	3.84E-04
Qtr 2 - T.Spec Any Organ	ADULT	GILLI	1.07E-04	5.00E+00	2.14E-03
Qtr 2 - T.Spec Total Body	ADULT	TBODY	1.73E-05	1.50E+00	1.16E-03
Qtr 3 - T.Spec Any Organ	ADULT	GILLI	1.95E-04	5.00E+00	3.90E-03
Qtr 3 - T.Spec Total Body	ADULT	TBODY	2.88E-05	1.50E+00	1.92E-03
Qtr 4 - T.Spec Any Organ	ADULT	GILLI	2.44E-05	5.00E+00	4.88E-04
Qtr 4 - T.Spec Total Body	ADULT	TBODY	5.58E-06	1.50E+00	3.72E-04
2015 - T.Spec Any Organ	ADULT	GILLI	3.52E-04	1.00E+01	3.52E-03
2015 - T.Spec Total Body	ADULT	TBODY	5.34E-05	3.00E+00	1.78E-03

TABLE 3
Effluent and Waste Disposal Annual Report 2015 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/15 to 12/31/15

A. Solid Waste Shipped for Burial or Disposal (Not Irradiated Fuel)

1. <u>Type of Waste</u>	<u>Units</u>	<u>12 Month Period</u>	<u>Waste Class</u>	<u>Estimated Error %</u>
Spent Resins, Filter	m3	5.56E+01	A	± 25%
Sludges, Evaporator	Ci	4.87E+01	A	
Bottoms, Etc.	m3	0.00E+00	B	
	Ci	0.00E+00	B	
	m3	0.00E+00	C	
	Ci	0.00E+00	C	
<hr/>				
Dry Compressible Wastes,	m3	8.69E+02	A	± 25%
Contaminated Equipment	Ci	1.48E+00	A	
Etc.				
<hr/>				
Irradiated Components,	m3	0.00E+00		
Control Rods, Etc.	Ci	0.00E+00		
<hr/>				
Other	m3	1.46E+02	A	± 25%
(Water, EHC, Waste Oil,	Ci	1.67E+02	A	
etc.)				

Note: Volume considered being the total disposal volume of the container.

Radwaste Estimated Error %:

Waste types considered are processed solid waste (i.e. resin, filter media) and non-compactible/compactible dry active waste.

1. Possible Errors

- a. Volume
- b. Representative Sampling
- c. Instrument/Counting
- d. Dose to Curie Calculations

2. Volume Error

Level indication for processed resins can be determined to +/- 0.5 inches. This correlates to approximately 1.0%. Container manufacturer stated design tolerance allows for 1.0% deviation from container dimensions. Volume error is not applicable to dry active waste.

3. Representative Sampling Error

Sampling error for processed resins is based upon obtaining a representative sample from the waste being processed using an iso-lock sampler. Sampling error from dry active waste is based upon obtaining a representative sample from the material being packaged. This error is estimated to be +/- 10% for all waste types, which is consistent with industry standards.

Effluent and Waste Disposal Annual Report 2015 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/15 to 12/31/15
Table 3 (continued)

4. Instrument/Counting Error

The error caused by sample geometry, counting time, sample activity and instrument background is estimated to be +/- 10%. The error for radiological survey instrumentation is estimated to be +/- 20%. This error is applicable to all waste types.

5. Dose to Curie Calculations Error

The Dose to Curie method used to calculate activity suffers from analytical accuracy in that certain important parameters are neglected. These parameters are geometry of package, measuring instrument characteristics, build-up, internal attenuation effect, and external media attenuation. An activity correction factor is applied to provide adjustment for these factors. This error is applicable to all waste types.

2. Estimates of Major Nuclides by Waste Stream

Resins, Filters, Evaporator Bottoms, Etc. (Min 1%)			Dry Compressible Wastes, Contaminated Equipment, Etc. (Min 1%)			Other Water, EHC, Waste Oil, Etc. (Min 1%)		
Isotope	% Abundance	Curies	Isotope	% Abundance	Curies	Isotope	% Abundance	Curies
H-3	1.27	6.23E-01	CR-51	1.74	2.59E-02	H-3	99.97	1.67E+02
MN-54	4.31	2.2E+00	MN-54	4.30	6.40E-02			
FE-55	36.41	1.79E+01	FE-55	25.48	3.80E-01			
CO-60	52.27	2.57E+01	CO-58	2.51	3.74E-02			
ZN-65	2.81	1.38E+00	CO-60	49.60	7.39E-01			
			ZN-65	2.10	3.13E-02			
			ZR-95	4.21	6.27E-02			
			NB-95	6.62	9.86E-02			

Determined by Measurement & Correlation.
 Packaged in Strong, Tight Liners.

No Solidification Agent or Absorbent Used.

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
1	Truck	Energy Solutions (Clive) - Clive Utah
40	Truck	Energy Solutions (Bear Creek) - Oak Ridge, TN

B. Irradiated Fuel Shipments Disposition

No Irradiated Components, Control Rods, Etc. were shipped in 2015

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A

TABLE 4
MEMBERS OF THE PUBLIC ON SITE DOSE
ASSUMPTIONS/PARAMETERS

MEMBER OF THE PUBLIC	LOCATION	DISTANCE ⁽¹⁾ METERS	SECTOR	DURATION (HR/YEAR) ⁽²⁾
People Entering Site Without Consent	Alligator Bayou	2500	SW	40
National Guard	Activity Center	994	WNW	0 ⁽³⁾
Workers staying onsite	Activity Center Trailer City	994	WNW	1104 ⁽⁴⁾
Deer Hunters	Activity Center	994	WNW	256 ⁽⁵⁾

(1) The approximate distances from main plant vent exhaust to location.

(2) Liquid dose pathway is not considered due to the nature of activities that individuals are engaged in.

(3) National Guard/State Police are being evaluated, if applicable, for dose while stationed on site as members of the public. The adult age group is the only age group considered in this category. No National Guard in 2015.

(4) Workers have been permitted to stay long term at the Activity Center Trailer City beginning April 10, 2007. Effective August 15, 2014, site management closed the Activity Center Trailer City and all trailers were removed. Going forward, trailers will be allowed 30 days prior to and must be removed 14 days following refueling outages. For 2015, this conservative estimate is based on 12 hours per day, 4 days per week for 23 weeks, totaling 1104 hours. The adult age group is the only age group considered for this activity.

(5) Employees are allowed to deer hunt on company property. Since the hunters are spread out all over the site, those workers are conservatively evaluated at the activity center using occupancy information provided by the Bow Club. In 2015, hunter's dose is not greater than Trailer City.

**MEMBERS OF THE PUBLIC ON SITE DOSE
FROM GASEOUS RELEASES 2015**

<u>Location</u>	<u>Critical Organ Dose Annual (mrem)</u>	<u>Total Body Dose Annual (mrem)</u>	<u>Skin Dose Annual (mrem)</u>	<u>Annual Duration Factor</u>
Alligator Bayou	2.90E-05	2.75E-04	4.14E-04	4.57E-03
Workers staying onsite	1.39E-03	5.46E-02	8.22E-02	1.26E-01
Deer Hunters	3.21E-04	1.27E-02	1.91E-02	2.92E-02

TABLE 5
2015 YEAR METEOROLOGICAL DATA - JOINT FREQUENCY TABLES

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	87	51	66	151	124	217	72	1	0	0	0	0	769
NNE	82	38	72	160	119	159	20	0	0	0	0	0	650
NE	52	39	63	141	128	86	7	0	0	0	0	0	516
ENE	76	38	42	106	77	60	9	0	0	0	0	0	408
E	58	57	50	72	56	19	0	0	0	0	0	0	312
ESE	30	59	56	80	74	31	1	0	0	0	0	0	331
SE	16	58	105	207	228	236	29	0	0	0	0	0	879
SSE	19	31	55	181	141	183	72	21	0	0	0	0	703
S	18	29	60	126	89	158	28	0	0	0	0	0	508
SSW	16	32	64	107	86	89	37	0	0	0	0	0	431
SW	15	42	59	64	51	35	13	0	0	0	0	0	279
WSW	19	43	42	50	65	60	5	0	0	0	0	0	284
W	33	59	38	56	71	98	6	0	0	0	0	0	361
WNW	45	88	43	64	52	65	9	0	0	0	0	0	366
NW	105	90	47	61	52	68	25	0	0	0	0	0	448
NNW	112	85	53	96	78	107	66	0	0	0	0	0	597
TOTAL	783	839	915	1722	1491	1671	399	22	0	0	0	0	7842

NUMBER OF CALMS: 162

NUMBER OF INVALID HOURS: 756

NUMBER OF VALID HOURS: 7842

TOTAL HOURS FOR THE PERIOD: 8760

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS A

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	1	3	30	34	90	34	1	0	0	0	0	193
NNE	1	2	8	33	27	67	8	0	0	0	0	0	146
NE	3	2	8	20	47	48	0	0	0	0	0	0	128
ENE	1	0	8	30	27	24	1	0	0	0	0	0	91
E	0	1	7	21	20	10	0	0	0	0	0	0	59
ESE	1	3	5	20	26	12	1	0	0	0	0	0	68
SE	0	1	8	27	63	95	10	0	0	0	0	0	204
SSE	0	0	2	18	40	85	34	0	0	0	0	0	179
S	0	3	2	15	32	96	17	0	0	0	0	0	165
SSW	1	1	5	24	40	45	14	0	0	0	0	0	130
SW	0	2	1	25	38	22	8	0	0	0	0	0	96
WSW	0	3	5	25	55	47	4	0	0	0	0	0	139
W	0	0	5	33	59	94	5	0	0	0	0	0	196
WNW	0	0	5	27	30	55	8	0	0	0	0	0	125
NW	0	0	3	22	31	33	7	0	0	0	0	0	96
NNW	0	0	4	16	31	41	44	0	0	0	0	0	136
TOTAL	7	19	79	386	600	864	195	1	0	0	0	0	2151

NUMBER OF CALMS: 2

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2151

TOTAL HOURS FOR THE PERIOD: 2151

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS B

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	0	0	3	4	2	0	0	0	0	0	9
NNE	0	1	0	2	3	3	0	0	0	0	0	0	9
NE	0	0	0	1	1	1	0	0	0	0	0	0	3
ENE	0	1	0	3	0	0	0	0	0	0	0	0	4
E	0	1	1	2	1	0	0	0	0	0	0	0	5
ESE	1	0	0	2	0	0	0	0	0	0	0	0	3
SE	0	0	2	0	1	6	1	0	0	0	0	0	10
SSE	0	0	1	1	4	2	5	1	0	0	0	0	14
S	0	0	1	2	0	7	0	0	0	0	0	0	10
SSW	0	0	0	2	2	5	3	0	0	0	0	0	12
SW	0	0	0	0	1	1	2	0	0	0	0	0	4
WSW	0	0	1	3	1	2	0	0	0	0	0	0	7
W	0	0	2	3	1	1	0	0	0	0	0	0	7
WNW	0	0	0	1	0	1	0	0	0	0	0	0	2
NW	0	0	1	1	1	2	1	0	0	0	0	0	6
NNW	0	0	0	0	0	3	0	0	0	0	0	0	3
TOTAL	1	3	9	23	19	38	14	1	0	0	0	0	108

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 108

TOTAL HOURS FOR THE PERIOD: 108

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS C

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	0	3	2	9	4	0	0	0	0	0	18
NNE	0	0	1	3	3	8	1	0	0	0	0	0	16
NE	0	0	0	5	2	5	0	0	0	0	0	0	12
ENE	0	0	1	1	4	1	0	0	0	0	0	0	7
E	1	0	2	1	2	1	0	0	0	0	0	0	7
ESE	0	2	2	3	4	1	0	0	0	0	0	0	12
SE	0	0	2	6	2	5	1	0	0	0	0	0	16
SSE	0	0	1	4	4	6	4	1	0	0	0	0	20
S	0	0	2	3	3	11	3	0	0	0	0	0	22
SSW	0	0	0	1	5	4	3	0	0	0	0	0	13
SW	0	0	0	2	0	3	0	0	0	0	0	0	5
WSW	0	0	0	2	1	3	0	0	0	0	0	0	6
W	0	0	1	1	4	1	0	0	0	0	0	0	7
WNW	0	0	1	0	1	1	0	0	0	0	0	0	3
NW	0	0	3	0	0	3	0	0	0	0	0	0	6
NNW	0	0	0	2	2	3	2	0	0	0	0	0	9
TOTAL	1	2	16	37	39	65	18	1	0	0	0	0	179

