PSEG Nuclear LLC
P.O. Box 236, Hancocks Bridge, New Jersey 08038-0236

PSEG
Nuclear LLC

Technical Specification Section 6.9.1.8 (Salem)
Technical Specification Section 6.9.1.7 (Hope Creek)

LR-N17-0087

APR 26 2017

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555-001

Salem Nuclear Generating Station, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. DPR-70 and DPR-75
NRC Docket Nos. 50-272 and 50-311

Hope Creek Generating Station
Renewed Facility Operating License No. NPF-57
Docket No. 50-354

Subject: 2016 Annual Radioactive Effluent Release Report

In accordance with Section 6.9.1.8 of Appendix A to Renewed Facility Operating Licensees DPR-70 and DPR-75 for Salem Generating Station Unit Nos. 1 and 2 (Salem), and Section 6.9.1.7 of Appendix A to Renewed Facility Operating License NPF-57 for Hope Creek Generating Station (HCGS), PSEG nuclear hereby transmits one copy of the combined 2016 Annual Radioactive Effluent Release Report (Enclosure). The report is RERR-65 for Salem and RERR-39 for HCGS. This report summarizes liquid and gaseous releases and solid waste shipments from Salem and HCGS for the period of January 1, 2016 to December 31, 2016.

There are no regulatory commitments contained in this letter.

If you have any questions or comments on this transmittal, please contact Ms. Alison Kraus at (856) 339-7900.

Sincerely,

F. Kenneth Grover
Plant Manager
Salem Generating Station

Edward T. Casulli
Plant Manager
Hope Creek Generating Station

ako

Enclosure: 2016 Annual Radioactive Effluent Release Report

IE48
NRR

cc: Mr. Daniel Dorman, Regional Administrator - NRC Region 1
Ms. Carleen Parker, Project Manager - USNRC
Mr. Patrick Finney, USNRC Senior Resident Inspector - Salem
Mr. Justin Hawkins, USNRC Senior Resident Inspector - Hope Creek
Mr. Patrick Mulligan, Manager IV, NJBNE
Mr. Lee Marabella, Corporate Commitment Tracking Coordinator
Mr. Thomas Cachaza, Salem Commitment Tracking Coordinator
Mr. Thomas MacEwen, Hope Creek Commitment Tracking Coordinator

Technical Specification Section 6.9.1.9 (Salem)
Technical Specification Section 6.9.1.7 (Hope Creek)

LR-N17-0087

Enclosure

PSEG Nuclear LLC

2016 Annual Radioactive Effluent Release Report

For

The Salem and Hope Creek

Generating Stations

TYPICAL LICENSING AND REGULATORY AFFAIRS CORRESPONDENCE CONCURRENCE FORM

Station(s): Salem/Hope Creek Correspondence No.: LR-N17-0087

Subject/Document: 2016 Annual Radioactive Effluent Release Report

Document Due Date: 04/27/2017 Regulatory Driven Due Date: (YES) / NO

Document Prepared by: Alysse Ochoa Extension: 2742

If Routine NRC report, then document SAP recurring task or generate notification: _____

Required Review and Disciplines Assigned by: James Mallon / Director, Reg. Compliance
Title

Type of Review Required: (Reference LS-AA-117)
- ☐ Technical Verification Team Review
- ■ Individual or Series Review
- ☐ No Technical Review

Disciplines Required:
- ☐ Maintenance
- ☐ Operations
- ☐ Rx Engineering
- ☐ Nuclear Fuels
- ■ Radiation Protection
- ☐ Engineering - I&C
- ☐ Design Engineering
- ☐ Work Management
- ■ Chemistry
- ☐ Radwaste
- ☐ Engr - Mech Systems
- ☐ Engr - Elect Systems
- ☐ Training
- ■ Reg Assurance / Licensing
- ☐ Programs Engineering
- ■ Other: Environmental Affairs

NOTE
The following signatures indicate and affirm that technical inputs for this regulatory correspondence are technically correct, complete, and accurate in all material respects.

Print Name / Signature	Discipline	Date
Alysse Ochoa / Alysse K Ochoa	Preparer	4/20/17
Thomas MacEwen Thomas J MacEwen	Peer Reviewer	4/20/17
Thomas Cachaza see attached email	Peer Reviewer	4/21/17
~~Joseph Chamy~~ N/A	~~CEAM - Chemistry~~ N/A	N/A
Alison Kraus See attached email	Manager – Env. Affairs	4/24/17
Shelly Kugler see attached email	Manager – HC Chemistry	4/21/17
Mark Pyle see attached email	Manager – Salem Chemistry	4/24/17
Hal Trimble Hal Trimble	Manager – HC Rad Pro	4/25/17
Matt Hassler See attached traveler	Manager – Salem Rad Pro	4/25/17

Required Reviews and Signatures (check as appropriate):

- ☐ Station Qualified Review Required: _____ Date: _____
- ☐ Corporate Licensing Concurrence Required: _____ Date: _____
- ■ Station Regulatory Assurance Concurrence Required: J Mallon Date: 4/25/17
  James Mallon/ Dir. Site Reg. Compliance
- ☐ PORC Approval Required: PORC Meeting No. _____ PORC Chair _____
- ■ Plant Manager Approval Required: Ken Grover and Ed Casulli/ On Letter Date: _____
- ☐ Site Vice President Approval Required: _____ Date: _____

Quality Review Checklist

1. The following checklists should be selected based on the type of document being submitted (LER, LAR or other NRC correspondence)
    a. Correspondence Checklist – Page 3
    b. LAR – Page 4
    c. LER – Pages 5 and 6

2. Only one checklist should be used for each document, the individual assigned the responsibility for the letter should fill out the checklist.

3. The peer reviewer can use the following checklists as a guide.

Correspondence Quality Checklist	
Letter Number: LR-N17-0087	
Format	Initials
o Cover letter formatted IAW LS-AA-117-1003	AG JM
o Letter number on all pages, as appropriate	AG JM
o Pagination and page count	AG JM
o Attachments and Enclosures referenced to the letter	AG JM
o CC and/or BC list are complete and accurate	AG JM
o Enclosures or attachments are readable	AG JM
o Special requirements noted such as Public Withholding with pages marked as appropriate	N/A
o Correct Addressee	AG JM
o Spelling and Grammar	AG JM
o Docket and License Numbers as required	AG JM
o Margins consistent	AG JM
o Fonts consistent	AG JM
Content	Initials
o Summary paragraph as introduction, which clearly states purpose of correspondence (what we wish to accomplish or what we need from addressee)	AG JM
o Appropriate regulatory references included	AG JM
o Body text flows, has a logical sequence and supports the conclusions	AG JM
o Follows any regulatory guidance regarding content	AG JM
o Extraneous material is not included	AG JM
o References cited as appropriate and necessary	AG JM
o Conclusion states who has the action and what the action is including due dates as appropriate	AG JM
o PSEG contact provided for any follow-up	AG JM
o Paragraph structure complete and consistent	AG JM
o Affidavit or "affirmation" as required	N/A
o Statements supporting withholding included as appropriate	N/A
o Summary of Commitments included as appropriate. (ref: LS-AA-117-1003)	AG JM
Transmission	Initials
o Letter signed by appropriate individual	
o Envelope(s) correctly addressed.	
o SGI envelopes properly protected.	
o Document page checked	
o Document transmitted to Records Management	JAR
o PDF File of signed and dated letter created for NRC electronic submission	JAR
o OCR and Preflight PDF file	JAR
o Submit document to NRC and retain electronic submittal confirmation	JAR
o Traveler (per LS-AA-117-1002) is complete (including appropriate discipline signatures)	
o Commitments entered into Tracking Database	
o Correspondence log updated	JAR
o Distribution timely	JAR

License Amendments Requests Quality Checklist N/A		[redacted]
Letter Number:	LAR Number:	
Format		Initials
o Format IAW LS-AA-101-1000		
o Marked up pages are clear and legible		
Content		Initials
o 50.92 Discussion sections accurately answers the question		
o Marked-up pages agree with descriptions in pleading.		
Miscellaneous		Initials
o Marked up pages reflect current effective page.		
o LAR number is appropriate and obtained from LAR log		
o The effects of other pending changes have been evaluated for the potential to affect this application		
o If included, Camera Ready pages are based on current effective pages. Be alert for pages that are impacted by different simultaneous amendments		
o Traveler includes all relevant reviewers.(TVT, SQR and PORC)		
o Traveler includes **ALL** impacted departments		
o Traveler completed		
o Distribution timely		
o Commitments appropriately entered into SAP		
o Correspondence log updated		
Transmission		Initials
o Letter signed by appropriate individual		
o Envelope(s) correctly addressed		
o Document page checked		
o Document transmitted to Records Management		
o PDF File of signed and dated letter created for NRC electronic submission		
o OCR and Preflight PDF file		
o Submit document to NRC and retain electronic submittal confirmation.		
o Traveler (per LS-AA-117-1002) is complete (including appropriate discipline signatures)		
o Commitments entered into Tracking Database		
o Correspondence log updated		
o Distribution timely		

LER Quality Checklist		
Letter Number:	**LER Number:**	
Content		Initials
o A brief abstract describing the major occurrences during the event, including all component or system failures that contributed to the event and significant corrective action taken or planned to prevent recurrence (NOTE: Energy Industry Identification System (EIIS) codes are not be used in abstract)		
o A clear, specific, narrative description of what occurred so that knowledgeable readers conversant with the design of commercial nuclear power plants, but not familiar with the details of a particular plant, can understand the complete event		
o Plant operating conditions before the event		
o Status of structures, components, or systems that were inoperable at the start of the event and that contributed to the event		
o Dates and approximate times of occurrences. [Validate dates and times][1]		
o The cause of each component or system failure or personnel error, if known		
o The failure mode, mechanism, and effect of each failed component, if known		
o The EIIS component function identifier and system name of each system referred to in the LER		
o For failures of components with multiple functions, include a list of systems or secondary functions that were also affected		
o For failure that rendered a train of a safety system inoperable, an estimate of the elapsed time from the discovery of the failure until the train was returned to service		
o The method of discovery of each component or system failure or procedural error		
o Operator actions that affected the course of the event, including operator errors, procedural deficiencies, or both, that contributed to the event		
o For each personnel error, we **Shall** discuss:		
▪ Whether the error was a cognitive error (e.g., failure to recognize the actual plant condition, failure to realize which systems should be functioning, failure to recognize the true nature of the event) or a procedural error;		
▪ Whether the error was contrary to an approved procedure, was a direct result of an error in an approved procedure, or was associated with an activity or task that was not covered by an approved procedure;		
▪ Any unusual characteristics of the work location (e.g., heat, noise) that directly contributed to the error; and		
▪ The type of personnel involved (i.e., contractor personnel, licensed operator, non-licensed operator, other licensee personnel)		
o Discussed automatic and manually initiated safety system responses		
o Discussed the manufacturer and model number (or other identification) of each component that failed during the event.		
o Provided an assessment of the safety consequences and implications of the event. This assessment must include the availability of other systems or components that could have performed the same function as the components and systems that failed during the event		
o Provided a description of any corrective actions planned as a result of the event, including those to reduce the probability of similar events occurring in the future		

[1] Added as result of Notification 20450306

LER Quality Checklist (continued):	Initials
o Provided reference to any previous similar events at the same plant that are known	
o Provided the name and telephone number of a person within the licensee's organization who is knowledgeable about the event and can provide additional information concerning the event and the plant's characteristics	
o Provided a clear statement regarding any Commitments	
o Provided clear statement regarding SSFF (NEI 99-02), e.g., "A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guidelines, did not occur. This event did not prevent the ability of a system to fulfill its safety function to either shutdown the reactor, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident." Or, "A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guidelines, did occur" and explain why	
o Review of SSFF completed by the Licensing NRC ROP SSFF PI program owner (70040851)	
o Avoid referencing INPO OE Reports in Publicly Available NRC Licensee Event Reports	
o SDP Considered	
LER Format	Initials
o Form NRC 366 is the current form. Check upper right hand corner for expiration.	
o Docket and License Numbers are correct.	
o LER Number appropriate (Check for duplicate LER numbers)	
o Margins consistent	
o Fonts consistent	
o Spelling and Grammar	
o Pagination correct	
o LER submittal date has been correctly filled in on Page 1 of LER form	
Transmission	Initials
o Letter signed by appropriate individual	
o Envelope(s) correctly addressed. SGI envelopes properly protected	
o Document page checked	
o Document transmitted to Records Management	
o LER uploaded to www.inpo.org/inpo/ices.asp	
o For HC – PORC minutes approving LER sent to CNO	
o For Salem – LER sent to CNO	
o PDF File of signed and dated letter created for NRC electronic submission	
o OCR and Preflight PDF file	
o Submit document to NRC and retain electronic submittal confirmation.	
o Traveler (per LS-AA-117-1002) is complete (including appropriate discipline signatures)	
o Commitments entered into Tracking Database	
o Correspondence log updated	
o Distribution timely	

Ochoa, Alysse K.

From: Cachaza, Thomas J.
Sent: Friday, April 21, 2017 2:52 PM
To: Ochoa, Alysse K.; Mallon, James; MacEwen, Thomas T.
Subject: RE: Action Required: AREOR and ARERR signatures needed

Importance: High

Alysse, I have peer reviewed both cover letters and concur with content of the cover letters. Please attach my email as concurrence.

Thomas Cachaza
Salem Senior Regulatory Compliance Engineer
Phone (work): 856-339-5038
Phone (Home): 856-697-0430
Cell: 856-689-2416
Email: Thomas.Cachaza@PSEG.com

From: Ochoa, Alysse K.
Sent: Friday, April 21, 2017 1:33 PM
To: Chamy, Joseph; Kugler, Shelly F.; Pyle, Mark; Trimble, Harold; Hassler Sr, Matthew J. (Mgr Radiation Protection); Mallon, James; Kraus, Alison R.
Cc: Cachaza, Thomas J.; MacEwen, Thomas T.; Pimentel, Frances A.; Ochoa, Alysse K.; Casulli, Edward T.; Grover, F. Kenneth; Heathwaite, Rick M.; Mannai, David
Subject: Action Required: AREOR and ARERR signatures needed

All,

Thank you for your quick turn around with the reviews. The only changes made to the ARERR were fonts and table resizing and there were minor editorial changes made to the AREOR (changes can be found in the AREOR folder).

Next step – I need all the reviewers to sign off the traveler. You can either reply to this email that you approve/sign via email or, if you prefer to physically sign the traveler, let me know and I will get it to you. Due date: April 25, 2017 Please keep in mind that there is a regulatory due date for submittal, April 30, 2017.