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 179

TOTAL HOURS FOR THE PERIOD: 179

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS D

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	3	2	6	22	39	72	22	0	0	0	0	0	166
NNE	1	0	6	28	36	40	3	0	0	0	0	0	114
NE	0	2	3	17	18	6	0	0	0	0	0	0	46
ENE	1	2	2	7	8	3	0	0	0	0	0	0	23
E	0	4	8	7	3	3	0	0	0	0	0	0	25
ESE	0	2	4	13	11	2	0	0	0	0	0	0	32
SE	0	0	7	37	27	16	7	0	0	0	0	0	94
SSE	1	0	6	14	14	26	11	12	0	0	0	0	84
S	0	1	1	15	14	16	7	0	0	0	0	0	54
SSW	0	1	5	7	7	12	10	0	0	0	0	0	42
SW	0	4	4	8	4	5	2	0	0	0	0	0	27
WSW	2	0	7	7	3	6	1	0	0	0	0	0	26
W	0	4	4	7	2	2	1	0	0	0	0	0	20
WNW	0	2	4	10	11	3	1	0	0	0	0	0	31
NW	0	2	7	12	4	13	4	0	0	0	0	0	42
NNW	1	1	5	17	16	35	12	0	0	0	0	0	87
TOTAL	9	27	79	228	217	260	81	12	0	0	0	0	913

NUMBER OF CALMS: 3

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 913

TOTAL HOURS FOR THE PERIOD: 913

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	7	12	22	59	44	42	10	0	0	0	0	0	196
NNE	7	15	25	57	44	41	8	0	0	0	0	0	197
NE	7	8	27	49	49	25	7	0	0	0	0	0	172
ENE	7	9	19	34	29	25	8	0	0	0	0	0	131
E	5	20	18	29	28	5	0	0	0	0	0	0	105
ESE	5	23	25	36	31	16	0	0	0	0	0	0	136
SE	7	27	52	124	131	114	10	0	0	0	0	0	465
SSE	4	14	20	93	74	63	18	7	0	0	0	0	293
S	6	9	23	43	37	27	1	0	0	0	0	0	146
SSW	4	13	30	56	26	22	7	0	0	0	0	0	158
SW	5	18	21	24	8	4	1	0	0	0	0	0	81
WSW	5	18	19	10	5	2	0	0	0	0	0	0	59
W	4	13	15	11	5	0	0	0	0	0	0	0	48
WNW	1	15	17	19	10	3	0	0	0	0	0	0	65
NW	7	8	15	24	16	17	13	0	0	0	0	0	100
NNW	9	11	15	36	27	25	8	0	0	0	0	0	131
TOTAL	90	233	363	704	564	431	91	7	0	0	0	0	2483

NUMBER OF CALMS: 27

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2483

TOTAL HOURS FOR THE PERIOD: 2483

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS F

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	9	12	11	26	2	0	0	0	0	0	0	0	60
NNE	19	11	21	33	5	0	0	0	0	0	0	0	89
NE	9	16	21	44	10	1	0	0	0	0	0	0	101
ENE	17	11	9	29	8	6	0	0	0	0	0	0	80
E	21	15	10	11	1	0	0	0	0	0	0	0	58
ESE	13	24	15	6	2	0	0	0	0	0	0	0	60
SE	7	15	26	9	4	0	0	0	0	0	0	0	61
SSE	10	17	22	48	5	1	0	0	0	0	0	0	103
S	8	14	23	46	3	1	0	0	0	0	0	0	95
SSW	7	14	23	17	6	1	0	0	0	0	0	0	68
SW	7	12	27	4	0	0	0	0	0	0	0	0	50
WSW	9	17	7	3	0	0	0	0	0	0	0	0	36
W	9	19	6	1	0	0	0	0	0	0	0	0	35
WNW	16	30	12	6	0	2	0	0	0	0	0	0	66
NW	20	22	11	1	0	0	0	0	0	0	0	0	54
NNW	17	19	12	21	2	0	0	0	0	0	0	0	71
TOTAL	198	268	256	305	48	12	0	0	0	0	0	0	1087

NUMBER OF CALMS: 35

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1087

TOTAL HOURS FOR THE PERIOD: 1087

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS G

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	68	24	24	11	0	0	0	0	0	0	0	0	127
NNE	54	9	11	4	1	0	0	0	0	0	0	0	79
NE	33	11	4	5	1	0	0	0	0	0	0	0	54
ENE	50	15	3	2	1	1	0	0	0	0	0	0	72
E	31	16	4	1	1	0	0	0	0	0	0	0	53
ESE	10	5	5	0	0	0	0	0	0	0	0	0	20
SE	2	15	8	4	0	0	0	0	0	0	0	0	29
SSE	4	0	3	3	0	0	0	0	0	0	0	0	10
S	4	2	8	2	0	0	0	0	0	0	0	0	16
SSW	4	3	1	0	0	0	0	0	0	0	0	0	8
SW	3	6	6	1	0	0	0	0	0	0	0	0	16
WSW	3	5	3	0	0	0	0	0	0	0	0	0	11
W	20	23	5	0	0	0	0	0	0	0	0	0	48
WNW	28	41	4	1	0	0	0	0	0	0	0	0	74
NW	78	58	7	1	0	0	0	0	0	0	0	0	144
NNW	85	54	17	4	0	0	0	0	0	0	0	0	160
TOTAL	477	287	113	39	4	1	0	0	0	0	0	0	921

NUMBER OF CALMS: 95

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 921

TOTAL HOURS FOR THE PERIOD: 921

RIVER BEND STATION
JOINT FREQUENCY TABLE

ALL STABILITY CLASSES

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	2	1	12	43	56	206	284	27	2	0	0	0	633
NNE	0	5	6	37	68	252	279	13	0	0	0	0	660
NE	2	4	9	18	55	146	329	31	6	0	0	0	600
ENE	1	3	6	36	65	125	188	61	7	0	0	0	492
E	2	2	14	35	54	110	101	36	4	0	0	0	358
ESE	1	2	4	24	42	172	509	158	7	0	0	0	919
SE	0	1	11	28	38	159	299	62	5	0	0	0	603
SSE	1	4	7	23	53	166	191	49	23	0	0	0	517
S	3	3	8	29	70	199	231	10	3	0	0	0	556
SSW	0	3	9	34	67	208	155	30	1	0	0	0	507
SW	2	2	8	25	69	185	78	7	1	0	0	0	377
WSW	0	1	6	26	75	240	61	5	0	0	0	0	414
W	0	1	6	23	63	237	109	1	0	0	0	0	440
WNW	1	5	5	31	47	117	50	7	0	0	0	0	263
NW	0	4	5	20	33	87	77	20	0	0	0	0	246
NNW	1	2	8	26	42	112	188	29	1	0	0	0	409
TOTAL	16	43	124	458	897	2721	3129	546	60	0	0	0	7994

NUMBER OF CALMS: 4

NUMBER OF INVALID HOURS: 762

NUMBER OF VALID HOURS: 7994

TOTAL HOURS FOR THE PERIOD: 8760

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS A

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	1	0	2	15	15	37	83	9	1	0	0	0	163
NNE	0	2	0	12	24	45	54	3	0	0	0	0	140
NE	0	1	0	5	26	44	66	5	0	0	0	0	147
ENE	0	0	0	7	21	40	46	12	1	0	0	0	127
E	0	0	4	6	15	31	24	6	1	0	0	0	87
ESE	0	0	0	7	14	36	93	32	2	0	0	0	184
SE	0	0	2	6	10	27	70	20	0	0	0	0	135
SSE	0	1	0	4	14	35	62	23	1	0	0	0	140
S	0	0	3	7	9	48	75	5	0	0	0	0	147
SSW	0	0	1	8	22	45	38	9	0	0	0	0	123
SW	0	0	3	9	25	39	18	3	0	0	0	0	97
WSW	0	0	0	11	28	76	35	3	0	0	0	0	153
W	0	0	0	6	32	107	78	1	0	0	0	0	224
WNW	0	1	1	10	20	42	18	1	0	0	0	0	93
NW	0	1	1	6	11	26	24	3	0	0	0	0	72
NNW	0	1	0	7	14	27	52	18	0	0	0	0	119
TOTAL	1	7	17	126	300	705	836	153	6	0	0	0	2151

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2151

TOTAL HOURS FOR THE PERIOD: 2151

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS B

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	0	1	0	7	3	1	0	0	0	0	12
NNE	0	0	0	2	0	2	3	0	0	0	0	0	7
NE	0	0	0	0	0	1	3	0	0	0	0	0	4
ENE	0	0	1	0	1	2	2	0	0	0	0	0	6
E	0	0	1	0	2	0	2	0	0	0	0	0	5
ESE	0	0	1	0	0	0	2	4	0	0	0	0	7
SE	0	0	1	2	1	1	0	3	0	0	0	0	8
SSE	0	0	1	0	0	1	4	4	1	0	0	0	11
S	0	0	0	0	2	2	9	0	0	0	0	0	13
SSW	0	0	0	1	0	1	3	2	0	0	0	0	7
SW	0	0	0	0	0	1	3	2	0	0	0	0	6
WSW	0	0	0	1	3	1	2	0	0	0	0	0	7
W	0	0	0	1	2	3	1	0	0	0	0	0	7
WNW	0	0	0	0	1	2	0	1	0	0	0	0	4
NW	0	0	0	0	0	0	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	3	0	0	0	0	0	3
TOTAL	0	0	5	8	12	24	41	17	1	0	0	0	108

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 108

TOTAL HOURS FOR THE PERIOD: 108

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS C

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	0	0	0	2	9	2	0	0	0	0	13
NNE	0	0	1	1	2	7	8	1	0	0	0	0	20
NE	0	0	0	1	1	5	7	0	0	0	0	0	14
ENE	0	0	0	0	1	3	4	1	0	0	0	0	9
E	0	0	0	1	1	1	4	0	0	0	0	0	7
ESE	1	0	0	1	0	5	9	3	0	0	0	0	19
SE	0	0	0	0	2	2	4	2	0	0	0	0	10
SSE	0	0	1	1	2	2	7	1	3	0	0	0	17
S	0	1	0	0	0	7	8	1	1	0	0	0	18
SSW	0	0	0	0	0	3	6	3	0	0	0	0	12
SW	0	0	0	0	1	2	5	0	0	0	0	0	8
WSW	0	0	0	0	3	0	3	0	0	0	0	0	6
W	0	0	0	0	1	2	3	0	0	0	0	0	6
WNW	0	0	0	2	2	1	1	0	0	0	0	0	6
NW	0	0	0	0	0	1	4	0	0	0	0	0	5
NNW	0	0	0	1	1	1	5	1	0	0	0	0	9
TOTAL	1	1	2	8	17	44	87	15	4	0	0	0	179

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 179

TOTAL HOURS FOR THE PERIOD: 179

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS D

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	1	1	1	6	13	43	79	8	1	0	0	0	153
NNE	0	0	0	4	12	57	53	2	0	0	0	0	128
NE	0	1	2	2	3	15	22	1	0	0	0	0	46
ENE	0	1	1	4	5	8	15	3	0	0	0	0	37
E	0	0	2	4	1	6	13	3	0	0	0	0	29
ESE	0	1	0	2	3	16	38	11	0	0	0	0	71
SE	0	0	0	2	3	17	29	10	3	0	0	0	64
SSE	1	0	1	2	8	15	22	6	12	0	0	0	67
S	0	0	0	1	5	20	22	3	2	0	0	0	53
SSW	0	0	1	1	5	8	17	7	1	0	0	0	40
SW	0	1	0	0	5	12	7	2	0	0	0	0	27
WSW	0	0	2	2	4	9	7	2	0	0	0	0	26
W	0	1	1	3	5	18	8	0	0	0	0	0	36
WNW	0	0	1	1	4	9	3	2	0	0	0	0	20
NW	0	1	0	4	7	7	14	4	0	0	0	0	37
NNW	0	0	2	3	6	20	44	5	1	0	0	0	81
TOTAL	2	7	14	41	89	280	393	69	20	0	0	0	915