Once all signatures are obtained, I will send the reports to both stations' Plant Managers to sign off the letter.

Attached to this email are the traveler and letter for each report. The final reports and changes can be found using the following links:

M:\Shared\Hope Creek Regulatory Assurance\Environmental Reports\2016 Salem-Hope Creek AREOR

M:\Shared\Hope Creek Regulatory Assurance\Environmental Reports\2016 Salem-Hope Creek ARERR

If you have any questions, please let me know.

Thank you.
Alysse

Alysse K. Ochoa | ☼**PSEG Nuclear LLC** | Hope Creek Regulatory Assurance, Sr. Engineer
P.O. Box 236, M/C H02, Hancocks Bridge, NJ 08038-1236

O: (856) 339-2742 | alysse.ochoa@pseg.com

Ochoa, Alysse K.

From: Kugler, Shelly F.
Sent: Friday, April 21, 2017 3:39 PM
To: Ochoa, Alysse K.
Subject: RE: Action Required: AREOR and ARERR signatures needed

Approve via email

From: Ochoa, Alysse K.
Sent: Friday, April 21, 2017 1:33 PM
To: Chamy, Joseph; Kugler, Shelly F.; Pyle, Mark; Trimble, Harold; Hassler Sr, Matthew J. (Mgr Radiation Protection); Mallon, James; Kraus, Alison R.
Cc: Cachaza, Thomas J.; MacEwen, Thomas T.; Pimentel, Frances A.; Ochoa, Alysse K.; Casulli, Edward T.; Grover, F. Kenneth; Heathwaite, Rick M.; Mannai, David
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Thank you.
Alysse

Alysse K. Ochoa | ☼**PSEG Nuclear LLC** | Hope Creek Regulatory Assurance, Sr. Engineer
P.O. Box 236, M/C H02, Hancocks Bridge, NJ 08038-1236
O: (856) 339-2742 | alysse.ochoa@pseg.com

Ochoa, Alysse K.

From: Kraus, Alison R.
Sent: Monday, April 24, 2017 9:01 AM
To: Ochoa, Alysse K.
Subject: RE: Action Required: AREOR and ARERR signatures needed

I approve.
Thank you!!!

From: Ochoa, Alysse K.
Sent: Monday, April 24, 2017 8:58 AM
To: Kraus, Alison R.
Subject: RE: Action Required: AREOR and ARERR signatures needed

No worries. I do need your approval for the traveler for Environmental. If you are ok with it, please respond that you approve via email or if you prefer I can bring the traveler to you to sign.

Thank you.
Alysse
2742

From: Kraus, Alison R.
Sent: Friday, April 21, 2017 3:04 PM
To: Ochoa, Alysse K.
Cc: Mallon, James
Subject: RE: Action Required: AREOR and ARERR signatures needed

Thank you for tracking this and keeping the process moving!!!

From: Ochoa, Alysse K.
Sent: Friday, April 21, 2017 1:33 PM
To: Chamy, Joseph; Kugler, Shelly F.; Pyle, Mark; Trimble, Harold; Hassler Sr, Matthew J. (Mgr Radiation Protection); Mallon, James; Kraus, Alison R.
Cc: Cachaza, Thomas J.; MacEwen, Thomas T.; Pimentel, Frances A.; Ochoa, Alysse K.; Casulli, Edward T.; Grover, F. Kenneth; Heathwaite, Rick M.; Mannai, David
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If you have any questions, please let me know.

Thank you.
Alysse

Alysse K. Ochoa | ☼**PSEG Nuclear LLC** | Hope Creek Regulatory Assurance, Sr. Engineer
P.O. Box 236, M/C H02, Hancocks Bridge, NJ 08038-1236
O: (856) 339-2742 | alysse.ochoa@pseg.com

Ochoa, Alysse K.

From: Pyle, Mark
Sent: Monday, April 24, 2017 8:49 PM
To: Ochoa, Alysse K.
Subject: RE: Action Required: AREOR and ARERR signatures needed

Approve via email.

Mark Pyle

From: Ochoa, Alysse K.
Sent: Friday, April 21, 2017 1:33 PM
To: Chamy, Joseph; Kugler, Shelly F.; Pyle, Mark; Trimble, Harold; Hassler Sr, Matthew J. (Mgr Radiation Protection); Mallon, James; Kraus, Alison R.
Cc: Cachaza, Thomas J.; MacEwen, Thomas T.; Pimentel, Frances A.; Ochoa, Alysse K.; Casulli, Edward T.; Grover, F. Kenneth; Heathwaite, Rick M.; Mannai, David
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If you have any questions, please let me know.

Thank you.
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Alysse K. Ochoa | ☼**PSEG Nuclear LLC** | Hope Creek Regulatory Assurance, Sr. Engineer
P.O. Box 236, M/C H02, Hancocks Bridge, NJ 08038-1236
O: (856) 339-2742 | alysse.ochoa@pseg.com

TYPICAL LICENSING AND REGULATORY AFFAIRS CORRESPONDENCE CONCURRENCE FORM

Station(s): Salem/Hope Creek Correspondence No.: LR-N17-0089

Subject/Document: 2016 Annual Radiological Environmental Operating Report

Document Due Date: 04/27/2017 Regulatory Driven Due Date: (YES) / NO

Document Prepared by: Alysse Ochoa Extension: 2742

If Routine NRC report, then document SAP recurring task or generate notification: _____

Required Review and Disciplines Assigned by: James Mallon / Director, Reg. Compliance
Title

Type of Review Required: (Reference LS-AA-117)
- ☐ Technical Verification Team Review
- ■ Individual or Series Review
- ☐ No Technical Review

Disciplines Required:

☐ Maintenance	■ Radiation Protection	■ Chemistry	☐ Training
☐ Operations	☐ Engineering - I&C	☐ Radwaste	■ Reg Assurance / Licensing
☐ Rx Engineering	☐ Design Engineering	☐ Engr - Mech Systems	☐ Programs Engineering
☐ Nuclear Fuels	☐ Work Management	☐ Engr - Elect Systems	■ Other: Environmental Affairs

NOTE
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Print Name / Signature	Discipline	Date
Alysse Ochoa	Preparer	
Thomas MacEwen	Peer Reviewer	
Thomas Cachaza	Peer Reviewer	
Joseph Chamy	CFAM - Chemistry	
Alison Kraus	Manager – Env. Affairs	
Shelly Kugler	Manager – HC Chemistry	
Mark Pyle	Manager – Salem Chemistry	
Hal Trimble	Manager – HC Rad Pro	
Matt Hassler Matt Hassler	Manager – Salem Rad Pro	4/25/17

Required Reviews and Signatures (check as appropriate):

☐ Station Qualified Review Required: _____ Date: _____

☐ Corporate Licensing Concurrence Required: _____ Date: _____

■ Station Regulatory Assurance Concurrence Required: _____ Date: _____
James Mallon/ Dir. Site Reg. Compliance

☐ PORC Approval Required: PORC Meeting No. _____ PORC Chair _____

■ Plant Manager Approval Required: Ken Grover and Ed Casulli/ On Letter Date: _____

☐ Site Vice President Approval Required: _____ Date: _____

TYPICAL LICENSING AND REGULATORY AFFAIRS CORRESPONDENCE CONCURRENCE FORM

Station(s): Salem/Hope Creek Correspondence No.: LR-N17-0087

Subject/Document: 2016 Annual Radioactive Effluent Release Report

Document Due Date: 04/27/2017 Regulatory Driven Due Date: (YES) / NO

Document Prepared by: Alysse Ochoa Extension: 2742

If Routine NRC report, then document SAP recurring task or generate notification: _____

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Title

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☐ Operations	☐ Engineering - I&C	☐ Radwaste	■ Reg Assurance / Licensing
☐ Rx Engineering	☐ Design Engineering	☐ Engr - Mech Systems	☐ Programs Engineering
☐ Nuclear Fuels	☐ Work Management	☐ Engr - Elect Systems	■ Other: Environmental Affairs

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Thomas Cachaza	Peer Reviewer	
Joseph Chamy	CFAM - Chemistry	
Alison Kraus	Manager – Env. Affairs	
Shelly Kugler	Manager – HC Chemistry	
Mark Pyle	Manager – Salem Chemistry	
Hal Trimble	Manager – HC Rad Pro	
Matt Hassler Matt Hassler	Manager – Salem Rad Pro	4/25/17

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■ Station Regulatory Assurance Concurrence Required: _____ Date: _____
James Mallon/ Dir. Site Reg. Compliance

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■ Plant Manager Approval Required: Ken Grover and Ed Casulli/ On Letter Date: _____

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PSEG NUCLEAR LLC
2016 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
For
The Salem and Hope Creek
Generating Stations

SGS RERR-65
DOCKET NO. 50-272
DOCKET NO. 50-311
OPERATING LICENSE NO. DPR-070
OPERATING LICENSE NO. DPR-075

HCGS RERR-39
DOCKET NO. 50-354
OPERATING LICENSE NO. NPF-057

April 2017

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Table of Contents

Table of Contents (continued)

List of Tables

List of Figures

I. Executive Summary

In 2016, the Salem Generating Station (SGS) and the Hope Creek Generating Station (HCGS) released to the environment through the radioactive liquid and gaseous effluents approximately 13 curies of noble gas, 34 curies of fission and activation products and 1,841 curies of tritium. The dose from both liquid and gaseous effluents was conservatively calculated for the Maximum Exposed Member of the Public. The results of those calculations and their comparison to the allowable limits were as follows:

Gaseous and liquid radiation doses to members of the public at the highest dose receptor							
Effluent	**Applicable Organ**	**Estimated Dose**	**Age Group**	**Location**	**% of Applicable Limit**	**Limit**	**Units**
Noble Gas	Gamma – Air Dose	4.63E-04	All	Site Boundary	1.54E-03	30	mRad
Noble Gas	Beta – Air Dose	1.06E-03	All	Site Boundary	1.76E-03	60	mRad
Iodine, Particulate, C-14 & Tritium	Bone	3.54E-01	Child	4.6 miles SW	7.87E-01	45	mrem
Liquid	Total Body	4.19E-04	Adult	0.75 mi. N of Salem	4.66E-03	9	mrem
Liquid	GI-LLI	1.57E-03	Adult	0.75 mi. N of Salem	5.24E-03	30	mrem

The calculated doses from the radiological effluents released from the three units were a very small percentage of the allowable limits.

The Total Dose to the Critical Receptor as required by section 3.11.4 of the SGS and HCGS ODCMs was determined to be 4.36E-01 mrem. The dose calculated was below the limits of 40 CFR 190 and 10 CFR 72.104 (25 mrem) to the total body and critical organ other than the thyroid.

Maximum TEDE doses to Members of the Public and personnel not having access to the Radiologically Controlled Area (RCA) were calculated as 2.25E-02 mrem and 2.21E+00 mrem, respectively. These doses were a small fraction of the 10 CFR 20.1301 dose limit of 100 mrem.

II. Introduction

This report, SGS-RERR-65/HCGS-RERR-39, summarizes information pertaining to the releases of radioactive materials in liquid, gaseous and solid forms from SGS and HCGS for the period January 1, 2016, to December 31, 2016.

SGS Unit 1 is a Westinghouse Pressurized Water Reactor that has a licensed core thermal power of 3459 MWt and an approximate net electrical output of 1180 MWe. SGS Unit 1 achieved initial criticality on December 11, 1976, and began commercial operation on June 30, 1977.

SGS Unit 2 is a Westinghouse Pressurized Water Reactor that has a licensed core thermal power of 3459 MWt and an approximate net electrical output of 1178 MWe. SGS Unit 2 achieved initial criticality on August 2, 1980, and began commercial operation on October 13, 1981.

HCGS is a General Electric Boiling Water Reactor that has an up rated core thermal power of 3840 MWt and an approximate net electrical output of 1212 MWe. The HCGS achieved initial criticality on June 28, 1986 and began commercial operation on December 20, 1986.

The electrical energy (gross) output for 2016 was as follows:

Unit	MW·h electrical (net)
SGS Unit 1	6,997,238
SGS Unit 2	8,699,415
HCGS	9,603,368

This report complies with the format described in Regulatory Guide 1.21, "Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants", Revision 1, June, 1974, as required by Control 6.9.1.8 of the SGS Units 1 and 2 Offsite Dose Calculation Manual (ODCM) and Control 6.9.1.7 of the HCGS ODCM.

Meteorological data was reported in the format specified in Regulatory Guide 1.23, Revision 1, "Meteorological Monitoring Programs for Nuclear Power Plants."

All vendor results were received and included in the report calculations. Therefore the 2016 report is complete.

III. Supplemental Information

1. Regulatory Limits

The same regulatory limits apply to SGS Unit 1, SGS Unit 2 and HCGS. The limits were as follows:

Limit		Units	Receptor	ODCM and 10 CFR 50, Appendix I Design Objective Limits
1. Noble Gases:				
a.	≤ 500	mrem/Yr	Total Body	ODCM Control 3.11.2.1.a
	≤ 3000	mrem/Yr	Skin	
b.	≤ 5	mRad	Air Gamma	Quarterly air dose limits ODCM Control 3.11.2.2.a
	≤ 10	mRad	Air Beta	
c.	≤ 10	mRad	Air Gamma	Yearly air dose limits ODCM Control 3.11.2.2.b
	≤ 20	mRad	Air Beta	
d.	≤ 10	mrem	Total Body (Gamma)	10 CFR 50, Appendix I, Section II.B.2(b)
	≤ 30	mrem	Skin (Beta)	
2. Iodines, Tritium, Particulates with Half Life > 8 days:				
a.	≤ 1500	mrem/Yr	Any Organ	ODCM Control 3.11.2.1.b
b.	≤ 7.5	mrem	Any Organ	Quarterly dose limits ODCM Control 3.11.2.3.a

Limit		Units	Receptor	ODCM and 10 CFR 50, Appendix I Design Objective Limits
c.	≤ 15	mrem	Any Organ	Yearly dose limits ODCM Control 3.11.2.3.b
3. Liquid Effluents				
a.	The concentration limits in 10 CFR 20, Appendix B, Table II Col. 2 (pre 1994). For dissolved or entrained noble gases, the concentration shall be limited to 2 E-04 microcuries/ml.			ODCM Control 3.11.1.1
b.	≤ 1.5	mrem	Total Body	Quarterly dose limits ODCM Control 3.11.1.2.a
	≤ 5	mrem	Any Organ	
c.	≤ 3	mrem	Total Body	Yearly dose limits ODCM Control 3.11.1.2.b
	≤ 10	mrem	Any Organ	
4. Total Dose Limits				
	≤ 25	mrem	Total Body or Organ	Yearly dose limits ODCM Control 3.11.4, 40 CFR 190 and 10 CFR 72.104
	≤ 75	mrem	Thyroid	
	≤ 100	mrem	Site TEDE Dose	10 CFR 20.1301

2. Maximum Permissible Concentration (MPC) Limits

Gaseous dose rates limits rather than maximum permissible concentration limits were used to calculate permissible release rates for gaseous releases. The maximum permissible dose rates for gaseous releases were defined in ODCM Controls 3.11.2.1.a and 3.11.2.1.b.