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 915

TOTAL HOURS FOR THE PERIOD: 915

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS E

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	3	12	15	71	62	7	0	0	0	0	170
NNE	0	0	3	8	13	71	94	7	0	0	0	0	196
NE	0	1	4	2	13	43	111	16	6	0	0	0	196
ENE	0	0	0	12	9	39	81	31	6	0	0	0	178
E	0	0	4	12	10	25	36	23	3	0	0	0	113
ESE	0	0	2	5	12	68	249	102	5	0	0	0	443
SE	0	0	2	5	11	65	137	27	2	0	0	0	249
SSE	0	0	1	7	9	45	75	15	6	0	0	0	158
S	1	0	3	5	19	43	80	1	0	0	0	0	152
SSW	0	0	3	7	15	69	61	9	0	0	0	0	164
SW	0	1	0	6	19	55	24	0	1	0	0	0	106
WSW	0	0	1	4	11	55	10	0	0	0	0	0	81
W	0	0	1	5	6	33	10	0	0	0	0	0	55
WNW	1	1	1	6	8	11	16	3	0	0	0	0	47
NW	0	2	2	7	6	20	27	13	0	0	0	0	77
NNW	0	1	3	6	14	33	56	5	0	0	0	0	118
TOTAL	2	6	33	109	190	746	1129	259	29	0	0	0	2503

NUMBER OF CALMS: 3

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2503

TOTAL HOURS FOR THE PERIOD: 2503

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS F

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	1	5	6	18	22	0	0	0	0	0	52
NNE	0	0	0	4	4	38	38	0	0	0	0	0	84
NE	0	0	0	3	6	15	80	7	0	0	0	0	111
ENE	0	1	2	6	15	23	23	10	0	0	0	0	80
E	2	1	1	7	13	27	20	2	0	0	0	0	73
ESE	0	0	1	6	9	29	97	3	0	0	0	0	145
SE	0	0	1	4	6	31	45	0	0	0	0	0	87
SSE	0	1	0	4	11	34	16	0	0	0	0	0	66
S	1	0	0	5	14	49	28	0	0	0	0	0	97
SSW	0	0	0	3	11	48	23	0	0	0	0	0	85
SW	0	0	3	3	4	35	15	0	0	0	0	0	60
WSW	0	1	0	1	12	43	0	0	0	0	0	0	57
W	0	0	1	1	7	18	4	0	0	0	0	0	31
WNW	0	1	0	8	3	22	6	0	0	0	0	0	40
NW	0	0	1	0	1	17	5	0	0	0	0	0	24
NNW	0	0	0	2	3	10	14	0	0	0	0	0	29
TOTAL	3	5	11	62	125	457	436	22	0	0	0	0	1121

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1121

TOTAL HOURS FOR THE PERIOD: 1121

RIVER BEND STATION
JOINT FREQUENCY TABLE

STABILITY CLASS G

FROM 1/01/15 0:00 TO 12/31/15 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	5	4	7	28	26	0	0	0	0	0	70
NNE	0	3	2	6	13	32	29	0	0	0	0	0	85
NE	2	1	3	5	6	23	40	2	0	0	0	0	82
ENE	1	1	2	7	13	10	17	4	0	0	0	0	55
E	0	1	2	5	12	20	2	2	0	0	0	0	44
ESE	0	1	0	3	4	18	21	3	0	0	0	0	50
SE	0	1	5	9	5	16	14	0	0	0	0	0	50
SSE	0	2	3	5	9	34	5	0	0	0	0	0	58
S	1	2	2	11	21	30	9	0	0	0	0	0	76
SSW	0	3	4	14	14	34	7	0	0	0	0	0	76
SW	2	0	2	7	15	41	6	0	0	0	0	0	73
WSW	0	0	3	7	14	56	4	0	0	0	0	0	84
W	0	0	3	7	10	56	5	0	0	0	0	0	81
WNW	0	2	2	4	9	30	6	0	0	0	0	0	53
NW	0	0	1	3	8	16	2	0	0	0	0	0	30
NNW	1	0	3	7	4	21	14	0	0	0	0	0	50
TOTAL	7	17	42	104	164	465	207	11	0	0	0	0	1017

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1017

TOTAL HOURS FOR THE PERIOD: 1017

TABLE 6
ATMOSPHERIC DISPERSION AND DEPOSITION RATES FOR
THE MAXIMUM INDIVIDUAL DOSE CALCULATIONS

Analysis	Location (meters)	Ground Level Releases	Mixed Mode Releases
Gamma air dose (3) and Beta Air Dose	994 m WNW (Containment)	CHI/Q - 421.0	CHI/Q - 33.1
Maximum Receptor (4)	994 m WNW	CHI/Q - 421.0	CHI/Q - 33.1
Resident		D/Q - 50.3	D/Q - 18.0
Garden			
Meat animal			
Immersion			
Milk animal (5)	7,000 m WNW	CHI/Q - 3.58 D/Q - 0.38	CHI/Q - .870 D/Q - .223
Other on-site Receptors	115 m ENE	CHI/Q - 5977.0 D/Q - 529.7	CHI/Q - 407.5 D/Q - 46.9
	275 m N	CHI/Q - 1644.0 D/Q - 345.6	CHI/Q - 169.1 D/Q - 68.4
	2500 SW	CHI/Q - 34.45 D/Q - 3.35	CHI/Q - 4.65 D/Q - 1.40

Notes:

(1) All CHI/Q = 10^{-7} sec/m³

(2) All D/Q = 10^{-9} m⁻²

(3) Maximum offsite location (property boundary) with highest CHI/Q (unoccupied).

(4) Maximum hypothetical occupied offsite location with highest CHI/Q and D/Q.

(5) No milk animal within 5 miles radius, hypothetical location in worst sector.

(6) Other onsite receptors

(7) Revisions to X/Q and D/Q can be performed using NUREG/CR-2919, XOQDOQ, Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations

TABLE 7
GROUNDWATER MONITORING WELL SAMPLE RESULTS

Station	Start Date	Analysis	Reportable Results	Units
MW-01	11/19/2015 9:57	H-3 (DIST)	<631	pCi/L
MW-02	11/18/2015 14:00	H-3 (DIST)	<467	pCi/L
MW-03	12/3/2015 11:10	H-3 (DIST)	<562	pCi/L
MW-04	2/3/2015 10:32	H-3 (DIST)	<563	pCi/L
MW-04	5/6/2015 13:48	H-3 (DIST)	<675	pCi/L
MW-04	8/19/2015 12:55	H-3 (DIST)	<717	pCi/L
MW-04	11/18/2015 16:15	H-3 (DIST)	<468	pCi/L
MW-05	12/2/2015 13:50	H-3 (DIST)	<562	pCi/L
MW-06	2/3/2015 15:27	H-3 (DIST)	<562	pCi/L
MW-06	5/6/2015 12:50	H-3 (DIST)	<669	pCi/L
MW-06	8/19/2015 11:50	H-3 (DIST)	<729	pCi/L
MW-06	11/18/2015 14:30	H-3 (DIST)	<470	pCi/L
MW-07	11/19/2015 11:20	H-3 (DIST)	<617	pCi/L
MW-07-DUP	11/19/2015 11:30	H-3 (DIST)	<630	pCi/L
MW-08	5/6/2015 16:35	H-3 (DIST)	<665	pCi/L
MW-08	12/3/2015 13:50	H-3 (DIST)	<562	pCi/L
MW-09	11/19/2015 14:00	H-3 (DIST)	<473	pCi/L
MW-10	11/19/2015 9:45	H-3 (DIST)	<472	pCi/L
MW-100	2/4/2015 8:50	H-3 (DIST)	<560	pCi/L
MW-100	5/6/2015 12:40	H-3 (DIST)	<676	pCi/L
MW-100-DUP	5/6/2015 12:45	H-3 (DIST)	<669	pCi/L
MW-100	8/20/2015 10:11	H-3 (DIST)	<728	pCi/L
MW-100	11/18/2015 15:00	H-3 (DIST)	<478	pCi/L
MW-100-DUP	11/18/2015 15:15	H-3 (DIST)	<478	pCi/L
MW-102	11/19/2015 14:41	H-3 (DIST)	<622	pCi/L
MW-103	2/2/2015 13:29	H-3 (DIST)	<567	pCi/L
MW-103	5/5/2015 16:12	H-3 (DIST)	<657	pCi/L
MW-103-DUP	5/5/2015 16:15	H-3 (DIST)	<658	pCi/L
MW-103	8/18/2015 10:35	H-3 (DIST)	<696	pCi/L
MW-103-DUP	8/18/2015 10:40	H-3 (DIST)	<690	pCi/L
MW-103	11/17/2015 11:41	H-3 (DIST)	<711	pCi/L
MW-103-DUP	11/17/2015 11:51	H-3 (DIST)	<707	pCi/L
MW-104	2/3/2015 8:17	H-3 (DIST)	<568	pCi/L
MW-104	5/6/2015 8:50	H-3 (DIST)	<669	pCi/L
MW-104	8/19/2015 11:05	H-3 (DIST)	<726	pCi/L
MW-104	11/18/2015 10:15	H-3 (DIST)	<469	pCi/L
MW-104-DUP	11/18/2015 10:24	H-3 (DIST)	<480	pCi/L
MW-106	2/3/2015 9:32	H-3 (DIST)	<545	pCi/L
MW-106	5/6/2015 9:25	H-3 (DIST)	<674	pCi/L
MW-106	8/19/2015 9:32	H-3 (DIST)	<714	pCi/L

MW-106	11/18/2015 13:14	H-3 (DIST)	<477	pCi/L
MW-107	2/3/2015 9:15	H-3 (DIST)	<566	pCi/L
MW-107	5/6/2015 10:22	H-3 (DIST)	<666	pCi/L
MW-107	8/19/2015 9:15	H-3 (DIST)	<719	pCi/L
MW-107-DUP	8/19/2015 9:20	H-3 (DIST)	<701	pCi/L
MW-107	11/18/2015 14:20	H-3 (DIST)	<479	pCi/L
MW-108	11/18/2015 11:45	H-3 (DIST)	<473	pCi/L
MW-11	11/19/2015 9:30	H-3 (DIST)	<470	pCi/L
MW-110	2/2/2015 16:06	H-3 (DIST)	73100	pCi/L
MW-110	5/5/2015 13:06	H-3 (DIST)	24800	pCi/L
MW-110	8/18/2015 12:55	H-3 (DIST)	34600	pCi/L
MW-110	11/17/2015 13:05	H-3 (DIST)	38700	pCi/L
MW-111	2/3/2015 12:37	H-3 (DIST)	<570	pCi/L
MW-111	5/6/2015 11:57	H-3 (DIST)	<661	pCi/L
MW-111	8/19/2015 8:10	H-3 (DIST)	<720	pCi/L
MW-111	11/18/2015 15:30	H-3 (DIST)	<479	pCi/L
MW-112	2/2/2015 12:34	H-3 (DIST)	10900	pCi/L
MW-112	5/5/2015 10:50	H-3 (DIST)	8820	pCi/L
MW-112	8/18/2015 14:00	H-3 (DIST)	8830	pCi/L
MW-112	11/17/2015 16:50	H-3 (DIST)	11000	pCi/L
MW-112-DUP	11/17/2015 17:00	H-3 (DIST)	10700	pCi/L
MW-114	2/2/2015 11:43	H-3 (DIST)	2290	pCi/L
MW-114-DUP	2/2/2015 11:50	H-3 (DIST)	2420	pCi/L
MW-114	5/5/2015 12:00	H-3 (DIST)	2640	pCi/L
MW-114	8/18/2015 14:35	H-3 (DIST)	1670	pCi/L
MW-114	11/17/2015 15:47	H-3 (DIST)	2360	pCi/L
MW-116	2/2/2015 16:45	H-3 (DIST)	3700	pCi/L
MW-116-DUP	2/2/2015 16:50	H-3 (DIST)	3620	pCi/L
MW-116	5/5/2015 17:00	H-3 (DIST)	4300	pCi/L
MW-116	8/18/2015 16:53	H-3 (DIST)	1110	pCi/L
MW-116	11/17/2015 13:25	H-3 (DIST)	6410	pCi/L
MW-118	2/2/2015 14:27	H-3 (DIST)	4590	pCi/L
MW-118	5/5/2015 14:10	H-3 (DIST)	3490	pCi/L
MW-118	8/18/2015 15:40	H-3 (DIST)	4050	pCi/L
MW-118	11/17/2015 14:25	H-3 (DIST)	4910	pCi/L
MW-12	11/19/2015 12:11	H-3 (DIST)	<607	pCi/L
MW-120	2/3/2015 12:02	H-3 (DIST)	<570	pCi/L
MW-120	5/6/2015 11:10	H-3 (DIST)	<656	pCi/L
MW-120	8/18/2015 17:35	H-3 (DIST)	<720	pCi/L
MW-120	11/18/2015 17:00	H-3 (DIST)	<475	pCi/L
MW-122R	2/3/2015 11:00	H-3 (DIST)	<570	pCi/L