The Maximum Permissible Concentration Limit specified in 10 CFR 20, Appendix B, Table II, Column 2 (pre 1994) for identified nuclides, were used to calculate permissible release rates and concentrations for liquid release in accordance with the SGS Unit 1 and Unit 2 and the HCGS Offsite Dose Calculation Manual Control 3.11.1.1. The total activity concentration for all dissolved or entrained gases was limited to < 2E-04 uCi/ml.

3. Average Energy

The SGS ODCM and the HCGS ODCM limit the instantaneous dose equivalent rates due to the release of noble gases to less than or equal to 500 mrem/year to the total body and less than or equal to 3000 mrem/year to the skin. The average beta and gamma energies of the radionuclide mixture in releases of fission and activation gases as described in Regulatory Guide 1.21, "Measuring, Evaluation, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," may be used to calculate doses in lieu of more sophisticated software. The SGS and HCGS radioactive effluent programs employ the methodologies presented in U.S. NRC Regulatory Guide 1.109 "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50,

Appendix I," Revision 1, October 1977 and NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978. Therefore, average energies were not applicable to SGS and HCGS.

4. Measurements and Approximations of Total Radioactivity

A. Liquid Effluents:

Liquid effluents were monitored in accordance with Table 4.11-1 of the SGS ODCM and Table 4.11.1.1.1-1 of the HCGS ODCM.

During 2016, all batch liquid wastes were routed to sampling tanks for monitoring prior to release. The ODCMs require these tanks to be uniformly mixed for sampling and analysis before being released.

Batch releases were defined as:

- For SGS, releases from the Service Water Drums, which were collected and disposed via the Chemical Waste Basin, and the Chemical Volume Control System (CVCS) Monitor Tanks. During 2016, all batch liquid wastes from the Chemical Drain Tank and Laundry and Hot Shower Tanks were routed to Waste Monitor Holdup Tanks for monitoring prior to release. For flexibility in processing liquid effluents, the SGS Units 1 and 2 Liquid Radwaste Systems were cross-connected.
- For HCGS, releases from the Equipment Sample Tanks, Floor Drain Sample tanks, and Detergent Drain Tanks.

Continuous releases were defined as:

- For SGS, continuous liquid release pathways include condensate releases for blow-down of the Steam Generators and the Unit 1 Groundwater Recovery System through the Chemical Waste Basin.
- For HCGS, a continuous liquid effluent release path exists through the Circulating Water Dewatering Sump Discharge.

Representative samples were obtained in accordance with Table 4.11-1 of the SGS ODCM for SGS and Table 4.11.1.1.1-1 of the HCGS ODCM for HCGS. The total liquid activity discharged was determined by multiplying specific activities from the analyses by the volume of effluent discharged to the environment.

The detection requirements of Table 4.11-1 (SGS) and Table 4.11.1.1.1-1 (HCGS) of the ODCM were achieved, except as discussed in Section 7 "Significant Events". Radionuclides that were measured at concentrations below the ODCM-specified lower limit of detection (LLD) were considered present. A radionuclide for which no activity was detected while meeting the required LLD was considered absent.

B. Gaseous Effluents:

SGS Units 1 and 2:

Gaseous effluent streams at SGS were monitored and sampled in accordance with Table 4.11-2 of the ODCM. Each plant vent was the final release point for planned gaseous effluent releases and was continuously monitored by installed radiation monitors. The vent was also continuously sampled for iodine and particulates with fixed particulate and charcoal filters. The filter and charcoal were normally changed weekly, and analyzed on a multi-channel analyzer.

Sampling was also performed on all gas decay tanks and the containment atmosphere prior to release to the environment. The plant vent for each unit was normally sampled weekly for noble gases, particulates, iodine, and tritium.

The detection requirements of Table 4.11-2 of the ODCM were achieved or exceeded. A radionuclide detected at a concentration below the ODCM LLD was considered present. A radionuclide for which no activity was detected while meeting the required LLD was considered absent.

Continuous gaseous releases were quantified by routine sampling and isotopic analyses of the plant vent for each unit, as required by the ODCM. Specific activities for detected isotopes were multiplied by the total vent flow volume for the entire sampling period in order to determine the normal continuous release of radioactivity through each plant vent.

Batch noble gas releases were quantified by sampling each decay tank or containment atmosphere prior to release. The total activity in a batch release was determined by multiplying the specific activities for detected isotopes by the total volume of the gas discharged in that batch release.

Elevated plant vent radiation monitoring system readings while the channel was in an alarm state were treated as batch mode releases. If specific activity data from grab samples were not available, then the release was quantified by the use of the plant vent radiation monitors. The monitor response was converted to "specific activity" using historical efficiency factors. The total activity discharged was determined by multiplying the "specific activity" by the volume of effluent discharged while the channel was in an alarm state.

HCGS:

Gaseous effluent streams at HCGS were monitored and sampled in accordance with Table 4.11.2.1.2-1 of the ODCM. The North Plant Vent (NPV) and South Plant Vent (SPV) were the final release points for planned gaseous effluent releases. The NPV and SPV were continuously monitored for iodine, particulates and noble gases. These monitors have fixed particulate and charcoal filters. The particulate filters and charcoal cartridges were normally replaced and analyzed weekly. These analyses were performed on a multi-channel analyzer. The NPV and SPV were also normally sampled weekly for noble gases and tritium.

A small quantity of gaseous effluent was released via the Filtration, Recirculation, and Ventilation System (FRVS) vent during FRVS testing periods. The FRVS was continuously monitored for noble gases when in service, and has fixed particulate and charcoal filters. When the system was in vent mode for greater than two hours, samples were collected at the end of the release period. During periods of extended runs, samples were normally taken weekly.

The detection requirements of Tables 4.11.2.1.2-1 of the ODCM were achieved or exceeded, except as discussed in Section 7 "Significant Events". A radionuclide detected at a concentration below the ODCM LLD was considered present. A radionuclide for which no activity was detected while meeting the required LLD was considered absent.

Batch noble gas releases (i.e. primary containment purge) were quantified by pre-release sampling and isotopic analysis. The total radioactivity released was estimated by multiplying the specific activities for detected isotopes by the containment volume.

The SGS and HCGS ODCMs required LLD for airborne and liquid releases were as follows:

Liquid	LLD
Principal Gamma Emitters (Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141)	5E-07 uCi/ml
Ce-144 – HCGS	5E-06 uCi/ml
Ce-144 – SGS	2E-06 uCi/ml
I-131	1E-06 uCi/ml
Entrained Gases	1E-05 uCi/ml
H-3	1E-05 uCi/ml
Gross Alpha	1E-07 uCi/ml
Sr-89, Sr-90	5E-08 uCi/ml
Fe-55	1E-06 uCi/ml

Airborne	LLD
Gross Alpha, Sr-89, Sr-90	1E-11 uCi/cc
H-3	1E-06 uCi/cc
I-131	1E-12 uCi/cc
Principal Gamma Emitters (Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137,Ce-141, Ce-144)	1E-11 uCi/cc
Noble Gas (Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-138)	1E-04 uCi/cc

5. Estimated Total Error

The estimated total error reported for continuous and batch liquid releases for all three stations was within 27%. The estimated total error for continuous and batch gaseous releases, and solid waste was within 35%.

6. Unplanned Releases

SGS Unit 1

1. Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	0	0	0	0
Total Activity Released (Ci)	N/A	N/A	N/A	N/A	N/A
2. Gaseous					
Number of Releases	0	65	12	0	77
Total Activity Released (Ci)	N/A	9.02E-02	2.99E-02	N/A	1.20E-01

N/A Not Applicable

There were zero unplanned liquid releases, 76 gaseous releases through the Containment Equipment Hatch and one gaseous release as a result of the Containment integrated leak rate test, where the containment is pressurized to 47 psi. Radiation Protection has established routine sampling in that area of the Containment Equipment Hatch. When activity was found, a permit was created using conservative flow rate assumptions.

SGS Unit 2

1. Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	0	0	0	0
Total Activity Released (Ci)	N/A	N/A	N/A	N/A	N/A
2. Gaseous					
Number of Releases	0	0	0	0	0
Total Activity Released (Ci)	N/A	N/A	N/A	N/A	N/A

N/A Not Applicable

There were zero unplanned liquid releases and zero unplanned gaseous releases.

HCGS:

1. Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Releases	0	0	0	0	0
Total Activity Released (Ci)	N/A	N/A	N/A	N/A	N/A
2. Gaseous					
Number of Releases	0	0	0	0	0
Total Activity Released (Ci)	N/A	N/A	N/A	N/A	N/A

N/A Not Applicable

There were zero unplanned liquid releases and zero unplanned gaseous releases.

7. Significant Events

SGS Unit 1

None

SGS Unit 2

None

HCGS

A. Lube Oil System Tritium Releases:

In 2016 the total tritium released in gaseous effluents was 189 Ci. Using the average tritium concentration in HCGS RCS of 0.0128 uCi/ml. The calculated release from these vents was estimated below:

Vent Line	2016 Annual Release of Tritium, Ci	2016 Annual Gaseous Release of tritium, Ci	Percentage of Activity Relative to Total Release from Site
3 inch Reactor Feed Pump (RFPT) Vent Line	1.06	189.0	0.56%
3 inch Generator Hydrogen Seal Oil (GHSO) Vent Line	0.14		0.07%
10 inch GHSO Vent Line	1.24		0.66%
8 inch Main Turbine Lube Oil (MTLO) Vent Line	0.37		0.20%

The calculated releases from these vents remains less than 1% of the total gaseous releases from HCGS.

B. Charcoal Cartridge Iodine Efficiency:

A review of the HCGS gaseous effluent iodine sampling cartridges determined that the South Plant Vent (SPV) and North Plant Vent (NPV) used an iodine sample collection cartridge that had a low iodine collection efficiency from October 2016 through December 21, 2016. The collection efficiency of these cartridges was approximately 75%. The HCGS Updated Final Safety Analysis Report (UFSAR) Section 11.5.2.2.1 indicates the iodine retention efficiency for the sample cartridge should be 95%.

All of the low efficiency cartridges were discarded and replaced with high efficiency cartridges. The gaseous release permits containing iodine activity were recalculated to adjust the concentration of iodines upwards. The gaseous release data tables in APPENDIX A-3 reflect the corrected iodine results (CAP: 20751862).

C. Effluent LLDs:

A review of Hope Creek liquid and gaseous effluent composite data indicated that neither the sample analyses nor LLD analyses were being decay corrected from the time of counting to the midpoint of sample collection. Instead, the sample analyses and LLD measurements were being decay corrected from the end of the sample collection period to the time of counting. Tables 4.11.1.1.1-1 and 4.11.2.1.2-1 of the Hope Creek ODCM rev. 27 state that the decay correction time period for the LLD for plant effluents is the elapsed time between midpoint of sample collection and time of counting.

An extent of condition review performed back to 2012 found 15 instances where the non-detect MDC values exceeded the LLD. Bounding dose calculations were performed using the highest value measured within the last several years and assuming the release occurred over an entire year. These calculations indicated that the maximum dose impact was less than 0.5% of the annual limit (CAP: 20745702). It was also noted that Salem Effluent LLDs were being calculated correctly per the SGS ODCM.

8. Changes to the Offsite Dose Calculation Manuals

There were no changes to either the SGS or HCGS ODCMs.

9. Changes to the Process Control Program

Revision 10 of RW-AA-100 was issued on 5/12/2015 to add corporate and station department managers to section 3.0 Responsibilities.

10. Radioactive Effluent Monitoring Instrumentation Out of Service for More than 30 Days

A. SGS Unit 1:

1. The 1R19A-D Steam Generator Blowdown (SGBD) radiation monitors were taken out of service on 3/28/16 0900. These monitors were out of service for greater than 30 days due to issues that were not able to be resolved prior to entering the Salem Unit 1 refueling outage. A relay had high resistance contacts and was replaced on 4/6/16 (CAP: 20723632). A rack and panel connector was replaced for the 1R19D channel on 4/25/16 (CAP: 20723658/20723932). Functional tests were completed satisfactorily on 6/13/16 but remained inoperable.

   Following the Salem Unit 1 refueling outage, the 1R19B-D channels were declared operable on 7/27/16 1300 after a successful channel check. 1R19A channel remained inoperable due to being in alert (CAP: 20736660), which required the sampler to be disassembled to clean the sample bowl. The 1R19A channel was declared operable on 9/15/16 1104.

2. Containment Fan Coolers – Service Water Line discharge liquid radiation monitors 1R13A was declared out of service on 9/28/2016 and remains out of service as of 12/31/2016 (CAP: 20743629). Radiation monitor 1R13B was declared out of service on 9/30/2016 and was returned to service on 12/01/2016 (20744258). Detector 1R13A was found damaged from stand pipe turbulence and was replaced and detector calibration completed satisfactory, but could not be restored due to both monitors going into test mode by themselves. Troubleshooting of the RAM 606 revealed random test mode power ups. Several attempts were made to correct the condition through replacement of the available DC-DC converter and AC to DC power supply. Repairs were unsuccessful and the Apentec RAM 606 was removed and shipped to the vendor on 10/11/16. The vendor replaced several components within the remote ratemeter. The remote ratemeter was reinstalled and a fault was received. Maintenance replaced the CPU circuit card assembly on 11/29/2016 after receiving a fault.

B. SGS Unit 2:

1. Chemical Waste Basin liquid radiation monitor 2R37 was declared out of service on 11/02/2016 and has not been returned to service as of 12/31/2016. The monitor was taken out of service to perform maintenance on the non-radioactive liquid waste basin liner. The required compensatory sampling was performed (CAP: 20750062).

2. Steam Generator Blowdown Line liquid radiation monitor 2R19A was declared out of service on 9/20/2016. It had not been returned to

service as of 12/31/2016 due to issues encountered during implementation of DCP 80111425 to replace the 2R19A-D detectors with high temperature detectors. There were failures of two separate detectors and pre-amplifiers during installation. One pre-amplifier and one detector were repaired by the vendor within 30 days. However, the 2R19A remained out of service, due to the long lead time in securing parts for the detector (CAP: 20751649). The required compensatory sampling had been performed.

Due to numerous issues related to the availability of radiation monitoring instrumentation, SGS management chartered the Radiation Monitoring System Performance Team to improve the reliability of required instrumentation.

C. HCGS:

None

11. Elevated Gaseous Radiation Monitor Responses

During the 2016 reporting period, none of the effluent radiation monitors elicited an elevated response during the discharge of liquid and gaseous effluent from either of the SGS Units 1 and 2 or from the HCGS.

12. Independent Spent Fuel Storage Installation (ISFSI)

There have been no gaseous or liquid releases from the Independent Spent Fuel Storage Installation (ISFSI) since it was placed in service in the summer of 2006. The direct dose from the ISFSI pad to the Critical Receptor located at 4.6 miles in the SW sector, Members of the Public and personnel not having access to the Radiologically Controlled Area (RCA) was determined using the dosimetry results from the 2016 Radiological Environmental Monitoring Program (REMP) and the formula provided in ANSI/HPS N13.37-2014 as follows:

$$D_2 = OF * \left(\left(D_1 * R_1^{\,2} \right) / R_2^{\,2} \right)$$

Where:

D_1 = Dose that was measured from TLD Location 16S2
D_2 = Dose that will be extrapolated to Security Checkpoint, Sewage Treatment Plant (STP) and Critical Receptor
R_1 = Distance from the source to the location where D1 was obtained
R_2 = Distance to the location that dose will be extrapolated
OF = Occupancy Factor (1 = full time, 0.25 = 2000 hrs.)

Location	R_1 16S2 Distance from ISFSI ft.	Annual Dose (mrem)	Background Dose (mrem)	D_1 Net Dose (mrem)	R_2 Distance from ISFSI ft.	Occupancy Factor	D_2 Dose (mrem)
Security Checkpoint	203	116.3	52	64.3	6,275	0.25	1.68E-02
STP	203	116.3	52	64.3	575	0.25	2.00E+00
Critical Receptor	203	116.3	52	64.3	19,536	1.0	4.49E-03

The doses from the ISFSI to Members of the Public located at the Security Checkpoint and personnel not having access to the RCA located at the STP and the Critical Receptor were calculated as 1.68E-02, 2.00E+00 and 4.49E-03 mrem, respectively.

13. Effluent Trends

The following trend graphs displays the total curies of liquid and gaseous effluents released for SGS and HCGS from 2005 through 2016.

Figure 1
Fission and Activation Gases Released in Gaseous Effluents, SGS Unit 1, SGS Unit 2 and HCGS, 2005 - 2016

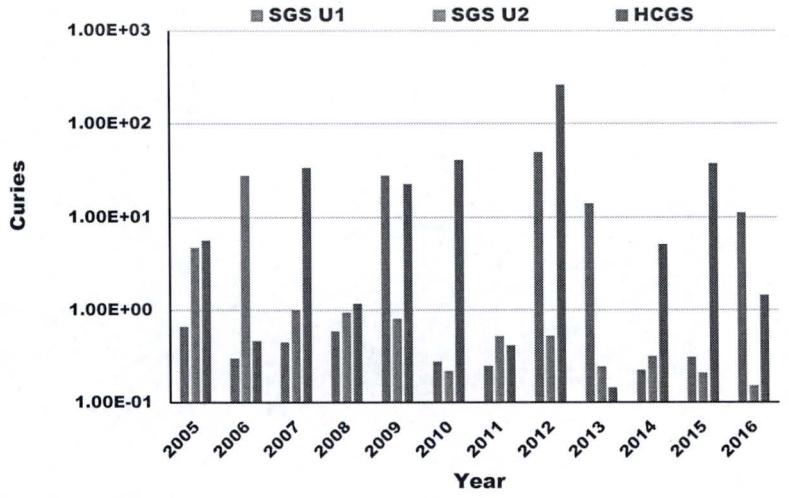


Figure 2
Iodines Released in Gaseous Effluents, SGS Unit 1, SGS Unit 2 and HCGS, 2005 - 2016

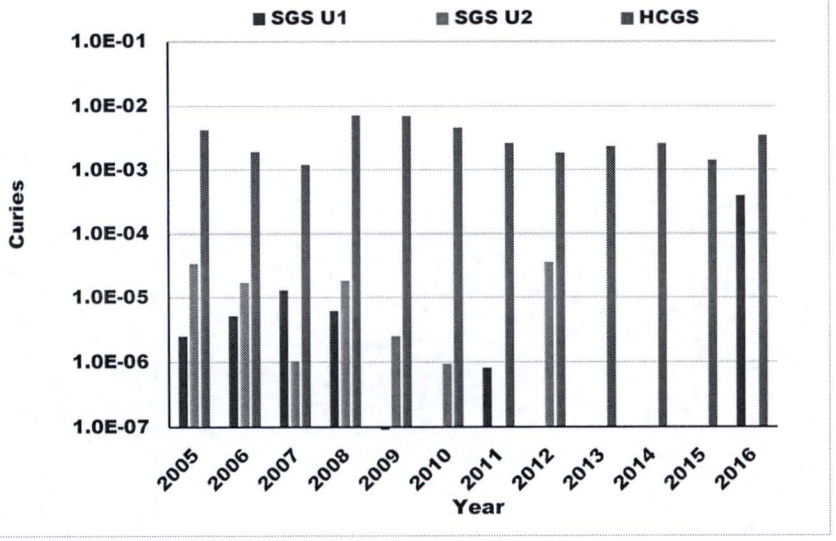


Figure 3
Particulates Released in Gaseous Effluents, SGS Unit 1, SGS Unit 2 and HCGS, 2005 - 2016

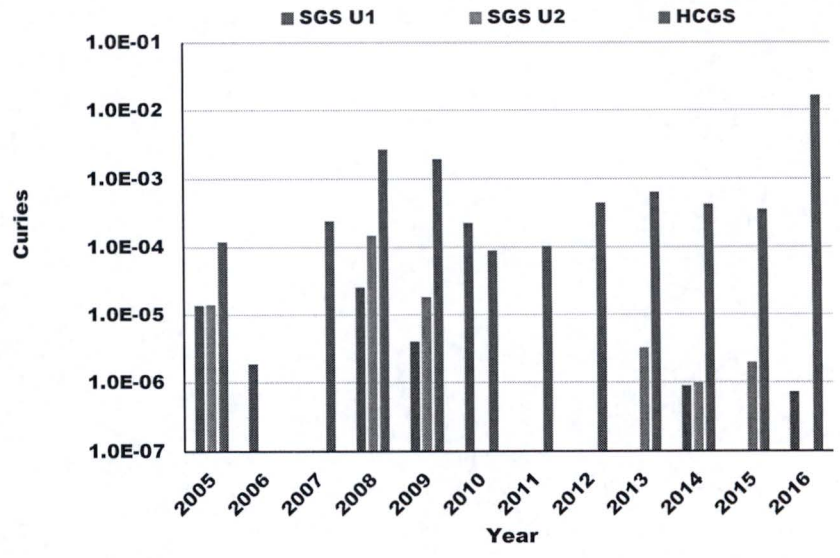


Figure 4
Tritium Released in Gaseous Effluents,
SGS Unit 1, SGS Unit 2 and HCGS, 2005 - 2016

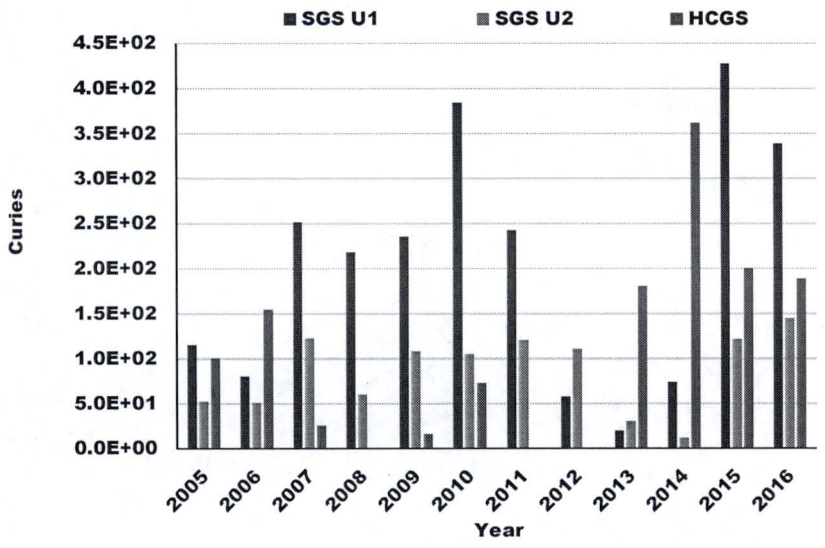


Figure 5
Fission and Activation Products Released in Liquid Effluents, SGS Unit 1, SGS Unit 2 and HCGS,
2005 - 2016

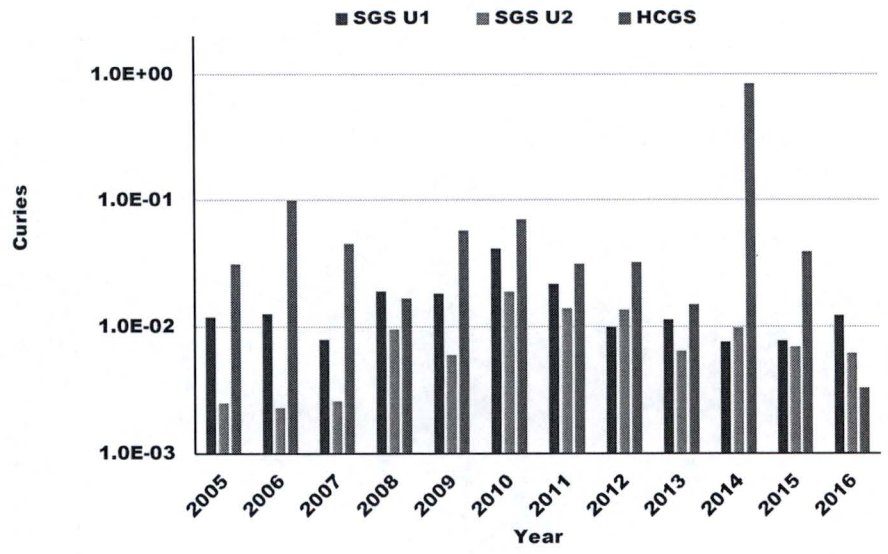
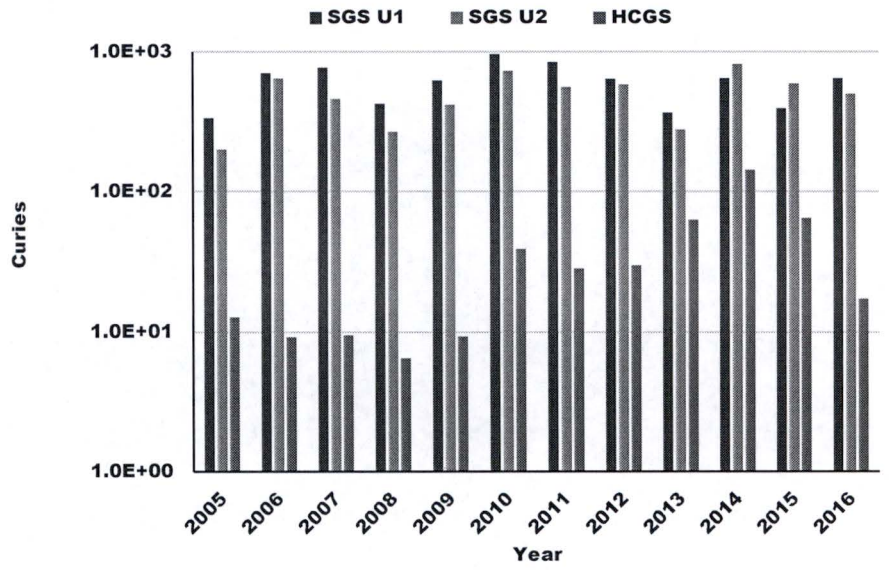


Figure 6
Tritium Released in Liquid Effluents,
SGS Unit 1, SGS Unit 2 and HCGS,
2005 - 2016



14. Carbon-14 in Gaseous Effluents

The NRC has identified Carbon-14 (C-14) as a potential principal radionuclide for gaseous effluent (refer to Regulatory Position 1.9 in Revision 2 of Regulatory Guide 1.21). Since the publication of Regulatory Guide 1.21, "*Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste*", Revision 1, June 1974, the radioactive effluents from commercial nuclear power plants have decreased to the point that C-14 was likely to be a principal radionuclide in gaseous effluents. Gaseous effluent releases from a boiling water reactor (BWR), such as the HCGS, and pressurized water reactor (PWR), such as the SGS Units 1 and 2, can contain significant quantities of C-14, the NRC has recommended that licensees evaluate C-14 as a potential principal radionuclide for gaseous releases from their facility. Those evaluations have determined that C-14 was a "principal radionuclide" in gaseous effluent from each of the three stations.

The assessment methodology used to estimate the quantity of C-14 discharged in gaseous effluent from the SGS and HCGS involved the use of a normalized C-14 source term and scaling factors based on power generation from EPRI Technical Report 1021106, "*Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents*", December 2010. This method was selected based on guidance offered in Regulatory Guide 1.21, and incorporates dose models described in Regulatory Guide 1.109, "*Calculation of Annual Doses to Man*

from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I", Revision 1, October 1977.

The following assumptions were incorporated into the method:

- Only C-14 in the form of CO_2 was incorporated into vegetation through photosynthesis, which causes dose via the ingestion exposure pathways.
- The concentration of C-14 in vegetation was proportional to the concentration of C-14 in air (per equation C-8 in Regulatory Guide 1.109).
- 95% of C-14 released from a BWR (i.e., HCGS) and 30% of C-14 released from a PWR (i.e., SGS Units 1 and 2) was in the form of CO_2 (EPRI Technical Report 1021106).

Using scaling factors and 2016 power generation data, the estimated total C-14 released in 2016 was 7.98 Ci from SGS Unit 1, 9.92 Ci from SGS Unit 2, and 16.43 Ci from the HCGS.

The calculated dose contribution of C-14 was determined using the methodology detailed in the HCGS's and SGS's ODCMs. The calculated maximum total body and organ (bone) doses from C-14 occurred for a child receptor at 4.6 miles SW (Table 1) using the pathways of inhalation, meat and vegetation. The calculated doses from the estimated C-14 in gaseous effluents represent about 100% of the total bone dose from both SGS and HCGS.

Table 1 Quarterly and Annual Bone Doses from Radioactive Gaseous Effluent Releases from the Site to the Critical Receptor (Child) and Pathway (Inhalation, Meat, Food Products and Ground Shine), 2016.