MW-122R	5/6/2015 14:27	H-3 (DIST)	<670	pCi/L
MW-122R	8/19/2015 12:30	H-3 (DIST)	<726	pCi/L
MW-122R	11/18/2015 15:00	H-3 (DIST)	<473	pCi/L
MW-124	2/3/2015 9:43	H-3 (DIST)	1010	pCi/L
MW-124	5/5/2015 15:10	H-3 (DIST)	2740	pCi/L
MW-124	8/19/2015 15:55	H-3 (DIST)	4860	pCi/L
MW-124	11/18/2015 13:51	H-3 (DIST)	4710	pCi/L
MW-125	2/3/2015 13:48	H-3 (DIST)	201,000	pCi/L
MW-126	2/2/2015 15:35	H-3 (DIST)	<565	pCi/L
MW-126	5/6/2015 9:05	H-3 (DIST)	<669	pCi/L
MW-126	8/19/2015 15:05	H-3 (DIST)	<701	pCi/L
MW-126	11/17/2015 16:32	H-3 (DIST)	<697	pCi/L
MW-128	2/3/2015 17:10	H-3 (DIST)	<573	pCi/L
MW-128	5/6/2015 13:33	H-3 (DIST)	<675	pCi/L
MW-128	8/20/2015 11:00	H-3 (DIST)	<598	pCi/L
MW-128	11/18/2015 16:42	H-3 (DIST)	<476	pCi/L
MW-13	12/3/2015 13:30	H-3 (DIST)	<562	pCi/L
MW-130	2/3/2015 15:29	H-3 (DIST)	<569	pCi/L
MW-130-DUP	2/3/2015 15:39	H-3 (DIST)	<556	pCi/L
MW-130	5/6/2015 16:15	H-3 (DIST)	<660	pCi/L
MW-130	8/20/2015 10:56	H-3 (DIST)	<604	pCi/L
MW-130	11/19/2015 10:45	H-3 (DIST)	<615	pCi/L
MW-131	2/3/2015 14:44	H-3 (DIST)	<554	pCi/L
MW-131	5/6/2015 16:05	H-3 (DIST)	<664	pCi/L
MW-131	8/20/2015 10:45	H-3 (DIST)	<603	pCi/L
MW-131	11/19/2015 11:25	H-3 (DIST)	<609	pCi/L
MW-132	2/3/2015 16:13	H-3 (DIST)	<575	pCi/L
MW-132	5/6/2015 15:20	H-3 (DIST)	<658	pCi/L
MW-132	8/20/2015 9:58	H-3 (DIST)	<597	pCi/L
MW-132	11/18/2015 12:20	H-3 (DIST)	<471	pCi/L
MW-134	2/3/2015 17:03	H-3 (DIST)	<571	pCi/L
MW-134	5/6/2015 14:45	H-3 (DIST)	<668	pCi/L
MW-134	8/20/2015 11:30	H-3 (DIST)	<715	pCi/L
MW-134-DUP	8/20/2015 11:40	H-3 (DIST)	<713	pCi/L
MW-134	11/18/2015 11:10	H-3 (DIST)	<475	pCi/L
MW-137	2/2/2015 16:49	H-3 (DIST)	28,200	pCi/L
MW-137	5/5/2015 16:15	H-3 (DIST)	20,900	pCi/L
MW-137	8/18/2015 17:20	H-3 (DIST)	26,600	pCi/L
MW-137-DUP	8/18/2015 17:25	H-3 (DIST)	26,900	pCi/L
MW-137	11/17/2015 14:45	H-3 (DIST)	32,400	pCi/L
MW-139	2/2/2015 13:00	H-3 (DIST)	1,550	pCi/L

MW-139	5/5/2015 13:17	H-3 (DIST)	1,130	pCi/L
MW-139	8/18/2015 16:10	H-3 (DIST)	1,310	pCi/L
MW-139	11/17/2015 15:40	H-3 (DIST)	2,070	pCi/L
MW-14	12/2/2015 16:45	H-3 (DIST)	<562	pCi/L
MW-141	2/2/2015 13:45	H-3 (DIST)	920	pCi/L
MW-141	5/5/2015 14:40	H-3 (DIST)	<661	pCi/L
MW-141	8/18/2015 15:25	H-3 (DIST)	<713	pCi/L
MW-141	11/18/2015 9:30	H-3 (DIST)	1,550	pCi/L
MW-141-DUP	11/18/2015 9:40	H-3 (DIST)	1,600	pCi/L
MW-142	2/3/2015 15:45	H-3 (DIST)	<572	pCi/L
MW-142	5/6/2015 13:10	H-3 (DIST)	<660	pCi/L
MW-142	8/19/2015 10:33	H-3 (DIST)	<729	pCi/L
MW-142	12/2/2015 9:55	H-3 (DIST)	<562	pCi/L
MW-144	2/3/2015 14:30	H-3 (DIST)	<565	pCi/L
MW-144	5/6/2015 12:35	H-3 (DIST)	<666	pCi/L
MW-144	8/19/2015 9:52	H-3 (DIST)	<644	pCi/L
MW-144	12/2/2015 8:50	H-3 (DIST)	<504	pCi/L
MW-144-DUP	12/2/2015 9:05	H-3 (DIST)	<512	pCi/L
MW-146	2/3/2015 12:15	H-3 (DIST)	139,000	pCi/L
MW-146	5/6/2015 11:50	H-3 (DIST)	59,200	pCi/L
MW-146	8/19/2015 13:30	H-3 (DIST)	91,900	pCi/L
MW-146	12/1/2015 15:36	H-3 (DIST)	149,000	pCi/L
MW-147	2/3/2015 12:55	H-3 (DIST)	82,200	pCi/L
MW-147	5/6/2015 11:15	H-3 (DIST)	87,600	pCi/L
MW-147	8/19/2015 13:36	H-3 (DIST)	49,600	pCi/L
MW-147	12/1/2015 15:35	H-3 (DIST)	91,800	pCi/L
MW-148	2/3/2015 13:30	H-3 (DIST)	<556	pCi/L
MW-148	5/6/2015 13:50	H-3 (DIST)	<670	pCi/L
MW-148	8/19/2015 10:12	H-3 (DIST)	<724	pCi/L
MW-148	12/1/2015 14:52	H-3 (DIST)	<522	pCi/L
MW-15	11/18/2015 11:40	H-3 (DIST)	<470	pCi/L
MW-151	2/2/2015 13:45	H-3 (DIST)	<587	pCi/L
MW-151	5/5/2015 13:35	H-3 (DIST)	<661	pCi/L
MW-151	8/18/2015 15:35	H-3 (DIST)	<685	pCi/L
MW-151	11/17/2015 14:25	H-3 (DIST)	<706	pCi/L
MW-153	2/3/2015 16:28	H-3 (DIST)	<618	pCi/L
MW-153	5/6/2015 15:07	H-3 (DIST)	<665	pCi/L
MW-153	8/19/2015 14:02	H-3 (DIST)	<719	pCi/L
MW-153	11/18/2015 13:00	H-3 (DIST)	<470	pCi/L
MW-155	2/2/2015 16:30	H-3 (DIST)	<573	pCi/L
MW-155	5/5/2015 16:20	H-3 (DIST)	17,000	pCi/L

MW-155	8/19/2015 15:04	H-3 (DIST)	<688	pCi/L
MW-155	11/17/2015 16:40	H-3 (DIST)	6,560	pCi/L
MW-156	2/3/2015 10:27	H-3 (DIST)	857	pCi/L
MW-156	5/5/2015 17:00	H-3 (DIST)	1,800	pCi/L
MW-156	8/19/2015 15:40	H-3 (DIST)	1,950	pCi/L
MW-156	11/17/2015 16:05	H-3 (DIST)	2,010	pCi/L
MW-157	2/3/2015 11:10	H-3 (DIST)	260,000	pCi/L
MW-157	5/5/2015 17:25	H-3 (DIST)	171,000	pCi/L
MW-157	8/19/2015 15:07	H-3 (DIST)	105,000	pCi/L
MW-157	11/17/2015 15:27	H-3 (DIST)	129,000	pCi/L
MW-158	2/3/2015 9:45	H-3 (DIST)	575,000	pCi/L
MW-158	5/6/2015 10:45	H-3 (DIST)	630,000	pCi/L
MW-158	8/19/2015 10:00	H-3 (DIST)	510,000	pCi/L
MW-158	12/1/2015 14:10	H-3 (DIST)	519,000	pCi/L
MW-159	2/3/2015 10:40	H-3 (DIST)	3,800	pCi/L
MW-159	5/6/2015 10:00	H-3 (DIST)	11,200	pCi/L
MW-159-DUP	5/6/2015 10:15	H-3 (DIST)	11,800	pCi/L
MW-159	8/19/2015 10:25	H-3 (DIST)	1,860	pCi/L
MW-159-DUP	8/19/2015 10:30	H-3 (DIST)	2,080	pCi/L
MW-159	12/1/2015 15:00	H-3 (DIST)	12,900	pCi/L
MW-16	12/3/2015 10:35	H-3 (DIST)	<562	pCi/L
MW-161	2/3/2015 13:25	H-3 (DIST)	<569	pCi/L
MW-161-DUP	2/3/2015 13:30	H-3 (DIST)	<565	pCi/L
MW-161	5/6/2015 7:52	H-3 (DIST)	<665	pCi/L
MW-161-DUP	5/6/2015 7:55	H-3 (DIST)	<660	pCi/L
MW-161	8/19/2015 10:20	H-3 (DIST)	<728	pCi/L
MW-161	11/18/2015 9:45	H-3 (DIST)	<674	pCi/L
MW-162	2/3/2015 11:15	H-3 (DIST)	<518	pCi/L
MW-162-DUP	2/3/2015 11:30	H-3 (DIST)	<576	pCi/L
MW-162	5/6/2015 9:20	H-3 (DIST)	<665	pCi/L
MW-162	8/19/2015 13:30	H-3 (DIST)	<678	pCi/L
MW-162	12/1/2015 14:03	H-3 (DIST)	<508	pCi/L
MW-167	11/17/2015 12:26	H-3 (DIST)	<644	pCi/L
MW-167-DUP	11/17/2015 12:26	H-3 (DIST)	<641	pCi/L
MW-169	11/17/2015 13:37	H-3 (DIST)	<643	pCi/L
MW-17	11/19/2015 12:25	H-3 (DIST)	<469	pCi/L
MW-170	11/18/2015 15:50	H-3 (DIST)	<473	pCi/L
MW-172	11/18/2015 15:05	H-3 (DIST)	<478	pCi/L
MW-174	11/18/2015 14:10	H-3 (DIST)	<473	pCi/L
MW-18	11/19/2015 16:27	H-3 (DIST)	<618	pCi/L
MW-180	11/18/2015 12:25	H-3 (DIST)	<473	pCi/L

MW-182	11/19/2015 16:25	H-3 (DIST)	<631	pCi/L
MW-182-DUP	11/19/2015 16:40	H-3 (DIST)	<618	pCi/L
MW-185	11/17/2015 15:29	H-3 (DIST)	<709	pCi/L
MW-188	11/18/2015 13:15	H-3 (DIST)	<470	pCi/L
MW-19	11/19/2015 14:45	H-3 (DIST)	<472	pCi/L
MW-20	12/2/2015 14:55	H-3 (DIST)	<562	pCi/L
MW-21	12/3/2015 8:50	H-3 (DIST)	<562	pCi/L
PZ-01	2/2/2015 11:20	H-3 (DIST)	20,200	pCi/L
PZ-01	5/5/2015 15:30	H-3 (DIST)	18,800	pCi/L
PZ-01	8/18/2015 11:30	H-3 (DIST)	18,200	pCi/L
PZ-01	11/17/2015 15:40	H-3 (DIST)	12,600	pCi/L
PZ-02	5/5/2015 17:43	H-3 (DIST)	<670	pCi/L
PZ-02	11/18/2015 11:15	H-3 (DIST)	<615	pCi/L
PZ-03	2/3/2015 12:39	H-3 (DIST)	<570	pCi/L
PZ-03	5/6/2015 11:25	H-3 (DIST)	<668	pCi/L
PZ-03	8/19/2015 16:00	H-3 (DIST)	<596	pCi/L
PZ-03	11/18/2015 16:28	H-3 (DIST)	<477	pCi/L
SW-101	5/7/2015 10:25	H-3 (DIST)	<660	pCi/L
SW-101	8/19/2015 15:10	H-3 (DIST)	<719	pCi/L
SW-101	12/3/2015 15:00	H-3 (DIST)	<562	pCi/L
SW-102	5/7/2015 9:00	H-3 (DIST)	<667	pCi/L
SW-102	8/19/2015 16:10	H-3 (DIST)	<635	pCi/L
SW-102	11/19/2015 13:25	H-3 (DIST)	<612	pCi/L
SW-103	2/4/2015 8:10	H-3 (DIST)	<579	pCi/L
SW-103	5/7/2015 9:30	H-3 (DIST)	<667	pCi/L
SW-103	8/19/2015 16:50	H-3 (DIST)	<732	pCi/L
SW-103	11/19/2015 16:40	H-3 (DIST)	<629	pCi/L
SW-104	5/7/2015 7:30	H-3 (DIST)	<670	pCi/L
SW-104	8/19/2015 17:10	H-3 (DIST)	<733	pCi/L
SW-104	11/19/2015 16:00	H-3 (DIST)	<470	pCi/L
T-14	11/19/2015 15:21	H-3 (DIST)	<622	pCi/L

Hard-To-Detects				
Station	Start Date	Analysis	Reportable Results	Units
MW-158 HTD	2/3/2015 10:05	FE-55	<91.64	pCi/L
MW-158 HTD	2/3/2015 10:05	NI-63	<15.5	pCi/L
MW-158 HTD	2/3/2015 10:05	SR-89	<9.25	pCi/L
MW-158 HTD	2/3/2015 10:05	SR-90	<2.27	pCi/L
MW-158 HTD	2/3/2015 10:05	CM-242 (AS)	<0.2018	pCi/L
MW-158 HTD	2/3/2015 10:05	CM-243/244 (AS)	<0.1009	pCi/L

Station	StartDate	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-01	11/19/2015	<6.474	<5.916	<14.19	<6.91	<13.37	<5.312	<10.51	<11.17	<6.447	<6.987	<30.28	<7.305
MW-02	11/18/2015	<5.627	<5.727	<13.63	<4.82	<9.85	<4.929	<10.45	<14.76	<5.023	<5.273	<37.84	<10.95
MW-03	12/3/2015	<.9513	<1.01	<2.461	<.8901	<1.778	<1.161	<1.923	<8.559	<.8795	<1.006	<11.82	<3.573
MW-04	2/3/2015	<2.264	<2.421	<4.633	<1.916	<3.05	<2.058	<3.696	<10.37	<1.904	<2.236	<19.75	<4.949
MW-04	5/6/2015	<1.728	<1.815	<4.18	<1.672	<3.544	<1.983	<3.437	<7.789	<1.689	<1.816	<14.7	<5.604
MW-04	8/19/2015	<3.627	<5.679	<9.324	<6.227	<6.626	<5.628	<9.336	<13.69	<5.069	<6.522	<29.58	<10.39
MW-04	11/18/2015	<5.652	<6.657	<13.73	<4.015	<10.94	<6.398	<9.269	<14.66	<5.222	<5.368	<33.4	<12.13
MW-05	12/2/2015	<1.06	<1.156	<2.481	<1.064	<2.157	<1.204	<2.231	<8.958	<.8686	<.9496	<13.74	<4.779
MW-06	2/3/2015	<2.061	<2.36	<6.624	<2.351	<5.162	<2.401	<4.154	<9.909	<2.283	<2.215	<20.94	<5.4
MW-06	5/6/2015	<1.961	<1.943	<4.45	<1.947	<3.852	<2.154	<3.677	<8.601	<1.846	<1.89	<16.63	<5.619
MW-06	8/19/2015	<4.671	<4.927	<10.49	<4.847	<8.14	<5.148	<8.192	<14.82	<4.138	<5.075	<34.03	<10.17
MW-06	11/18/2015	<4.318	<5.016	<8.431	<4.856	<7.182	<5.417	<8.307	<10.35	<4.539	<4.493	<22.13	<6.198
MW-07	11/19/2015	<5.062	<5.213	<12.59	<5.918	<9.822	<7.748	<12.35	<10.07	<5.106	<5.896	<29.28	<9.787
MW-07-DUP	11/19/2015	<5.054	<7.181	<12.72	<4.852	<14.35	<7.713	<5.141	<8.761	<7.209	<7.171	<32.8	<12.04
MW-08	5/6/2015	<3.416	<3.594	<7.525	<3.252	<7.115	<3.55	<6.534	<12.99	<2.892	<3.163	<27.43	<11.05
MW-08	12/3/2015	<.9083	<1.162	<2.583	<.9829	<2.134	<1.208	<2.217	<8.752	<.8647	<1.16	<12.95	<3.795
MW-09	11/19/2015	<5.496	<5.896	<12.63	<5.66	<12.2	<5.363	<9.645	<14.38	<5.022	<6.591	<38.49	<11.8
MW-10	11/19/2015	<4.099	<5.105	<8.999	<4.033	<8.906	<5.583	<8.439	<14.93	<4.606	<4.645	<31.31	<8.523
MW-100	2/4/2015	<2.232	<1.801	<4.679	<1.609	<4.67	<2.094	<3.934	<9.773	<1.874	<2.001	<17.09	<4.787
MW-100	5/6/2015	<2.845	<2.919	<6.468	<2.645	<5.078	<3.068	<5.671	<10.65	<2.617	<2.711	<23.08	<7.102
MW-100-DUP	5/6/2015	<3.109	<3.42	<8.151	<3.49	<6.215	<3.438	<5.531	<12.41	<2.812	<3.081	<27.14	<8.791
MW-100	8/20/2015	<3.723	<4.474	<8.534	<4.17	<8.029	<4.465	<7.316	<11.13	<3.87	<4.666	<29.24	<6.904
MW-100	11/18/2015	<6.433	<6.096	<14.61	<7.665	<13.02	<7.094	<11.73	<12.27	<6.976	<7.003	<29.4	<9.465
MW-100-DUP	11/18/2015	<5.452	<6.908	<13.85	<8.748	<14.69	<9.235	<9.558	<10.26	<6.47	<8.12	<31.8	<8.268
MW-102	11/19/2015	<6.803	<5.979	<12.96	<7.783	<13.48	<8.306	<12.03	<11.88	<6.886	<7.733	<35.06	<12.02
MW-103	2/2/2015	<2.417	<2.599	<5.014	<2.2	<1.87	<3.548	<5.04	<14.34	<2.061	<3.01	<22.48	<6.557
MW-103	5/5/2015	<2.067	<2.151	<5.13	<1.905	<4.184	<2.418	<3.913	<9.888	<1.796	<2.052	<18.63	<5.596

MW-103-DUP	5/5/2015	<2.281	<2.651	<6.468	<2.465	<4.56	<2.909	<4.947	<13.28	<2.239	<2.428	<21.25	<7.858
MW-103	8/18/2015	<5.648	<6.404	<11.64	<4.268	<11.24	<5.84	<10.73	<9.868	<5.986	<4.797	<25.21	<9.107
MW-103-DUP	8/18/2015	<6.897	<8.113	<14.1	<5.176	<16.86	<10.69	<11.86	<14.02	<6.808	<8.746	<39.71	<10.88
MW-103	11/17/2015	<6.84	<6.946	<12.06	<7.039	<14.42	<8.383	<13.64	<14.42	<8.908	<8.085	<38.47	<7.637
MW-103-DUP	11/17/2015	<7.833	<8.403	<15.84	<8.694	<12.87	<9.696	<14.47	<11.99	<6.677	<6.799	<37.81	<12.92
MW-104	2/3/2015	<1.922	<1.919	<4.345	<1.99	<3.648	<1.899	<3.747	<8.902	<1.738	<1.975	<19.37	<4.476
MW-104	5/6/2015	<2.122	<2.396	<5.51	<2.095	<4.445	<2.5	<4.371	<10.85	<2.205	<2.28	<20.45	<5.91
MW-104	8/19/2015	<5.345	<5.209	<11.11	<5.571	<11.14	<4.9	<9.838	<14.04	<4.575	<5.818	<32.67	<9.173
MW-104	11/18/2015	<4.557	<5.155	<11.14	<4.658	<8.55	<5.379	<8.959	<14.95	<4.844	<5.113	<32.98	<9.222
MW-104-DUP	11/18/2015	<3.875	<4.366	<10.37	<3.721	<9.328	<4.752	<7.779	<14.06	<4.054	<4.629	<28.89	<9.907
MW-106	2/3/2015	<2.411	<2.96	<5.821	<3.689	<5.906	<2.711	<5.826	<13.65	<1.799	<2.749	<27.01	<8.933
MW-106	5/6/2015	<1.895	<2.185	<4.76	<2.357	<4.096	<2.323	<3.942	<8.143	<1.807	<2.151	<17.67	<5.939
MW-106	8/19/2015	<4.774	<5.595	<11.71	<4.928	<10.17	<5.498	<10.87	<14.59	<4.897	<6.176	<32.71	<11.39
MW-106	11/18/2015	<3.351	<3.882	<8.779	<3.294	<7.1	<4.397	<7.192	<13.19	<3.829	<4.088	<27.2	<6.534
MW-107	2/3/2015	<1.626	<2.228	<5.573	<3.002	<4.072	<2.327	<4.834	<11.02	<2.07	<2.263	<16.66	<5.184
MW-107	5/6/2015	<3.175	<3.299	<7.753	<3.245	<5.874	<3.3	<6.098	<11.57	<2.929	<3.29	<24.4	<7.251
MW-107	8/19/2015	<4.113	<4.981	<9.378	<5.425	<11.16	<5.756	<10.19	<13.39	<4.732	<4.984	<30.89	<10.04
MW-107-DUP	8/19/2015	<5.838	<6.014	<14.98	<4.945	<12.07	<6.862	<11.54	<14.67	<4.802	<6.96	<38.37	<11.75
MW-107	11/18/2015	<5.181	<5.218	<12.06	<5.956	<10.27	<5.08	<9.851	<14.92	<4.595	<6.181	<38	<9.854
MW-108	11/18/2015	<4.239	<3.982	<9.582	<3.237	<7.396	<4.756	<9.194	<12.06	<4.33	<4.653	<27.54	<10.88
MW-11	11/19/2015	<4.136	<4.465	<9.806	<3.941	<7.245	<4.888	<8.49	<13.58	<3.933	<4.814	<29.36	<9.091
MW-110	2/2/2015	<2.799	<3.01	<5.557	<3.44	<5.229	<2.679	<5.602	<14.78	<2.957	<3.173	<23.05	<7.313
MW-110	5/5/2015	<2.405	<2.852	<6.941	<3.002	<6.036	<3.062	<5.136	<13.78	<2.519	<2.847	<23.35	<8.328
MW-110	8/18/2015	<5.496	<5.494	<10.75	<5.892	<12.83	<6.902	<9.845	<11.28	<5.608	<6.222	<27.1	<9.505
MW-110	11/17/2015	<5.761	<5.121	<12.63	<6.164	<11.25	<7.53	<10.02	<8.796	<5.841	<5.604	<24.89	<9.653
MW-111	2/3/2015	<2.056	<1.491	<4.839	<1.733	<4.535	<2.007	<3.399	<10.66	<1.808	<2.104	<20.82	<4.185
MW-111	5/6/2015	<2.806	<2.839	<6.13	<2.764	<5.341	<3.039	<5.692	<10.88	<2.73	<2.756	<21.04	<6.791
MW-111	8/19/2015	<5.453	<4.841	<12.27	<5.188	<9.718	<5.208	<10.03	<14.82	<4.743	<5.749	<33.4	<9.509
MW-111	11/18/2015	<4.217	<3.558	<9.651	<3.352	<8.775	<4.6	<8.115	<13.66	<4.304	<4.099	<31.31	<10.31
MW-112	2/2/2015	<2.928	<2.792	<5.626	<4.629	<4.806	<3.271	<5.373	<14.57	<2.506	<2.899	<25.19	<9.152