Bone Dose from Other Radionuclides	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Total**
SGS Unit 1	0.00E+00	7.18E-06	4.92E-08	0.00E+00	7.23E-06
SGS Unit 2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HCGS	7.47E-06	3.06E-06	1.91E-06	1.28E-06	1.37E-05
Total	7.47E-06	1.02E-05	1.96E-06	1.28E-06	2.09E-05
Bone Dose from C-14					
SGS Unit 1	2.05E-02	2.05E-02	2.07E-02	2.07E-02	8.23E-02
SGS Unit 2	2.54E-02	2.54E-02	2.57E-02	2.57E-02	1.02E-01
HCGS	4.21E-02	4.21E-02	4.26E-02	4.26E-02	1.70E-01
Total	8.80E-02	8.80E-02	8.90E-02	8.90E-02	3.54E-01
Total Dose	8.80E-02	8.80E-02	8.90E-02	8.90E-02	3.54E-01
Percent of C-14 Dose	100.0%	100.0%	100.0%	100.0%	100.0%

15. Modification to Previous Radioactive Effluent Release Reports - Errata Data Section

None

IV. Radiological Impact on Man

1. Effluent Doses

The doses from liquid and gaseous effluent represent the maximum potential radiation dose for a member of the general public following the methodology in the station's ODCM and reported by the SGS's EMS database program and HCGS's OpenEMS database program.

The annual doses presented in the tables below represent calculations for the four quarters of 2016. The radiological impacts from liquid and gaseous effluent discharges from SGS Units 1 and 2 and HCGS are presented in Tables 2 and 3, respectively, and demonstrate compliance with applicable regulatory limits. Dose limit values presented in bold font are regulatory limits. The quarterly doses must not exceed the quarterly limit in any quarter and the summation of two or more quarterly doses must not exceed the annual dose limit.

A. Doses from Liquid Effluent:

Quarterly and Annual doses from liquid effluent were calculated using the methodology described in the SGS and HCGS ODCMs. Usage factors and dose conversion factors used in the liquid dose calculations were those presented in the SGS and HCGS ODCMs.
The individual doses from liquid effluent (presented in Table 2) were calculated for the controlling location 0.75 miles N of SGS using dose calculation methodology detailed in the ODCMs by the SGS's EMS or the HCGS's OpenEMS database programs.

Table 2 2016 Doses and Percent of the Limits from Liquid Effluents by Operating Unit

SGS Unit 1					
Liquid Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Total Body Dose Limit (mrem)	**1.50E+00**	**1.50E+00**	**1.50E+00**	**1.50E+00**	**3.00E+00**
Maximum Total Body Dose (mrem)	5.36E-06	6.41E-05	1.02E-05	5.05E-06	7.45E-05
% Dose Limit	3.57E-04	4.27E-03	6.81E-04	3.37E-04	2.48E-03
Organ Dose Limit (mrem)	**5.00E+00**	**5.00E+00**	**5.00E+00**	**5.00E+00**	**1.00E+01**
Maximum Organ Dose (mrem)	8.59E-06	2.00E-04	1.80E-05	7.30E-06	2.16E-04
% Dose Limit	1.72E-04	4.00E-03	3.61E-04	1.46E-04	2.16E-03

Table 2 2016 Doses and Percent of the Limits from Liquid Effluents by Operating Unit (continued)

SGS Unit 2					
Liquid Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Total Body Dose Limit (mrem)	**1.50E+00**	**1.50E+00**	**1.50E+00**	**1.50E+00**	**3.00E+00**
Maximum Total Body Dose (mrem)	4.56E-06	1.34E-05	3.80E-06	2.57E-06	2.05E-05
% Dose Limit	3.04E-04	8.91E-04	2.53E-04	1.71E-04	6.83E-04
Organ Dose Limit (mrem)	**5.00E+00**	**5.00E+00**	**5.00E+00**	**5.00E+00**	**1.00E+01**
Maximum Organ Dose (mrem)	5.54E-06	1.56E-05	5.98E-06	5.17E-06	2.63E-05
% Dose Limit	1.11E-04	3.13E-04	1.20E-04	1.03E-04	2.63E-04
HCGS					
Liquid Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Total Body Dose Limit (mrem)	**1.50E+00**	**1.50E+00**	**1.50E+00**	**1.50E+00**	**3.00E+00**
Maximum Total Body Dose (mrem)	2.93E-04	3.33E-06	1.07E-05	2.80E-05	3.24E-04
% Dose Limit	1.95E-02	2.22E-04	7.15E-04	1.87E-03	1.08E-02
Organ Dose Limit (mrem)	**5.00E+00**	**5.00E+00**	**5.00E+00**	**5.00E+00**	**1.00E+01**
Maximum Organ Dose (mrem)	1.23E-03	4.80E-06	1.55E-05	8.52E-05	1.33E-03
% Dose Limit	2.45E-02	9.60E-05	3.11E-04	1.70E-03	1.33E-02
SGS-HCGS Site Total					
Liquid Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Total Body Dose Limit (mrem)	**4.50E+00**	**4.50E+00**	**4.50E+00**	**4.50E+00**	**9.00E+00**
Maximum Total Body Dose (mrem)	3.03E-04	8.08E-05	2.47E-05	3.56E-05	4.19E-04
% Dose Limit	6.73E-03	1.80E-03	5.49E-04	7.92E-04	4.66E-03
Organ Dose Limit (mrem)	**1.50E+01**	**1.50E+01**	**1.50E+01**	**1.50E+01**	**3.00E+01**
Maximum Organ Dose (mrem)	1.24E-03	2.20E-04	3.95E-05	9.77E-05	1.57E-03
% Dose Limit	8.29E-03	1.47E-03	2.63E-04	6.51E-04	5.24E-03

B. Doses from Gaseous Effluent using Default Conservative Meteorology:

Quarterly doses from gaseous effluent were calculated using the methodology described in the SGS and HCGS ODCMs. Usage factors and dose conversion factors used in the gaseous dose calculations were those presented in the SGS and HCGS ODCMs.

The individual doses from radioactive gaseous effluents (presented in Table 3) were calculated for the controlling locations described in the SGS and HCGS ODCMs using the methodology in the ODCMs by the SGS's EMS and the HCGS OpenEMS database programs. The dose contribution from

Carbon-14 was determined by manual calculations using the methodology listed in the stations' ODCMs and added to the appropriate organ from the EMS or OpenEMS printouts.

Table 3 2016 Doses and Percent of the Limits from Gaseous Effluents by Operating Unit

SGS Unit 1					
Gaseous Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Limit for Gamma Air Dose (mrad) from Noble Gases	**5.00E+00**	**5.00E+00**	**5.00E+00**	**5.00E+00**	**1.00E+01**
Maximum Gamma Air Dose (mrad)	6.77E-05	2.41E-04	6.28E-06	6.04E-07	3.16E-04
% Dose Limit	1.35E-03	4.82E-03	1.26E-04	1.21E-05	3.16E-03
Limit for Beta Air Dose (mrad) for Noble Gases	**1.00E+01**	**1.00E+01**	**1.00E+01**	**1.00E+01**	**2.00E+01**
Maximum Beta Air Dose (mrad)	2.26E-04	6.33E-04	2.58E-05	2.95E-07	8.85E-04
% Dose Limit	2.26E-03	6.33E-03	2.58E-04	2.95E-06	4.42E-03
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	**7.50E+00**	**7.50E+00**	**7.50E+00**	**7.50E+00**	**1.50E+01**
ODCM Critical Receptor (mrem)	1.79E-04	3.48E-03	3.54E-04	5.06E-04	4.51E-03
% Dose Limit	2.38E-03	4.63E-02	4.71E-03	6.75E-03	3.01E-02
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14 and particulate nuclides (>8 days half-life)	**7.50E+00**	**7.50E+00**	**7.50E+00**	**7.50E+00**	**1.50E+01**
ODCM Critical Receptor (mrem)	2.05E-02	2.05E-02	2.07E-02	2.07E-02	8.23E-02
% Dose Limit	2.73E-01	2.73E-01	2.76E-01	2.76E-01	5.49E-01
SGS Unit 2					
Gaseous Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Limit for Gamma Air Dose (mrad) from Noble Gases	**5.00E+00**	**5.00E+00**	**5.00E+00**	**5.00E+00**	**1.00E+01**
Maximum Gamma Air Dose (mrad)	1.08E-05	1.35E-05	5.23E-06	3.48E-05	6.43E-05
% Dose Limit	2.15E-04	2.71E-04	1.05E-04	6.97E-05	6.43E-04
Limit for Beta Air Dose (mrad) for Noble Gases	**1.00E+01**	**1.00E+01**	**1.00E+01**	**1.00E+01**	**2.00E+01**
Maximum Beta Air Dose (mrad)	6.35E-06	5.00E-06	2.20E-06	1.27E-05	2.62E-05
% Dose Limit	6.35E-05	5.00E-05	2.20E-05	1.27E-04	1.31E-04
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	**7.50E+00**	**7.50E+00**	**7.50E+00**	**7.50E+00**	**1.50E+01**
ODCM Critical Receptor	1.69E-04	2.02E-04	1.82E-04	2.00E-04	7.53E-04
% Dose Limit	2.25E-03	2.70E-03	2.43E-03	2.66E-03	5.02E-03
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14 and particulate nuclides (>8 days half-life)	**7.50E+00**	**7.50E+00**	**7.50E+00**	**7.50E+00**	**1.50E+01**
ODCM Critical Receptor	2.54E-02	2.54E-02	2.57E-02	2.57E-02	1.02E-01
% Dose Limit	3.39E-01	3.39E-01	3.43E-01	3.43E-01	6.82E-01

Table 3 2016 Doses and Percent of the Limits from Gaseous Effluents by Operating Unit (continued)

HCGS					
Gaseous Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Limit for Gamma Air Dose (mrad) from Noble Gases	**5.00E+00**	**5.00E+00**	**5.00E+00**	**5.00E+00**	**1.00E+01**
Maximum Gamma Air Dose (mrad)	5.90E-05	2.37E-05	0.00E+00	0.00E+00	8.27E-05
% Dose Limit	1.18E-03	4.74E-04	0.00E+00	0.00E+00	8.27E-04
Limit for Beta Air Dose (mrad) for Noble Gases	**1.00E+01**	**1.00E+01**	**1.00E+01**	**1.00E+01**	**2.00E+01**
Maximum Beta Air Dose (mrad)	7.56E-05	7.05E-05	0.00E+00	0.00E+00	1.46E-04
% Dose Limit	7.56E-04	7.05E-04	0.00E+00	0.00E+00	7.30E-04
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	**7.50E+00**	**7.50E+00**	**7.50E+00**	**7.50E+00**	**1.50E+01**
ODCM Critical Receptor	3.90E-03	3.70E-03	6.98E-03	3.64E-03	1.82E-02
% Dose Limit	5.20E-02	4.94E-02	9.31E-02	4.85E-02	1.22E-01
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14 and particulate nuclides (>8 days half-life)	**7.50E+00**	**7.50E+00**	**7.50E+00**	**7.50E+00**	**1.50E+01**
ODCM Critical Receptor	4.21E-02	4.21E-02	4.26E-02	4.26E-02	1.69E-01
% Dose Limit	5.62E-01	5.62E-01	5.68E-01	5.68E-01	1.13E+00

SGS-HCGS Site Total					
Gaseous Effluent Parameter	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Annual**
Limit for Gamma Air Dose (mrad) from Noble Gases	**1.50E+01**	**1.50E+01**	**1.50E+01**	**1.50E+01**	**3.00E+01**
Maximum Gamma Air Dose (mrad)	1.38E-04	2.78E-04	1.15E-05	3.54E-05	4.63E-04
% Dose Limit	9.17E-04	1.85E-03	7.67E-05	2.36E-04	1.54E-03
Limit for Beta Air Dose (mrad) for Noble Gases	**3.00E+01**	**3.00E+01**	**3.00E+01**	**3.00E+01**	**6.00E+01**
Maximum Beta Air Dose (mrad)	3.08E-04	7.09E-04	2.80E-05	1.30E-05	1.06E-03
% Dose Limit	1.03E-03	2.36E-03	9.33E-05	4.33E-05	1.76E-03
Limit for Organ Dose (mrem) from I-131, I-133, Tritium and particulate nuclides (>8 days half-life)	**2.25E+01**	**2.25E+01**	**2.25E+01**	**2.25E+01**	**4.50E+01**
ODCM Critical Receptor	4.25E-03	7.38E-03	7.52E-03	4.35E-03	2.35E-02
% Dose Limit	1.89E-02	3.28E-02	3.34E-02	1.93E-02	5.21E-02
Limit for Organ Dose (mrem) from I-131, I-133, Tritium, C-14 and particulate nuclides (>8 days half-life)	**2.25E+01**	**2.25E+01**	**2.25E+01**	**2.25E+01**	**4.50E+01**
ODCM Critical Receptor	8.80E-02	8.80E-02	8.90E-02	8.90E-02	3.54E-01
% Dose Limit	3.91E-01	3.91E-01	3.95E-01	3.95E-01	7.87E-01

C. Doses from Gaseous Effluent using Annual Average Meteorology:

As a check on the use of conservative historical meteorological dispersion (X/Q) and deposition values (D/Q), the 2016 gaseous release curies (Tables 2C-1, 2C-2 and 2C-3) for each of the three units and the 2016 annual average dispersion and deposition data (Table 4) were used to calculate doses to the critical receptors and pathways identified by the 2016 Land Use Census (LUC) using the NRC approved GASPAR computer program. The methods used to determine gaseous doses were consistent with the methods described in SGS and HCGS ODCMs and in NRC Regulatory Guide 1.109. The 2016 LUC did not identify any gardens greater than 500 ft^2; however, that pathway was included in the dose analysis. Using the 2016 meteorology data the calculated doses were lower than that reported in Table 3 that used the conservative ODCM default meteorology (Table 5).

Table 4 2016 Annual Average Undepleted X/Q, Depleted X/Q and D/Q and Active Exposure Pathways

Receptor Location	Undepleted X/Q	Depleted X/Q	D/Q	Active Exposure Pathways
HCGS SB, 0.5mi N	1.6E-06	1.4E-06	1.1E-08	Plume Immersion, Ground Deposition, Inhalation
SGS SB, 0.83mi N	7.3E-07	6.5E-07	4.6E-09	Plume Immersion, Ground Deposition, Inhalation
ODCM Dairy, 4.9mi W	5.5E-08	4.1E-08	9.8E-11	Plume Immersion, Ground Deposition, Inhalation, Milk Ingestion
Resident, 3.7mi NW	1.1E-07	8.5E-8	4.7E-10	Plume Immersion, Ground Deposition, Inhalation
Resident-Garden, 4.4mi WSW	8.1E-08	6.1E-08	2.0E-10	Plume Immersion, Ground Deposition, Inhalation Vegetable Ingestion
Resident-Meat, 4.2mi NNE	8.1E-06	6.1E-08	3.0E-10	Plume Immersion, Ground Deposition, Inhalation, Meat Ingestion
Resident-Garden-Meat, 4.6mi SW	9.7E-08	7.3E-08	2.8E-10	Plume Immersion, Ground Deposition, Inhalation, Meat Ingestion, Vegetable Ingestion

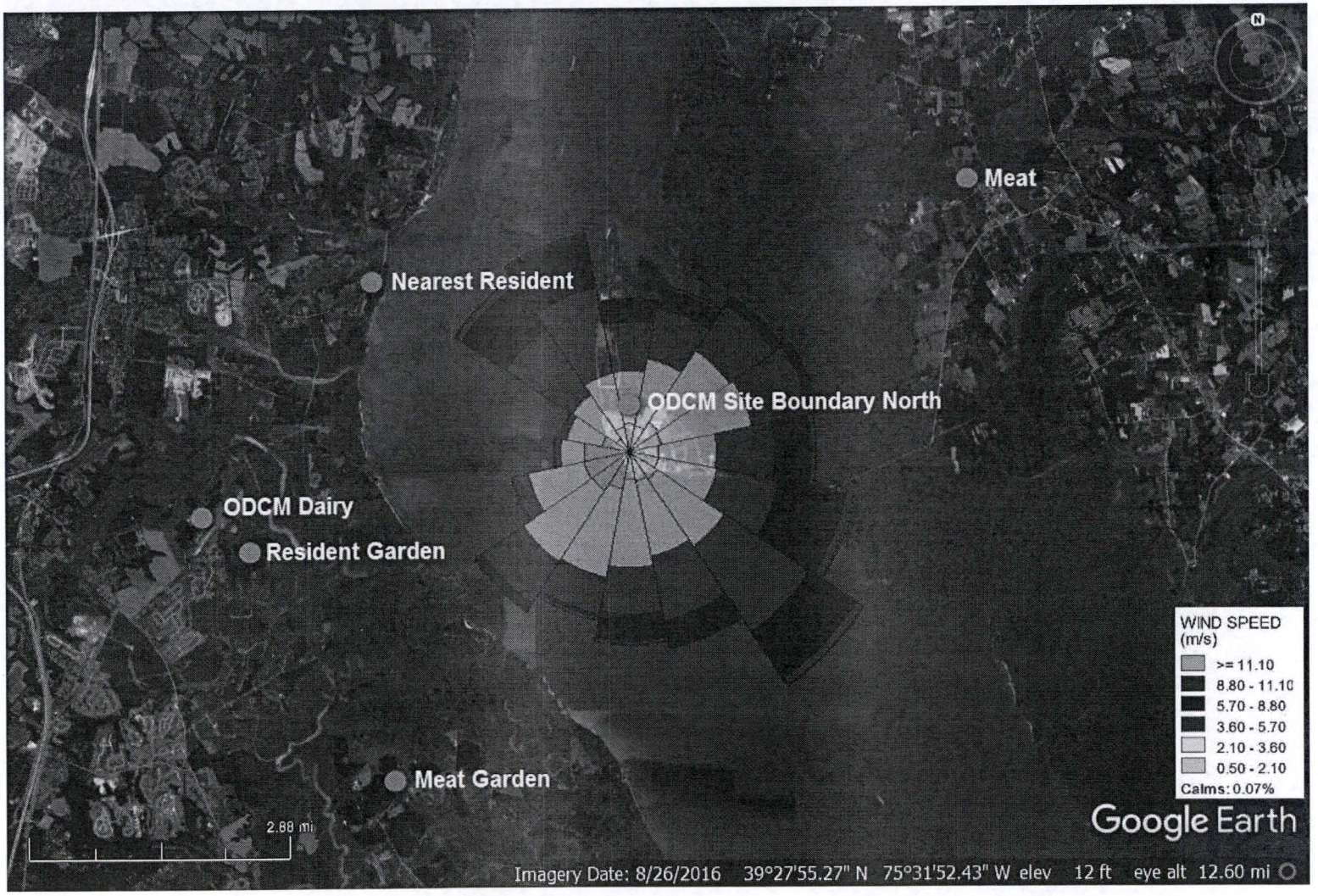


Figure 7 Locations of Dose Calculation Receptors with 2016 Wind Rose Overlay

Note: Wind rose depicts fraction of time wind transports gaseous effluents towards each of the sixteen compass sectors.

Table 5 2016 Total Body and Critical Organ Doses at Receptor Locations Using Annual Average X/Q and D/Q Data by Operating Unit

Operating Unit	ODCM Site Boundary Inhalation, Ground Plane 0.5 / 0.8 mi N			
	Excluding C-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
SGS Unit 1	5.92E-03	5.74E-03	5.92E-03	5.74E-03
SGS Unit 2	2.45E-03	2.44E-03	2.45E-03	2.44E-03
HCGS	8.47E-03	7.61E-03	8.47E-03	7.61E-03
Site Total	1.68E-02	1.58E-02	1.68E-02	1.58E-02

Operating Unit	ODCM Dairy Inhalation, Ground Plane, Milk 4.9 mi W			
	Excluding C-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
SGS Unit 1	1.67E-03	1.04E-03	4.53E-02	1.07E-02
SGS Unit 2	4.42E-04	4.41E-04	5.63E-02	1.25E-02
HCGS	1.73E-03	5.82E-04	9.33E-02	2.05E-02
Site Total	3.84E-03	2.06E-03	1.95E-01	4.37E-02

Operating Unit	Nearest Resident Inhalation, Ground Plane 3.7 mi NW			
	Excluding C-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
SGS Unit 1	8.93E-04	8.65E-04	8.93E-04	8.65E-04
SGS Unit 2	3.69E-04	3.68E-04	3.69E-04	3.68E-04
HCGS	5.62E-04	5.07E-04	5.62E-04	5.07E-04
Site Total	1.82E-03	1.74E-03	1.82E-03	1.74E-03

Operating Unit	Resident - Garden Inhalation, Ground Plane, Vegetation 4.4 mi WSW			
	Excluding C-14		Including C-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
SGS Unit 1	2.92E-03	2.58E-03	7.25E-02	1.71E-02
SGS Unit 2	1.10E-03	1.10E-03	9.01E-02	1.91E-02
HCGS	2.04E-03	1.44E-03	1.49E-01	3.13E-02
Site Total	6.06E-03	5.12E-03	3.12E-01	6.75E-02

Table 5 2016 Total Body and Critical Organ Doses at Receptor Locations Using Annual Average X/Q and D/Q Data by Each Operating Unit (continued)

Operating Unit	Resident - Garden Inhalation, Ground Plane, Vegetation 4.4 mi WSW			
	Excluding C-14		Including C-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
SGS Unit 1	2.92E-03	2.58E-03	7.25E-02	1.71E-02
SGS Unit 2	1.10E-03	1.10E-03	9.01E-02	1.91E-02
HCGS	2.04E-03	1.44E-03	1.49E-01	3.13E-02
Site Total	6.06E-03	5.12E-03	3.12E-01	6.75E-02

Operating Unit	Meat Inhalation, Ground Plane, Meat 4.2 mi NNE			
	Excluding Carbon-14		Including Carbon-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
SGS Unit 1	8.15E-04	7.94E-04	1.09E-02	2.87E-03
SGS Unit 2	3.39E-04	3.38E-04	1.36E-02	3.01E-03
HCGS	5.00E-04	4.53E-04	2.22E-02	4.84E-03
Site Total	1.65E-03	1.59E-03	4.67E-02	1.07E-02

Operating Unit	Meat - Garden Inhalation, Ground Plane, Meat, Vegetation 4.6 mi SW			
	Excluding C-14		Including C-14	
	Organ (mrem)	Total Body (mrem)	Organ (mrem)	Total Body (mrem)
SGS Unit 1	3.71E-03	3.24E-03	9.99E-02	2.32E-02
SGS Unit 2	1.38E-03	1.38E-03	1.24E-01	2.62E-02
HCGS	2.66E-03	1.82E-03	2.06E-01	4.30E-02
Site Total	7.75E-03	6.44E-03	4.30E-01	9.24E-02

As set forth in 10CFR50 Appendix I ALARA requirement for gaseous effluent was met if a licensee demonstrates that the estimated annual external dose from gaseous effluent to any individual in unrestricted areas does not exceed 5 mrem to the total body or 15 mrem to the skin. Compliance with these limits was demonstrated for 2016 gaseous effluents by the calculated total body and skin doses from external exposure pathways (i.e., plume and ground deposition) at the controlling site boundary location in the north sector. The calculated total body dose and

skin dose from the combined gaseous releases for the site represent less than 0.32% (Total Body) and less than 0.12% (Organ), of the respective dose limits (Table 5 Site Boundary Location). This confirms that no single unit's radioactive gaseous effluent releases exceeded the Appendix I dose limits. These doses (presented below) were calculated using the GASPAR computer program, which was consistent with the methods described in Regulatory Guide 1.109.

Dose Parameter from Table 5 Site Boundary	Annual Dose
Total Body Dose from Noble Gases, Iodines, Particulates, H-3 and C-14:	1.58E-02
Percent of Appendix I Annual Limit (5 mrem):	0.316%
Skin Dose from Noble Gases, Iodines, Particulates, H-3 and C-14:	1.68E-02
Percent of Appendix I Annual Limit (15 mrem):	0.112%

Population doses were not required to be calculated.

2. Total Dose to a Member of the Public, Resulting from Radioactive Effluent Releases and Radiation from Uranium Fuel Cycle Sources

40 CFR 190 and 10 CFR 72.104 limit the total dose to a "Real Individual" to 25 mrem to the total body, 75 mrem to the thyroid and 25 mrem to other organs other than the thyroid. The maximum annual total body and organ doses from gaseous and liquid pathways with all other uranium fuel cycle sources present on site were calculated as required by section 3.11.4 of the SGS and HCGS ODCMs. The direct dose from the ISFSI pad was determined using the Radiological Environmental Monitoring Program (REMP) and the guidance provided in ANSI/HPS N13.37-2014 (see page 11).

The direct shine dose from the ISFSI to the Critical Receptor located at 4.6 miles in the SW sector was conservatively estimated at 4.49E-03 mrem. The doses from the gaseous and liquid radioactive effluents released from SGS Units 1 and Unit 2 and HCGS in 2016 resulted in a calculated total body and an organ dose of 7.64E-02 mrem and 3.56E-01 mrem, respectively. The majority of dose was from the gaseous dose pathways from Carbon-14. The total dose was calculated as 4.36E-01 mrem, which was below the limits of 40 CFR 190 and 10 CFR 72.104. The results of this analysis are in Table 6.

Table 6 2016 Total Body and Organ Doses due to Liquid and Gaseous Effluents and Direct Shine ISFSI Dose to the Critical Receptor Located at 4.6 miles SW

Generating Station	Total Body Dose (mrem)		Critical Organ Dose (mrem)		ISFSI (mrem)
	Liquid	Gaseous*	Liquid	Gaseous*	
SGS Unit 1	7.45E-05	1.82E-02	2.16E-04	8.23E-02	
SGS Unit 2	2.05E-05	2.12E-02	2.63E-05	1.02E-01	
HCGS	3.24E-04	3.65E-02	1.33E-03	1.69E-01	
Total	4.19E-04	7.59E-02	1.57E-03	3.54E-01	
Total of Liquid and Gaseous	7.64E-02		3.56E-01		4.49E-03
Total Dose (mrem)	4.36E-01				

* Includes C-14 dose.

3. Dose to Members of the Public Due to Activities Inside the Site Boundary

Members of the Public may receive up to a limit of 100 mrem Total Effective Dose Equivalent (TEDE) in a year in accordance with 10 CFR 20.1301. The TEDE dose is the combined organ Committed Dose Equivalent (CDE) and the Total Body Dose. The Total Body Dose includes the direct shine dose from the ISFSI pad. The dose from radioactive liquid and gaseous effluents to a Member of the Public performing activities inside the site boundary are to be calculated as required by ODCM 6.9.1.8 (SGS) and 6.9.1.7 (HCGS).

Two sets of TEDE doses were calculated to two different members of the public. The first TEDE dose calculation assumes that an adult emergency worker (i.e. National Guard, Police, etc.) was located at the site vehicle Security Checkpoint entrance. The second calculation was to an adult contract worker stationed at the sewage treatment plant (STP). Both sets of members of the public have assigned duties that do not involve exposure to radiation or to radioactive material. Neither group have Radiation Control Access. In addition exposure time was limited to 2000 hours in a year (0.25 occupancy).

The vehicle Security Checkpoint was located at 0.89 miles E from the gaseous release points for SGS Units 1 and 2 and 0.94 miles E from the HCGS and 1.18 miles from the ISFSI. The STP workers were located about 575 feet from the ISFSI pad.

The active exposure pathways at both locations were plume immersion, ground deposition and inhalation of airborne radioactivity in gaseous effluent. There was no liquid dose pathway to Members of the Public on site.

The 2016 atmospheric dispersion factors were imputed into the GASPAR computer program to calculate the gaseous effluent doses. For purposes of

these calculations the gaseous doses for the STP worker used the highest site boundary sector doses located in the SW sector.

The calculated TEDE dose from gaseous effluents from the three reactors for each location was calculated by summing the total body and highest organ doses from SGS U1, SGS U2 and HCGS. The ISFSI dose was then added to each and then compared to the 10 CFR 20.1301 limit of 100 mrem. The results were as follows:

Table 7 Summary of TEDE doses to Members of the Public Due to Activities Inside the Site Boundary

Location	Operating Unit	CDE (Thyroid) mrem	Total Body Dose mrem	TEDE mrem	% of 10 CFR 20.1301 Limit of 100 mrem
Security Checkpoint	SGS U1	1.43E-03	1.40E-03		
	SGS U2	5.99E-04	5.99E-04		
	HCGS	8.57E-04	7.87E-04		
	ISFSI	N/A	1.68E-02		
	Total	2.89E-03	1.96E-02	2.25E-02	0.023%
STP	SGS U1	5.97E-02	5.84E-02		
	SGS U2	2.49E-02	2.49E-02		
	HCGS	1.88E-02	1.72E-02		
	ISFSI	N/A	2.00E+00		
	Total	1.03E-01	2.10E+00	2.21E+00	2.21%

The calculated doses were well below the 100 mrem limit of 10 CFR 20.1301.