MW-112	5/5/2015	<2.498	<3.087	<5.873	<2.926	<5.538	<3.139	<5.095	<14.39	<2.433	<2.824	<25.92	<8.025
MW-112	8/18/2015	<6.531	<6.115	<14.72	<8.523	<14.2	<7.275	<12.36	<12.64	<6.116	<8.377	<37.5	<14.39
MW-112	11/17/2015	<5.472	<5.388	<16.3	<4.971	<14.92	<8.126	<11.3	<10.66	<6.421	<7.478	<31.27	<10.9
MW-112-DUP	11/17/2015	<5.37	<5.772	<11.67	<6.209	<15.17	<7.566	<9.135	<10.26	<6.203	<5.664	<31.85	<7.892
MW-114	2/2/2015	<2.02	<2.44	<4.239	<1.798	<3.387	<2.451	<3.321	<9.899	<2.203	<1.7	<21.37	<5.502
MW-114-DUP	2/2/2015	<2.529	<1.897	<3.718	<1.616	<6.021	<1.938	<5.539	<13.11	<2.601	<2.55	<28.8	<4.094
MW-114	5/5/2015	<2.113	<2.372	<5.352	<2.006	<4.308	<2.497	<4.267	<10.07	<1.948	<2.216	<20.51	<7.026
MW-114	8/18/2015	<5.985	<7	<11.73	<6.792	<10.36	<7.263	<10.89	<12.46	<5.931	<5.6	<32.12	<7.477
MW-114	11/17/2015	<7.097	<10.45	<13.97	<4.899	<16.43	<7.533	<13.8	<13.26	<7.719	<7.978	<36.55	<13.2
MW-116	2/2/2015	<2.625	<2.366	<4.071	<2.028	<4.68	<3.031	<4.225	<12.52	<1.98	<2.18	<22.52	<7.641
MW-116-DUP	2/2/2015	<3	<3.714	<7.34	<3.38	<5.066	<3.176	<6.036	<14.75	<2.783	<2.917	<23.07	<7.465
MW-116	5/5/2015	<1.46	<1.754	<4.16	<1.548	<2.997	<1.827	<3.109	<8.34	<1.391	<1.562	<14.82	<4.425
MW-116	8/18/2015	<8.23	<6.112	<15.34	<8.832	<18.38	<10.96	<16.25	<14.89	<6.906	<8.122	<35.94	<14.6
MW-116	11/17/2015	<7.105	<7.197	<16.66	<7.275	<12.09	<8.468	<11.67	<12.86	<5.238	<6.722	<31.71	<8.962
MW-118	2/2/2015	<3.955	<3.503	<6.79	<3.497	<6.751	<3.917	<6.94	<14.48	<3.191	<4.007	<33.04	<10.67
MW-118	5/5/2015	<3.098	<3.039	<7.568	<3.132	<7.497	<3.811	<6.112	<14.61	<2.871	<3.158	<26.93	<9.927
MW-118	8/18/2015	<4.725	<5.786	<10.07	<5.95	<9.723	<5.889	<7.335	<9.126	<5.028	<5.787	<24.79	<7.758
MW-118	11/17/2015	<6.262	<6.169	<13.97	<7.558	<12.57	<7.26	<12.62	<12.93	<6.98	<6.874	<26.98	<10.07
MW-12	11/19/2015	<5.528	<5.653	<12.05	<5.512	<12.45	<6.266	<8.688	<9.342	<4.853	<6.367	<27.34	<9.056
MW-120	2/3/2015	<2.232	<2.818	<5.613	<2.442	<3.665	<2.759	<4.507	<14.65	<2.242	<1.932	<19.7	<5.4
MW-120	5/6/2015	<3.209	<3.682	<8.163	<2.929	<6.703	<3.97	<7.131	<13.91	<3.384	<3.586	<28.6	<8.506
MW-120	8/18/2015	<4.793	<5.525	<13.14	<4.588	<10.13	<5.494	<11.22	<14.94	<4.81	<4.864	<32.52	<13.03
MW-120	11/18/2015	<4.952	<3.988	<11.91	<4.598	<8.09	<5.003	<8.401	<13.74	<4.456	<4.258	<29.24	<12.82
MW-122R	2/3/2015	<2.196	<2.118	<3.274	<2.238	<4.28	<3.12	<4.506	<11	<2.011	<2.042	<16.02	<7.734
MW-122R	5/6/2015	<2.089	<2.104	<4.651	<2.259	<4.086	<2.404	<3.945	<8.499	<1.851	<2.145	<17.83	<5.348
MW-122R	8/19/2015	<4.481	<5.415	<10.28	<5.342	<10.07	<5.731	<8.827	<12.88	<4.683	<5.254	<29.49	<7.508
MW-122R	11/18/2015	<3.936	<3.085	<8.461	<3.97	<7.818	<4.904	<8.517	<12.4	<4.632	<4.959	<28.17	<7.667
MW-124	2/3/2015	<2.973	<3.371	<7.579	<3.364	<6.541	<2.919	<6.47	<14.55	<3.067	<3.529	<29.37	<7.065
MW-124	5/5/2015	<2.105	<2.221	<5.321	<2.202	<4.614	<2.644	<4.289	<10.81	<1.93	<2.167	<19.59	<6.528
MW-124	8/19/2015	<7.474	<7.897	<16.14	<6.269	<13.43	<7.274	<14.29	<13.12	<6.828	<6.56	<36.13	<8.639

MW-124	11/18/2015	<6.229	<6.973	<17.16	<7.233	<15.11	<7.991	<15.15	<12.44	<7.871	<6.589	<38.3	<13.01
MW-125	2/3/2015	<2.447	<2.576	<5.965	<2.802	<5.708	<2.915	<5.179	<13.57	<2.56	<2.992	<27.14	<5.064
MW-126	2/2/2015	<3.238	<3.056	<7.478	<2.834	<5.791	<3.43	<5.436	<13.67	<3.051	<3.247	<30.86	<9.501
MW-126	5/6/2015	<1.871	<2.219	<4.861	<2.027	<4.053	<2.441	<4.041	<10.44	<1.949	<2.067	<18.79	<6.251
MW-126	8/19/2015	<7.401	<5.338	<13.47	<5.901	<10.32	<8.468	<11.46	<11.66	<7.169	<7.658	<37.02	<10.65
MW-126	11/17/2015	<6.613	<6.865	<16.73	<6.647	<13.42	<6.988	<13.11	<14.11	<7.449	<8.01	<34.35	<12.3
MW-128	2/3/2015	<2.033	<3.18	<5.116	<1.89	<5.024	<2.909	<5.304	<13.34	<2.31	<2.944	<24.34	<7.274
MW-128	5/6/2015	<2.284	<2.612	<5.822	<2.297	<4.886	<2.891	<4.845	<11.32	<2.337	<2.426	<21.11	<6.762
MW-128	8/20/2015	<5.566	<6.174	<10.67	<5.917	<11.32	<6.562	<9.062	<13.97	<4.797	<5.31	<31.99	<9.624
MW-128	11/18/2015	<4.897	<4.361	<10.49	<4.711	<9.853	<5.29	<8.848	<14.92	<4.623	<5.577	<33.9	<12.35
MW-13	12/3/2015	<1.339	<1.69	<3.473	<1.5	<3.077	<1.697	<2.898	<10.12	<1.268	<1.222	<17.41	<5.26
MW-130	2/3/2015	<2.47	<2.929	<6.845	<2.506	<4.884	<3.316	<5.631	<13.17	<2.631	<2.834	<23.7	<7.065
MW-130	5/6/2015	<2.632	<3.008	<6.862	<2.647	<5.99	<3.055	<5.421	<10.69	<2.291	<2.593	<20.57	<7.606
MW-130	8/20/2015	<4.225	<4.956	<8.71	<4.52	<9.005	<4.974	<7.471	<9.291	<3.536	<4.026	<25.37	<11.21
MW-130	11/19/2015	<6.551	<5.592	<13.94	<5.878	<10.24	<7.104	<12.11	<12.17	<8.356	<7.343	<27	<9.248
MW-130-DUP	2/3/2015	<2.049	<2.524	<5.105	<2.544	<3.857	<2.924	<4.535	<10.92	<2.22	<2.529	<17.56	<6.579
MW-131	2/3/2015	<2.264	<3.135	<4.452	<2.207	<4.354	<2.177	<4.784	<11.26	<2.408	<2.921	<22.63	<4.799
MW-131	5/6/2015	<3.609	<3.899	<8.342	<4.407	<7.601	<4.102	<7.109	<10.86	<3.569	<3.906	<26.27	<9.308
MW-131	8/20/2015	<3.923	<4.605	<8.723	<3.773	<10.74	<4.705	<8.459	<11.17	<4.217	<4.337	<27.85	<7.139
MW-131	11/19/2015	<7.566	<5.556	<10.26	<4.757	<10.55	<5.662	<10.5	<12.46	<5.239	<6.137	<25.99	<9.021
MW-132	2/3/2015	<2.125	<2.647	<5.554	<2.549	<4.304	<3.212	<4.568	<12.4	<2.223	<2.558	<21.62	<5.828
MW-132	5/6/2015	<2.437	<2.809	<5.931	<2.668	<5.971	<2.73	<4.801	<9.153	<2.48	<2.636	<19.2	<5.86
MW-132	8/20/2015	<3.261	<4.095	<8.955	<3.485	<7.903	<4.595	<7.403	<10.6	<3.553	<4.129	<25.96	<7.74
MW-132	11/18/2015	<2.171	<2.334	<5.66	<2.109	<4.677	<2.671	<4.637	<12.74	<2.217	<2.346	<23.63	<6.291
MW-134	2/3/2015	<1.837	<2.254	<5.09	<2.674	<4.432	<2.172	<3.581	<11.85	<1.718	<1.714	<21.44	<5.079
MW-134	5/6/2015	<2.271	<2.403	<5.231	<2.241	<4.219	<2.586	<4.494	<8.157	<2.19	<2.23	<19.14	<5.376
MW-134	8/20/2015	<4.65	<4.672	<10.66	<4.308	<8.971	<4.671	<8.93	<11.06	<4.136	<4.718	<28.52	<8.825
MW-134-DUP	8/20/2015	<3.984	<4.225	<8.865	<4.695	<9.185	<4.48	<9.119	<11.77	<4.829	<4.316	<29.24	<9.687
MW-134	11/18/2015	<3.827	<4.998	<11.83	<4.602	<8.613	<5.263	<8.989	<14.62	<4.289	<4.137	<32.39	<10.33
MW-137	2/2/2015	<2.284	<2.6	<5.63	<1.563	<5.268	<2.836	<5.521	<14.21	<2.181	<2.591	<21.14	<6.304