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APPENDIX A -1

Effluent and Waste Disposal Summary, SGS Unit 1

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List of Tables

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TABLE 1A-1

LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: SGS Unit 1 Period: 2016

A. Fission & Activation Products	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	2.65E-03	6.15E-03	1.80E-03	1.58E-03	1.22E-02	2.70E+01
2. Average diluted concentration during period	µCi/ml	5.93E-12	6.61E-11	4.77E-12	3.62E-12	9.00E-12	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body % Organ %	See Table 2 on page 17					
B. Tritium							
1. Total List	Ci	1.24E+02	2.23E+02	1.89E+02	1.12E+02	6.48E+02	2.70E+01
2. Average diluted concentration during period	µCi/ml	2.76E-07	2.40E-06	5.03E-07	2.55E-07	4.78E-07	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body % Organ %	See Table 2 on page 17					
C. Dissolved & Entrained Gases							
1. Total Release	Ci	5.50E-05	1.41E-03	< LLD	< LLD	1.47E-03	2.70E+01
2. Average diluted concentration during period	µCi/ml	1.23E-13	1.52E-11	< LLD	< LLD	1.08E-08	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	6.15E-08	7.60E-06	N/A	N/A	6.15E-08	
D. Gross Alpha Activity							
Total Release	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.70E+01
E. Volume Of Waste Released (prior to dilution)	Liters	8.52E+07	4.72E+07	7.06E+07	8.08E+07	2.84E+08	
F. Volume Of Dilution Water Used During Period	Liters	4.48E+11	9.30E+10	3.77E+11	4.36E+11	1.35E+12	

N/A Not Applicable

TABLE 1B-1

LIQUID EFFLUENTS

Facility: SGS Unit 1 Period: 2016

Nuclides Released	Unit	Continuous Mode					Batch Mode				
		Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
H-3	Ci	2.27E-01	9.97E-02	1.30E-01	6.54E-01	1.11E+00	1.23E+02	2.23E+02	1.89E+02	1.11E+02	6.46E+02
Fission & Activation Products											
Mn-54	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.14E-05	5.04E-06	< LLD	< LLD	1.64E-05
Co-57	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.79E-06	2.79E-06
Co-58	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.31E-03	5.56E-03	1.43E-03	1.03E-03	9.33E-03
Co-60	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	7.13E-04	4.57E-04	3.15E-04	2.82E-04	1.77E-03
As-76	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	3.14E-05	< LLD	< LLD	3.14E-05
Nb-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.17E-05	< LLD	1.17E-05
Tc-101	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	7.29E-06	< LLD	6.63E-06	< LLD	1.39E-05
Sb-125	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.59E-04	6.80E-05	1.38E-05	2.33E-04	5.74E-04
I-131	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	5.73E-06	< LLD	5.73E-06
Cs-134	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.21E-05	< LLD	< LLD	< LLD	1.21E-05
Cs-137	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.42E-04	3.44E-05	6.09E-06	2.81E-05	4.11E-04
La-142	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	6.11E-06	< LLD	6.11E-06
Other	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.21E-06	< LLD	1.21E-06
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.65E-03	6.15E-03	1.80E-03	1.58E-03	1.22E-02
Dissolved and Entrained Noble Gases											
Kr-85	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.09E-06	< LLD	< LLD	< LLD	3.09E-06
Xe-133	Ci	< LLD	2.41E-05	< LLD	< LLD	2.41E-05	4.19E-05	1.37E-03	< LLD	< LLD	1.41E-03
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.63E-06	1.37E-05	< LLD	< LLD	1.63E-05
Xe-135m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	7.34E-06	< LLD	< LLD	< LLD	7.34E-06
Total for Period	Ci	< LLD	2.41E-05	< LLD	< LLD	2.41E-05	5.50E-05	1.39E-03	< LLD	< LLD	1.44E-03

Note: Only radionuclides with positive activity reported in this table.

TABLE 2A-1

GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: SGS Unit 1 Period: 2016

A. Fission & Activation Gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
Total Release	Ci	2.66E+00	8.37E+00	1.88E-01	2.16E-03	1.12E+01	3.400E+01
Average release rate for the period	µCi/sec	3.39E-01	1.07E+00	2.37E-02	2.72E-04	3.55E-01	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air % Beta Air %	See Table 3 on page 19					
B. Iodine							
Total I-131	Ci	< LLD	3.92E-04	< LLD	< LLD	3.92E-04	3.00E+01
Average release rate for the period	µCi/sec	< LLD	4.99E-05	< LLD	< LLD	1.24E-05	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
C. Particulates							
Particulates with half-lives > 8 days	Ci	< LLD	1.58E-08	7.12E-07	< LLD	7.28E-07	3.00E+01
Average release rate for the period	µCi/sec	< LLD	2.01E-09	8.96E-08	< LLD	2.30E-08	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
Gross alpha radioactivity	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	
D. Tritium							
Total Release	Ci	3.45E+01	1.39E+02	6.82E+01	9.77E+01	3.39E+02	3.10E+01
Average release rate for the period	µCi/sec	4.38E+00	1.77E+01	8.58E+00	1.23E+01	1.07E+01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
E. Carbon-14							
Total Release	Ci	1.98E+00	1.98E+00	2.01E+00	2.01E+00	7.98E+00	N/A[a]
Average release rate for the period	µCi/sec	2.53E-01	2.54E-01	2.53E-01	2.53E-01	2.52E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
F. I-131, I-133, H-3 & Particulates > 8 day half-life							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 19					
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 19					

* Iodine, Tritium, Carbon-14, and Particulates were treated as a group. Although listed separately in the above table, the percent ODCM Limit is based on most limiting nuclide and organ dose for the group (even in cases when a sub-group member was not identified in effluents).

a. It is not necessary to calculate uncertainties for C-14 or to include C-14 uncertainty in any subsequent calculation of overall uncertainty. (Regulatory Guide 1.21 revision 2)

TABLE 2C-1

GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Facility: SGS Unit 1 Period: 2016

Nuclides Released	Unit	Continuous Mode					Batch Mode				
1.Fission gases		**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Total**	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Total**
Ar-41	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.93E-02	5.78E-02	8.98E-03	8.82E-04	8.70E-02
Kr-85m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.74E-04	< LLD	< LLD	2.74E-04
Kr-85	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.33E-01	1.16E-01	1.69E-01	< LLD	7.18E-01
Xe-131m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.75E-02	1.17E-02	< LLD	< LLD	2.92E-02
Xe-133m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	6.17E-03	5.59E-02	< LLD	< LLD	6.21E-02
Xe-133	Ci	< LLD	4.13E+00	< LLD	< LLD	4.13E+00	2.18E+00	3.98E+00	1.04E-02	1.28E-03	6.17E+00
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.57E-03	1.60E-02	< LLD	< LLD	2.06E-02
Total for Period	Ci	< LLD	4.13E+00	< LLD	< LLD	4.13E+00	2.66E+00	4.24E+00	1.88E-01	2.16E-03	7.09E+00
2. Iodines											
I-131	Ci	< LLD	3.92E-04	< LLD	< LLD	3.92E-04	< LLD	< LLD	< LLD	< LLD	< LLD
I-133	Ci	< LLD	6.08E-06	< LLD	< LLD	6.08E-06	< LLD	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	< LLD	3.99E-04	< LLD	< LLD	3.99E-04	< LLD	< LLD	< LLD	< LLD	< LLD
3. Particulates											
Co-58	Ci	< LLD	1.58E-08	2.65E-08	< LLD	4.23E-08	< LLD	< LLD	3.50E-07	< LLD	3.50E-07
Co-60	Ci	< LLD	< LLD	2.88E-08	< LLD	2.88E-08	< LLD	< LLD	3.06E-07	< LLD	3.06E-07
Mo-99	Ci	< LLD	3.64E-09	< LLD	< LLD	3.64E-09	< LLD	< LLD	< LLD	< LLD	< LLD
Tc-99m	Ci	< LLD	3.71E-09	< LLD	< LLD	3.71E-09	< LLD	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	< LLD	2.31E-08	5.54E-08	< LLD	7.85E-08	< LLD	< LLD	6.57E-07	< LLD	6.57E-07
4. Tritium	Ci	3.42E+01	1.39E+02	6.78E+01	9.75E+01	3.39E+02	2.60E-01	3.84E-01	3.91E-01	2.31E-01	1.27E+00
5. Carbon-14	Ci	1.98E+00	1.98E+00	2.01E+00	2.01E+00	7.98E+00	< LLD	< LLD	< LLD	< LLD	< LLD

Note: Only radionuclides with positive activity reported in this table.

TABLE 4A-1

SUMMARY SHEET FOR LIQUID RADIOACTIVE EFFLUENTS RELEASED IN A BATCH MODE

Facility: SGS Unit 1 Period: 2016

Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	15	40	41	21	117
Total time period for batch releases (min)	5118.00	19584.47	9722.77	5940.42	40365.66
Maximum time period for batch release (min)	558.00	2379.00	610.00	581.00	2379
Average time period for batch release (min)	341.20	489.61	237.14	282.88	345.01
Minimum time period for batch release (min)	222.00	0.47	0.17	0.42	0.17
Average stream flow during periods of release of effluents into a flowing stream (Lpm)	8.76E+07	4.75E+06	3.88E+07	7.34E+07	3.36E+07

TABLE 4B-1

SUMMARY SHEET FOR GASEOUS RADIOACTIVE EFFLUENTS RELEASED IN A BATCH MODE

Facility: SGS Unit 1 Period: 2016

Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	121	24	82	96	323
Total time period for batch releases (min)	12237.00	3990.70	8723.57	9621.00	34572.27
Maximum time period for batch release (min)	180.00	1570.00	778.00	228.00	1570.00
Average time period for batch release (min)	101.13	166.28	106.38	100.22	107.03
Minimum time period for batch release (min)	45.00	2.00	10.00	38.00	2.00

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APPENDIX A -2

Effluent and Waste Disposal Summary, SGS Unit 2

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List of Tables

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TABLE 1A-2

LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: SGS Unit 2 Period: 2016

A. Fission & Activation Products	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	1.62E-03	1.87E-03	9.02E-04	1.76E-03	6.15E-03	2.70E+01
2. Average diluted concentration during period	µCi/ml	3.61E-12	4.15E-12	2.00E-12	3.72E-12	3.37E-12	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body %	See Table 2 on page 17					
	Organ %						
B. Tritium							
1. Total Release	Ci	1.25E+02	2.50E+02	7.31E+01	5.33E+01	5.01E+02	2.70E+01
2. Average diluted concentration during period	µCi/ml	2.78E-07	5.41E-07	1.60E-07	1.13E-07	2.75E-7	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body %	See Table 2 on page 17					
	Organ %						
C. Dissolved & Entrained Gases							
1. Total Release	Ci	6.90E-05	2.07E-04	4.44E-06	< LLD	2.80E-04	2.70E+01
2. Average diluted concentration during period	µCi/ml	1.54E-13	4.60E-13	9.84E-15	< LLD	1.54E-13	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	3.85E-10	1.15E-09	2.46E-11	N/A	3.84E-10	
D. Gross Alpha Activity							
Total Release	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.70E+01
E. Volume Of Waste Released (prior to dilution)	Liters	5.03E+07	5.04E+07	5.08E+07	5.06E+07	2.02E+08	
F. Volume Of Dilution Water Used During Period	Liters	4.50E+11	4.51E+11	4.51E+11	4.73E+11	1.83E+12	

TABLE 1B-2

LIQUID EFFLUENTS

Facility: SGS Unit 2 Period: 2016

	Unit	Continuous Mode					Batch Mode				
		Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
H-3	Ci	2.68E-01	1.60E-02	1.48E-02	8.57E-03	3.07E-01	1.25E+02	2.50E+02	7.31E+01	5.33E+01	5.01E+02
Fission and Activation Products											
Cr-51	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.49E-05	< LLD	< LLD	< LLD	3.49E-05
Co-57	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.21E-06	8.67E-06	1.09E-05
Co-58	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.50E-04	1.57E-03	7.83E-04	1.28E-03	3.88E-03
Co-60	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.07E-04	1.46E-04	9.68E-05	2.37E-04	6.87E-04
Ru-105	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	7.53E-06	< LLD	< LLD	< LLD	7.53E-06
Tc-101	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.70E-06	< LLD	< LLD	< LLD	4.70E-06
Sb-124	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	6.91E-05	< LLD	< LLD	< LLD	6.91E-05
Sb-125	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	8.83E-04	2.18E-05	< LLD	1.78E-04	1.08E-03
Cs-137	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.67E-04	1.12E-04	8.49E-06	5.39E-05	3.41E-04
Cs-138	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.02E-05	< LLD	< LLD	2.02E-05
Ce-143	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.15E-05	< LLD	1.15E-05
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.62E-03	1.87E-03	9.02E-04	1.76E-03	6.15E-03
Dissolved and Entrained Noble Gases											
Kr-87	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	6.20E-06	< LLD	4.44E-06	< LLD	1.06E-05
Xe-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	6.28E-05	2.04E-04	< LLD	< LLD	2.67E-04
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	2.83E-06	< LLD	< LLD	2.83E-06
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	6.90E-05	2.07E-04	4.44E-06	< LLD	2.80E-04

Note: Only radionuclides with positive activity reported in this table.