MW-137	5/5/2015	<2.015	<2.511	<6.054	<2.665	<4.835	<2.559	<4.86	<10.85	<2.108	<2.64	<22.31	<6.968
MW-137	8/18/2015	<5.212	<6.39	<12.18	<6.454	<11.06	<6.103	<10.96	<11.24	<5.314	<6.467	<31.14	<10.16
MW-137-DUP	8/18/2015	<9.121	<8.866	<20.37	<9.556	<12.71	<10.14	<15.08	<13.48	<7.091	<9.133	<40.18	<14.53
MW-137	11/17/2015	<7.934	<8.781	<18.04	<8.626	<14.12	<7.795	<12.91	<11.16	<7.789	<8.826	<34.11	<8.892
MW-139	2/2/2015	<2.303	<2.736	<5.037	<1.612	<4.279	<2.696	<3.774	<12.16	<2.113	<2.194	<21.88	<6.967
MW-139	5/5/2015	<2.724	<2.819	<6.549	<2.633	<5.624	<3.211	<5.37	<14.1	<2.601	<2.599	<25.8	<7.469
MW-139	8/18/2015	<6.091	<5.215	<12.17	<6.276	<11.31	<7.222	<9.003	<10.22	<5.089	<5.987	<26.23	<9.994
MW-139	11/17/2015	<5.833	<6.239	<17.08	<3.199	<9.581	<9.517	<10.66	<13.07	<7.556	<8.49	<36.07	<9.189
MW-14	12/2/2015	<1.888	<2.152	<5.003	<1.885	<3.97	<2.277	<4.058	<10.63	<1.838	<2.045	<19.3	<6.609
MW-141	2/2/2015	<2.679	<2.048	<7.405	<3.684	<3.993	<3.281	<3.507	<13.15	<2.841	<2.648	<25.22	<6.935
MW-141	5/5/2015	<2.814	<2.971	<6.279	<2.845	<5.453	<3.366	<5.269	<13.97	<2.665	<2.795	<25.6	<7.824
MW-141	8/18/2015	<4.406	<5.42	<11.71	<5.701	<9.485	<6.213	<7.214	<10.91	<5.068	<5.97	<25.48	<6.447
MW-141	11/18/2015	<5.87	<5.989	<10.12	<4.165	<12.6	<8.809	<10.98	<12.36	<7.045	<6.96	<32.19	<6.445
MW-142	2/3/2015	<2.331	<2.592	<4.036	<3.411	<3.022	<3.089	<7.342	<13.86	<1.967	<2.188	<23.7	<8.391
MW-142	5/6/2015	<3	<3.516	<7.527	<3.359	<6.448	<3.724	<6.244	<14.49	<3.003	<3.407	<26.81	<8.581
MW-142	8/19/2015	<5.392	<5.779	<11.93	<5.284	<10.18	<6.243	<10.1	<14.88	<4.97	<6.042	<35.59	<8.022
MW-142	12/2/2015	<8.172	<9.587	<1.939	<7.288	<1.527	<1.116	<1.595	<7.972	<7.648	<7.686	<11.68	<3.552
MW-144	2/3/2015	<2.607	<2.21	<5.816	<2.277	<4.92	<3.227	<5.836	<14.25	<2.948	<3.065	<25.86	<6.295
MW-144	5/6/2015	<2.295	<2.645	<5.528	<2.383	<4.69	<2.728	<5.014	<12.31	<2.01	<2.446	<22.19	<7.193
MW-144	8/19/2015	<6.424	<9.104	<19.05	<10.54	<14.44	<8.112	<12.3	<14.32	<8.058	<8.493	<39.84	<12.35
MW-144	12/2/2015	<2.27	<2.305	<4.993	<2.516	<4.767	<2.843	<5.116	<12.78	<2.357	<2.513	<24.33	<7.97
MW-144-DUP	12/2/2015	<2.261	<2.677	<6.111	<2.522	<4.966	<2.54	<5.435	<14.26	<2.328	<2.535	<26.16	<7.205
MW-146	2/3/2015	<3.12	<2.921	<6.278	<2.381	<6.431	<2.979	<5.353	<14.94	<2.979	<3.089	<25.3	<4.864
MW-146	5/6/2015	<1.551	<1.74	<4.367	<1.696	<3.428	<2.018	<3.509	<9.055	<1.659	<1.732	<17.27	<5.654
MW-146	8/19/2015	<9.419	<8.179	<17.05	<8.768	<19.62	<8.528	<11.76	<14.6	<8.255	<7.641	<40.88	<8.59
MW-146	12/1/2015	<2.245	<2.485	<5.131	<2.357	<4.719	<2.962	<4.643	<12.62	<2.149	<2.357	<22.12	<6.8
MW-147	2/3/2015	<2.58	<4.122	<7.735	<3.052	<6.691	<3.785	<5.967	<14.86	<2.991	<3.277	<21.41	<6.258
MW-147	5/6/2015	<2.149	<2.336	<4.767	<2.104	<4.322	<2.496	<4.369	<10.67	<2.082	<2.243	<19.58	<5.662
MW-147	8/19/2015	<7.54	<4.204	<11.57	<8.167	<14.27	<8.903	<10.4	<11.67	<6.959	<8.309	<34.17	<11.55
MW-147	12/1/2015	<2.894	<3.239	<7.036	<2.637	<5.432	<3.007	<4.84	<14.35	<2.592	<2.841	<28.49	<8.804

MW-148	2/3/2015	<3.34	<3.32	<7.154	<3.31	<6.499	<4.031	<6.814	<14.42	<3.121	<2.994	<26.46	<10.31
MW-148	5/6/2015	<3.046	<3.798	<6.797	<3.336	<6.811	<3.598	<6.129	<13	<3.016	<3.478	<26.52	<7.758
MW-148	8/19/2015	<4.646	<3.891	<8.527	<3.223	<8.098	<4.879	<7.005	<11.15	<3.516	<4.402	<25.16	<11.08
MW-148	12/1/2015	<1.217	<1.377	<3.308	<1.177	<2.421	<1.439	<2.601	<13.17	<1.151	<1.264	<18.31	<4.834
MW-15	11/18/2015	<6.043	<5.408	<13.47	<6.385	<11.94	<6.446	<10.88	<11.18	<5.841	<6.512	<31.46	<9.882
MW-151	2/2/2015	<2.421	<2.279	<4.708	<2.931	<3.906	<2.043	<5.326	<14.51	<1.925	<2.365	<24.24	<6.557
MW-151	5/5/2015	<1.775	<1.991	<4.423	<1.773	<3.51	<2.078	<3.358	<9.051	<1.715	<1.781	<17.37	<5.221
MW-151	8/18/2015	<6.909	<6.39	<16.96	<4.833	<13.03	<6.823	<12.95	<12.14	<6.223	<7.898	<36.31	<7.374
MW-151	11/17/2015	<7.672	<8.198	<13.04	<7.132	<14.62	<9.22	<13.64	<14.59	<9.534	<9.508	<40.42	<10.03
MW-153	2/3/2015	<3.213	<4.05	<8.657	<4.134	<6.44	<4.093	<6.856	<14.81	<3.337	<3.841	<32.89	<9.33
MW-153	5/6/2015	<3.229	<3.432	<6.812	<3.158	<6.388	<3.696	<5.842	<11.84	<3.171	<3.239	<23.9	<7.271
MW-153	8/19/2015	<5.094	<4.753	<11.57	<5.555	<10.84	<5.933	<9.486	<13.66	<4.684	<5.423	<25.73	<12.7
MW-153	11/18/2015	<5.334	<4.865	<10.45	<5.466	<11.79	<6.88	<9.679	<14.82	<3.971	<5.965	<40.33	<11.25
MW-155	2/2/2015	<2.653	<1.824	<6.639	<2.631	<5.234	<2.97	<4.565	<12.09	<2.023	<2.719	<25.2	<8.834
MW-155	5/5/2015	<2.182	<2.438	<5.199	<2.307	<4.458	<2.575	<4.569	<12.34	<2.176	<2.295	<21.97	<6.689
MW-155	8/19/2015	<6.422	<6.613	<16.84	<6.761	<15.12	<7.651	<11.62	<11.57	<7.108	<6.367	<32.64	<7.88
MW-155	11/17/2015	<5.602	<4.991	<12.37	<5.516	<11.23	<6.003	<10.06	<10.39	<5.266	<6.481	<26.11	<7.89
MW-156	2/3/2015	<2.244	<2.596	<6.137	<2.879	<5.53	<3.32	<5.478	<9.847	<2.444	<1.919	<22.94	<6.476
MW-156	5/5/2015	<2.029	<2.422	<5.658	<2.426	<4.211	<2.47	<4.229	<11.76	<2.017	<2.242	<20.6	<6.444
MW-156	8/19/2015	<5.891	<6.29	<12.46	<3.825	<11.52	<6.838	<8.027	<10.15	<7.081	<5.423	<31.76	<10.39
MW-156	11/17/2015	<6.189	<6.949	<14.02	<4.202	<10.52	<5.921	<10.68	<11.16	<5.89	<6.655	<32.58	<11.13
MW-157	2/3/2015	<2.395	<2.645	<6.39	<3.485	<5.234	<2.989	<5.49	<13.73	<2.524	<3.024	<29.39	<8.454
MW-157	5/5/2015	<2.219	<2.753	<6.15	<2.69	<4.579	<2.717	<4.723	<13.38	<2.221	<2.6	<24.32	<7.772
MW-157	8/19/2015	<5.872	<6.669	<13.7	<4.588	<13.53	<7.497	<11.32	<9.035	<6.358	<6.975	<28.33	<8.305
MW-157	11/17/2015	<5.659	<6.207	<11.48	<5.107	<15.22	<6.41	<9.103	<9.68	<5.499	<6.878	<22.54	<9.401
MW-158	2/3/2015	<2.363	<2.883	<7.956	<2.894	<5.915	<3.511	<5.837	<10.39	<2.516	<2.297	<27.16	<8.654
MW-158	5/6/2015	<2.033	<2.403	<4.882	<2.157	<4.553	<2.465	<3.614	<9.208	<1.865	<2.077	<17.71	<6.997
MW-158	8/19/2015	<7.388	<8.742	<16.63	<9.702	<16.89	<9.066	<15.25	<14.66	<7.711	<8.628	<45.78	<8.572
MW-158	12/1/2015	<3.443	<3.907	<7.97	<3.578	<7.638	<4.189	<7.398	<14.22	<3.886	<3.572	<28.98	<8.224
MW-159	2/3/2015	<3.126	<2.911	<6.401	<3.344	<6.047	<2.779	<5.706	<12.47	<2.812	<3.479	<29.07	<7.429

MW-159	5/6/2015	<2.103	<2.473	<5.363	<2.414	<5.31	<2.581	<4.316	<10.47	<2.065	<2.271	<20.93	<8.246
MW-159-DUP	5/6/2015	<2.94	<3.136	<7.55	<2.963	<6.618	<3.407	<5.533	<13.05	<2.804	<2.933	<26.63	<9.356
MW-159	8/19/2015	<7.015	<6.49	<10.84	<9.185	<14.33	<8	<14.09	<13.05	<8.128	<7.235	<35.02	<11.33
MW-159-DUP	8/19/2015	<6.385	<6.033	<13.52	<5.743	<12.26	<7.337	<11.6	<12.41	<5.671	<7.122	<36.21	<6.236
MW-159	12/1/2015	<2.348	<2.412	<5.167	<2.291	<5.123	<2.893	<4.364	<14.09	<2.057	<2.435	<21.46	<7.672
MW-16	12/3/2015	<1.115	<1.327	<3.153	<1.234	<2.292	<1.502	<2.369	<10.98	<1.154	<1.269	<14.83	<4.482
MW-161	2/3/2015	<2.789	<3.688	<8.708	<2.864	<7.426	<3.71	<6.759	<11.6	<2.586	<2.899	<32.72	<6.697
MW-161-DUP	2/3/2015	<1.97	<3.131	<5.851	<3.453	<6.888	<2.693	<5.265	<12.05	<2.716	<2.991	<26.29	<6.375
MW-161	5/6/2015	<2.907	<3.128	<6.566	<3.156	<6.644	<3.271	<5.414	<7.67	<2.84	<2.949	<18.9	<6.542
MW-161-DUP	5/6/2015	<8.937	<9.682	<2.052	<9.843	<2.016	<1.079	<1.689	<2.881	<9.392	<9.714	<6.611	<1.853
MW-161	8/19/2015	<5.706	<5.459	<12.56	<6.329	<9.791	<5.612	<11.84	<14.09	<4.829	<6.233	<29.67	<13.94
MW-161	11/18/2015	<8.521	<9.315	<16.79	<7.802	<17.14	<8.133	<13.82	<13.5	<7.886	<9.572	<40.56	<14.05
MW-162	2/3/2015	<2.637	<1.765	<5.772	<2.774	<4.916	<3.117	<4.082	<11.33	<2.113	<2.987	<25.71	<7.399
MW-162-DUP	2/3/2015	<2.053	<2.365	<4.272	<1.999	<4.879	<2.432	<3.722	<10.37	<2.083	<1.86	<19.87	<5.985
MW-162	5/6/2015	<2.57	<2.795	<6.034	<2.365	<4.852	<3.01	<5.007	<13.63	<2.498	<2.677	<25.44	<7.023
MW-162	8/19/2015	<6.301	<5.889	<11.79	<5.669	<13.21	<6.251	<10.5	<9.472	<7.232	<7.05	<29.16	<10.04
MW-162	12/1/2015	<2.791	<3.025	<6.368	<3.159	<5.018	<3.245	<5.648	<14.99	<2.688	<3.289	<26.64	<8.46
MW-167	11/17/2015	<6.167	<5.468	<11.37	<5.436	<10.2	<5.466	<8.836	<9.488	<5.189	<5.811	<24.19	<9.162
MW-167-DUP	11/17/2015	<4.636	<5.911	<15.24	<4.412	<9.049	<6.919	<7.712	<12.15	<5.071	<8.344	<26.11	<8.564
MW-169	11/17/2015	<7.668	<6.486	<15.65	<7.458	<13.33	<7.06	<13.36	<11.88	<6.655	<7.329	<31.7	<7.227
MW-17	11/19/2015	<3.911	<4.647	<9.892	<3.983	<7.223	<5.037	<8.382	<12.1	<4.682	<4.163	<27.1	<11.36
MW-170	11/18/2015	<3.774	<3.904	<8.859	<3.833	<6.824	<4.273	<7.131	<13.17	<4.438	<4.09	<27.57	<7.603
MW-172	11/18/2015	<4.135	<5.109	<10.41	<2.924	<9.543	<4.162	<8.103	<11.99	<4.076	<4.569	<23.27	<10.07
MW-174	11/18/2015	<4.209	<5.358	<11.35	<4.253	<9.384	<4.972	<9.095	<14.47	<4.713	<5.107	<33.5	<11.59
MW-18	11/19/2015	<5.989	<7.752	<16.32	<6.343	<11.98	<7.379	<12.72	<11.51	<8.284	<6.128	<28.85	<6.862
MW-180	11/18/2015	<5.952	<6.03	<12.4	<5.439	<13.94	<6.557	<10.04	<11.91	<7.516	<6.795	<30.55	<8.476
MW-182	11/19/2015	<8.198	<8.37	<19.03	<6.635	<13.49	<9.199	<14.9	<13.17	<8.522	<8.249	<38.02	<9.575
MW-182-DUP	11/19/2015	<6.348	<8.111	<12.76	<6.739	<16.69	<6.945	<11.84	<11.38	<5.817	<6.153	<24.46	<12.55
MW-185	11/17/2015	<6.494	<4.351	<10.62	<5.794	<11.87	<5.217	<8.342	<10.74	<5.183	<6.183	<20.59	<5.718
MW-188	11/18/2015	<3.458	<4.028	<8.569	<3.455	<7.034	<5.097	<7.834	<14.22	<3.713	<4.385	<32.66	<7.095

MW-19	11/19/2015	<4.76	<4.204	<11.05	<4.737	<9.08	<4.949	<8.161	<14.58	<4.25	<4.732	<32.48	<10.49
MW-20	12/2/2015	<1.431	<1.64	<3.878	<1.375	<2.786	<1.766	<2.883	<14.6	<1.356	<1.419	<20.81	<5.819
MW-21	12/3/2015	<1.782	<1.85	<5.089	<1.841	<3.598	<2.182	<3.551	<9.471	<1.662	<1.87	<16.8	<6.285
PZ-01	2/2/2015	<1.723	<2.423	<5.32	<2.063	<3.795	<2.243	<3.804	<9.887	<1.442	<2.35	<13.36	<3.245
PZ-01	5/5/2015	<2.574	<2.767	<6.18	<2.385	<5.116	<3.175	<4.968	<13.7	<2.396	<2.595	<25.15	<8.391
PZ-01	8/18/2015	<6.517	<6.149	<9.159	<7.798	<12.12	<4.868	<10.82	<10.82	<6.2	<5.457	<27.9	<9.64
PZ-01	11/17/2015	<8.028	<8.096	<17.49	<6.614	<13.22	<8.151	<13.13	<12.54	<8.788	<8.367	<40.11	<12.9
PZ-02	5/5/2015	<1.667	<1.769	<3.995	<1.686	<3.194	<1.931	<3.105	<5.792	<1.478	<1.71	<11.95	<3.767
PZ-02	11/18/2015	<5.869	<4.866	<10.63	<6.295	<10.51	<6.705	<10.94	<10.96	<6.061	<5.497	<23.9	<7.461
PZ-03	2/3/2015	<2.45	<2.851	<6.955	<2.372	<6.423	<2.694	<4.672	<10.95	<2.394	<2.826	<18.96	<8.551
PZ-03	5/6/2015	<2.182	<2.3	<5.154	<2.133	<4.175	<2.454	<4.051	<9.58	<2.018	<2.209	<19.85	<6.345
PZ-03	8/19/2015	<3.535	<3.366	<8.176	<3.565	<7.537	<3.537	<6.06	<9.718	<3.136	<3.469	<21.7	<6.854
PZ-03	11/18/2015	<5.057	<5.084	<10.1	<5.699	<9.952	<6.737	<9.36	<14.7	<4.845	<5.38	<40.72	<11.35
SW-101	5/7/2015	<4.186	<4.894	<10.08	<3.895	<8.64	<5.046	<8.059	<13.83	<3.72	<3.56	<30.63	<8.878
SW-101	8/19/2015	<5.627	<5.435	<13.5	<5.469	<9.455	<6.051	<10.05	<14.16	<5.16	<5.001	<30.12	<10.11
SW-101	12/3/2015	<9.454	<1.274	<3.1	<1.083	<2.25	<1.253	<2.322	<8.619	<1.057	<1.152	<14.39	<4.733
SW-102	5/7/2015	<3.509	<3.634	<8.506	<4.349	<7.713	<4.12	<6.909	<13.65	<3.093	<3.612	<26.65	<8.088
SW-102	8/19/2015	<3.446	<3.713	<7.412	<3.424	<6.959	<3.561	<6.065	<6.561	<3.316	<3.81	<17.25	<5.827
SW-102	11/19/2015	<8.2	<8.164	<14.7	<8.681	<17.84	<8.262	<15.06	<14.38	<5.444	<9.585	<41.27	<12.43
SW-103	2/4/2015	<1.95	<3.469	<7.503	<2.706	<6.549	<2.632	<4.856	<13.38	<2.379	<2.948	<24.1	<6.564
SW-103	5/7/2015	<3.393	<3.799	<6.938	<3.216	<6.666	<3.826	<6.428	<11.31	<3.246	<3.397	<25.91	<6.87
SW-103	8/19/2015	<3.52	<4.093	<6.38	<4.794	<6.882	<4.465	<6.731	<11.74	<3.814	<4.139	<27.73	<6.126
SW-103	11/19/2015	<8.775	<9.575	<20.78	<12.27	<17.66	<12.6	<14.42	<14.66	<9.012	<11.03	<51.02	<13.14
SW-104	5/7/2015	<4.281	<4.41	<10.58	<3.887	<8.597	<4.322	<7.359	<11.69	<3.676	<4.02	<28.3	<9.777
SW-104	8/19/2015	<4.865	<4.242	<10.59	<5.762	<9.691	<4.849	<11.18	<14.85	<4.053	<5.924	<33.4	<11.48
SW-104	11/19/2015	<5.505	<5.437	<13.53	<5.134	<11.78	<5.663	<9.743	<14.6	<4.948	<5.262	<36.1	<11.95
T-14	11/19/2015	<5.055	<5.461	<7.183	<6.289	<10.26	<6.163	<11.07	<8.144	<6.138	<6.223	<26.96	<7.953

Attachment 1 - 2013 Table 3 Revised

In the 2013 Annual Radioactive Effluent Release Report, page 34 of 71, Table 3, Section 3, it states that 16 solid waste shipments were made to the Energy Solutions (Bear Creek) facility in Oak Ridge, TN. During a recent review of solid waste shipments, it was discovered that in 2013 there were actually 23 solid waste shipments made to the Energy Solutions (Bear Creek) facility in Oak Ridge, TN. The following pages have the revised Table 3 (Solid Waste and Irradiated Fuel Shipments) for the 2013 Annual Radioactive Effluent Release Report.

REVISED - 2013 - TABLE 3 - REVISED
Effluent and Waste Disposal Annual Report 2013 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/13 to 12/31/13

A. Solid Waste Shipped for Burial or Disposal (Not Irradiated Fuel)

1. <u>Type of Waste</u>	<u>Units</u>	<u>12 Month Period</u>	<u>Waste Class</u>	<u>Estimated Error %</u>
Spent Resins, Filter	m3	5.22E+01	A	± 25%
Sludges, Evaporator	Ci	5.55E+01	A	
Bottoms, Etc.	m3	0.00E+00	B	
	Ci	0.00E+00	B	
	m3	0.00E+00	C	
	Ci	0.00E+00	C	
Dry Compressible Wastes,	m3	5.82E+02	A	± 25%
Contaminated Equipment	Ci	6.38E-01	A	
Etc.				
Irradiated Components,	m3	0.00E+00		
Control Rods, Etc.	Ci	0.00E+00		
Other	m3	2.30E+02	A	± 25%
(Water, EHC, Waste Oil,	Ci	1.86E-02	A	
etc.)				

Note: Volume considered being the total disposal volume of the container.

Radwaste Estimated Error %:

Waste types considered are processed solid waste (i.e. resin, filter media) and non-compactible/compactible dry active waste.

1. Possible Errors

- a. Volume
- b. Representative Sampling
- c. Instrument/Counting
- d. Dose to Curie Calculations

2. Volume Error

Level indication for processed resins can be determined to +/- 0.5 inches. This correlates to approximately 1.0%. Container manufacturer stated design tolerance allows for 1.0% deviation from container dimensions. Volume error is not applicable to dry active waste.

3. Representative Sampling Error

Sampling error for processed resins is based upon obtaining a representative sample from the waste being processed using an iso-lock sampler. Sampling error from dry active waste is based upon obtaining a representative sample from the material being packaged. This error is estimated to be +/- 10% for all waste types, which is consistent with industry standards.

REVISED - Effluent and Waste Disposal Annual Report 2013 Year - REVISED
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/13 to 12/31/13
Table 3 (continued)

4. Instrument/Counting Error

The error caused by sample geometry, counting time, sample activity and instrument background is estimated to be +/- 10%. The error for radiological survey instrumentation is estimated to be +/- 20%. This error is applicable to all waste types.

5. Dose to Curie Calculations Error

The Dose to Curie method used to calculate activity suffers from analytical accuracy in that certain important parameters are neglected. These parameters are geometry of package, measuring instrument characteristics, build-up, internal attenuation effect, and external media attenuation. An activity correction factor is applied to provide adjustment for these factors. This error is applicable to all waste types.

2. Estimates of Major Nuclides by Waste Stream

Resins, Filters, Evaporator Bottoms, Etc. (Min 1%)			Dry Compressible Wastes, Contaminated Equipment, Etc. (Min 1%)			Other Water, EHC, Waste Oil, Etc. (Min 1%)		
Isotope	% Abundance	Curies	Isotope	% Abundance	Curies	Isotope	% Abundance	Curies
MN-54	3.080	1.71E+00	MN-54	1.738	1.11E-02	Cr-51	1.380	2.56E-04
FE-55	6.335	3.51E+00	FE-55	54.947	3.51E-01	MN-54	2.113	3.92E-04
CO-60	63.813	3.54E+01	CO-60	33.290	2.13E-01	FE-55	48.234	8.95E-03
Ni-63	4.565	2.53E+00	ZR-95	1.700	1.09E-02	CO-60	33.587	6.23E-03
ZN-65	16.809	9.33E+00	NB-95	2.560	1.63E-02	ZR-95	3.109	5.77E-04
CS-137	4.159	2.31E+00	CS-137	1.968	1.26E-02	NB-95	5.123	9.51E-04
						CS-137	1.721	3.19E-04

Determined by Measurement & Correlation.
 Packaged in Strong, Tight Liners.

No Solidification Agent or Absorbent Used.

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
9	Truck	Energy Solutions (Gallaher) - Oak Ridge, TN
23	Truck	Energy Solutions (Bear Creek) - Oak Ridge, TN
5	Truck	Energy Solutions (Barnwell) - Barnwell, SC

B. Irradiated Fuel Shipments Disposition

No Irradiated Components, Control Rods, Etc. were shipped in 2013.

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A