TABLE 2A-2

GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: SGS Unit 2 Period: 2016

A. Fission & Activation Gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
Total Release	Ci	5.47E-02	2.43E-02	1.33E-02	5.98E-02	1.52E-01	3.400E+01
Average release rate for the period	µCi/sec	6.96E-03	3.09E-03	1.68E-03	7.52E-03	4.81E-03	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	See Table 3 on page 19					
	Beta Air %						
B. Iodine							
Total Iodine – 131.	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.00E+01
Average release rate for the period	µCi/sec	< LLD	< LLD	< LLD	< LLD	< LLD	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
C. Particulates							
Particulates with half-lives > 8 days	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.00E+01
Average release rate for the period	µCi/sec	< LLD	< LLD	< LLD	< LLD	< LLD	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
Gross alpha radioactivity	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	
D. Tritium							
Total Release	Ci	3.26E+01	3.90E+01	3.52E+01	3.85E+01	1.45E+02	3.10E+01
Average release rate for the period	µCi/sec	4.15E+00	4.96E+00	4.43E+00	4.85E+00	4.59E+00	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
E. Carbon-14							
Total Release	Ci	2.47E+00	2.47E+00	2.49E+00	2.49E+00	9.92E+00	N/A[a]
Average release rate for the period	µCi/sec	3.14E-01	3.14E-01	3.15E-01	3.14E-01	3.14E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
F. I-131, I-133, H-3 & Particulates > 8 day half-life							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 19					
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 19					

* Iodine, Tritium, Carbon-14, and Particulates were treated as a group. Although listed separately in the above table, the percent ODCM Limit is based on most limiting nuclide and organ dose for the group (even in cases when a sub-group member was not identified in effluent).

a. It is not necessary to calculate uncertainties for C-14 or to include C-14 uncertainty in any subsequent calculation of overall uncertainty. (Regulatory Guide 1.21 revision 2)

TABLE 2C-2

GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Facility: SGS Unit 2 Period: 2016

Nuclides Released		Continuous Mode					Batch Mode				
1. Fission gases	**Unit**	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Total**	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Total**
Ar-41	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.51E-02	2.07E-02	7.86E-03	5.35E-02	9.72E-02
Xe-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.97E-02	3.54E-03	5.35E-03	6.31E-03	5.49E-02
Xe-133m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.26E-04	< LLD	1.26E-04
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	5.47 E-02	2.43E-02	1.33E-02	5.98E-02	1.52E-01
2. Iodines											
None	Ci										
	Ci										
Total for Period	Ci										
3. Particulates											
None	Ci										
	Ci										
Total for Period	Ci										
4. Tritium	Ci	3.25E+01	3.89E+01	3.50E+01	3.84E+01	1.45E+02	9.99E-02	1.06E-01	1.63E-01	1.17E-01	4.86E-01
5. Carbon-14	Ci	2.47E+00	2.47E+00	2.49E+00	2.49E+00	9.92E+00	< LLD	< LLD	< LLD	< LLD	< LLD

Note: Only radionuclides with positive activity reported in this table.

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
(Not Irradiated Fuel)

Facility: SGS Units 1 and 2 Period: 2016

a. Waste Stream; Resins, Filters, and Evaporator Bottoms
Liquid Waste Processing Resin

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	1.06E+03	3.01E+01	1.48E+01	+/-25%
B	1.20E+02	3.41E+00	1.58E+01	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.18E+03	3.35E+01	3.06E+01	+/-25%

Major Nuclides for Above Table: Percent Cutoff 1%

Resins, Filters and Evaporator Bottoms
Waste Class A

Nuclide Name	Percent Abundance	Curies
Fe-55	6.42%	9.50E-01
Co-60	18.13%	2.69E+00
Ni-63	65.51%	9.70E+00
Sb-125	1.7%	2.52E-01
Cs-137	5.73%	8.49E-01

Resins, Filters and Evaporator Bottoms
Waste Class B

Nuclide Name	Percent Abundance	Curies
Fe-55	6.92%	1.09E+00
Co-60	17.23%	2.72E+00
Ni-63	73.04%	1.15E+01

Resins, Filters and Evaporator Bottoms
Waste Class C

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Resins, Filters and Evaporator Bottoms
Waste Class All

Nuclide Name	Percent Abundance	Curies
Fe-55	6.67%	2.04E+00
Co-60	17.67%	5.41E+00
Ni-63	69.4%	2.12E+01
Sb-125	1.12%	3.44E-01
Cs-137	3.17%	9.70E-01

N/A Not Applicable

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

b. Waste Stream; Dry Active Waste

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	2.30E+04	6.52E+02	1.35E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	2.30E+04	6.52E+02	1.35E+00	+/-25%

Major Nuclides for Above Table: Percent Cutoff 1%

Dry Active Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
H-3	8.48%	1.15E-01
Fe-55	30.32%	4.40E-01
Co-58	27.03%	3.65E-01
Co-60	9.01%	1.22E-01
Ni-63	18.87%	2.55E-01
Cs-137	3.02%	4.08E-02
Dry Active Waste		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Dry Active Waste		
Waste Class C		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Dry Active Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
H-3	8.48%	1.15E-01
Fe-55	30.32%	4.40E-01
Co-58	27.03%	3.65E-01
Co-60	9.01%	1.22E-01
Ni-63	18.87%	2.55E-01
Cs-137	3.02%	4.08E-02

N/A Not Applicable

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

c. Waste Stream; Irradiated Components

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Major Nuclides for Above Table: Percent Cutoff 1%

Irradiated Components		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Irradiated Components		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Irradiated Components		
Waste Class C		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Irradiated Components		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

N/A Not Applicable

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

d. Waste Stream; Other Waste

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	0.00E+00	0.00E+00	0.00E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	0.00E+00	0.00E+00	0.00E+00	+/-25%

Major Nuclides for Above Table: Percent Cutoff 1%

Other Waste		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Other Waste		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Other Waste		
Waste Class C		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Other Waste		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

N/A Not Applicable

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

e. Waste Stream; Sum of All 4 Categories

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	2.41E+04	6.83E+02	1.61E+01	+/-25%
B	1.20E+02	3.41E+00	1.58E+01	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	2.42E+04	6.86E+02	3.19E+01	+/-25%

Major Nuclides for Above Table: Percent Cutoff 1%

Waste Stream; Sum of All 4 Categories
Waste Class A

Nuclide Name	Percent Abundance	Curies
Fe-55	8.41%	1.36E+00
Co-58	2.54%	4.11E-01
Co-60	17.37%	2.81E+00
Ni-63	61.61%	9.96E+00
Sb-125	1.64%	2.65E-01
Cs-137	5.51%	8.90E-01

Waste Stream; Sum of All 4 Categories
Waste Class B

Nuclide Name	Percent Abundance	Curies
Fe-55	6.92%	1.09E+00
Co-60	17.23%	2.81E+00
Ni-63	73.04%	1.15E+01

Waste Stream; Sum of All 4 Categories
Waste Class C

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Waste Stream; Sum of All 4 Categories
Waste Class All

Nuclide Name	Percent Abundance	Curies
Fe-55	7.67%	2.45E+00
Co-58	1.29%	4.11E-01
Co-60	17.3%	5.53E+00
Ni-63	67.26%	2.15E+01
Sb-125	1.12%	3.57E-01
Cs-137	3.17%	1.01E+00

N/A Not Applicable

TABLE 3A-2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

Number of Shipments	Mode Of Transportation	Destination
7	Hittman Transport Services, Inc.	Energy Solutions, LLC Barnwell Processing Facility
3	Hittman Transport Services, Inc.	Energy Solutions Services Inc. 1560 Bear Creek Road
5	Hittman Transport Services, Inc.	Energy Solutions Services Inc. 1560 Bear Creek Road
1	Tri State Motor Transit.	Energy Solutions Services Inc. 1560 Bear Creek Road

TABLE 4A-2

SUMMARY SHEET FOR LIQUID RADIOACTIVE EFFLUENTS RELEASED IN A BATCH MODE

Facility: SGS Unit 2 Period: 2016

Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	12	13	10	7	42
Total time period for batch releases (min)	4526.50	5323.00	3967.00	2969.00	16785.50
Maximum time period for batch release (min)	527.00	528.00	518.00	486.00	528.00
Average time period for batch release (min)	377.21	409.46	396.70	424.14	399.65
Minimum time period for batch release (min)	44.50	304.00	320.00	356.00	44.50
Average stream flow during periods of release of effluents into a flowing stream (Lpm)	9.94E+07	8.47E+07	1.14E+08	1.59E+08	1.09E+08

TABLE 4B-2

SUMMARY SHEET FOR GASEOUS RADIOACTIVE EFFLUENTS RELEASED IN A BATCH MODE

Facility: SGS Unit 2 Period: 2016

Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	78	80	61	112	331
Total time period for batch releases (min)	7784.00	19376.00	4385.00	9535.00	41080.00
Maximum time period for batch release (min)	198.00	13055.00	123.00	190.00	13055.00
Average time period for batch release (min)	99.79	242.20	71.89	85.13	124.11
Minimum time period for batch release (min)	19.00	21.00	45.00	30.00	19.00

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APPENDIX A -3

Effluent and Waste Disposal Summary, HCGS

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List of Tables

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TABLE 1A-3

LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: HCGS Period: 2016

A. Fission & Activation Products	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	3.02E-03	8.12E-06	2.93E-05	2.55E-04	3.32E-03	2.70E+01
2. Average diluted concentration during period	µCi/ml	3.97E-10	1.38E-12	4.84E-12	5.19E-11	1.35E-10	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body %	See Table 2 on page 17					
	Organ %						
B. Tritium							
1. Total Release	Ci	3.53E+00	9.12E-01	3.08E+00	9.86E+00	1.74E+01	2.70E+01
2. Average diluted concentration during period	µCi/ml	4.63E-07	1.55E-07	5.09E-07	2.00E-06	7.10E-07	
3. Percent of applicable limit (ODCM 3.11.1(a) & (b))	Total Body %	See Table 2 on page 17					
	Organ %						
C. Dissolved & Entrained Gases							
1. Total Release	Ci	1.03E-06	< LLD	< LLD	4.60E-04	4.61E-04	2.70E+01
2. Average diluted concentration during period	µCi/ml	1.35E-13	< LLD	< LLD	9.34E-11	1.88E-11	
3. Percent of applicable limit (ODCM 3.11.1.1)	%	6.75E-08	< LLD	< LLD	4.67E-05	9.41E-06	
D. Gross Alpha Activity							
Total Release	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.70E+01
E. Volume Of Waste Released (prior to dilution)	Liters	2.04E+06	2.29E+06	9.78E+06	4.30E+06	1.84E+07	
F. Volume Of Dilution Water Used During Period	Liters	7.61E+09	5.89E+09	6.05E+09	4.92E+09	2.45E+10	

TABLE 1B-3

LIQUID EFFLUENTS

Facility: HCGS Period: 2016

		Continuous Mode					Batch Mode				
Nuclides Released	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
H-3	Ci	3.31E-02	4.58E-01	1.43E+00	1.51E-01	2.07E+00	3.49E+00	4.54E-01	1.65E+00	9.71E+00	1.53E+01
Fission and Activation Products											
Na-24	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.48E-06	< LLD	< LLD	< LLD	1.48E-06
Mn-54	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.16E-04	1.42E-07	< LLD	3.11E-06	3.20E-04
Fe-59	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	5.23E-05	< LLD	< LLD	< LLD	5.23E-05
Co-58	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.47E-05	< LLD	< LLD	< LLD	3.47E-05
Co-60	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.36E-03	6.31E-06	2.93E-05	2.45E-04	2.64E-03
Zn-65	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	7.50E-05	< LLD	< LLD	< LLD	7.50E-05
Zn-69m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.27E-06	< LLD	< LLD	< LLD	3.27E-06
Zr-95	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	8.90E-06	< LLD	< LLD	< LLD	8.90E-06
Mo-99	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.20E-06	< LLD	< LLD	< LLD	2.20E-06
Tc-99m	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	2.23E-06	< LLD	< LLD	< LLD	2.23E-06
Sb-124	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	7.04E-06	7.04E-06
I-131	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	6.71E-08	< LLD	< LLD	6.71E-08
I-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	6.63E-07	< LLD	< LLD	< LLD	6.63E-07
Cs-134	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	4.63E-05	< LLD	< LLD	< LLD	4.63E-05
Cs-137	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.22E-04	< LLD	< LLD	< LLD	1.22E-04
Cs-138	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	1.60E-06	< LLD	< LLD	1.60E-06
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	3.02E-03	8.12E-06	2.93E-05	2.55E-04	3.32E-03
Dissolved and Entrained Noble Gases											
Xe-133	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	< LLD	3.11E-04	3.11E-04
Xe-135	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.03E-06	< LLD	< LLD	1.49E-04	1.50E-04
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	1.03E-06	< LLD	< LLD	4.60E-04	4.61E-04

Note: Only radionuclides with positive activity reported in this table.

TABLE 2A-3

GASEOUS EFFLUENTS – SUMMATION OF ALL RELEASES

Facility: HCGS Period: 2016

A. Fission & Activation Gases	Unit	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total	Est. Total Error %
Total Release	Ci	4.53E-01	9.89E-01	0.00E+00	0.00E+00	1.44E+00	3.400E+01
Average release rate for the period	µCi/sec	5.76E-02	1.26E-01	0.00E+00	0.00E+00	4.56E-02	
Percent of limit (ODCM 3.11.2.2(a))	Gamma Air %	See Table 3 on page 19					
	Beta Air %						
B. Iodines and Halogens							
Total Release	Ci	9.05E-04	1.05E-03	1.08E-03	4.87E-04	3.52E-03	3.00E+01
Average release rate for the period	µCi/sec	1.15E-04	1.34E-04	1.35E-04	6.12E-05	1.11E-04	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
C. Particulates							
Particulates with half-lives > 8 days	Ci	1.80E-03	9.25E-03	5.53E-03	6.62E-06	1.66E-02	3.00E+01
Average release rate for the period	µCi/sec	2.29E-04	1.18E-03	6.95E-04	8.32E-07	5.24E-04	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
Gross alpha radioactivity	Ci	< LLD	< LLD	< LLD	< LLD	< LLD	
D. Tritium							
Total Release	Ci	3.68E+01	3.67E+01	7.57E+01	3.94E+01	1.89E+02	3.10E+01
Average release rate for the period	µCi/sec	4.68E+00	4.67E+00	9.52E+00	4.95E+00	5.96E+00	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
E. Carbon-14							
Total Release	Ci	4.09E+00	4.09E+00	4.13E+00	4.13E+00	1.64E+01	N/A
Average release rate for the period	µCi/sec	5.19E-01	5.21E-01	5.16E-01	5.19E-01	5.18E-01	
Percent of limit (ODCM 3.11.2.3(a))	%	*	*	*	*	*	
F. I-131, I-133, H-3 & Particulates > 8 day half-life							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 19					
G. I-131, I-133, H-3, Particulates > 8 day half-life & C-14							
Percent of limit (ODCM 3.11.2.3(a))	%	See Table 3 on page 19					

* Iodine, Tritium, Carbon-14, and Particulates were treated as a group. Although listed separately in the above table, the percent ODCM Limit is based on most limiting nuclide and organ dose for the group (even in cases when a sub-group member was not identified in effluent).

[a.] It is not necessary to calculate uncertainties for C-14 or to include C-14 uncertainty in any subsequent calculation of overall uncertainty. (Regulatory Guide 1.21 revision 2)

TABLE 2C-3

GASEOUS EFFLUENTS – GROUND LEVEL RELEASES

Facility: HCGS Period: 2016

Nuclides Released	Unit	Continuous Mode					Batch Mode				
1. Fission gases		**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Total**	**Qtr. 1**	**Qtr. 2**	**Qtr. 3**	**Qtr. 4**	**Total**
Xe-133	Ci	< LLD	9.89E-01	< LLD	< LLD	9.89E-01	< LLD	< LLD	< LLD	< LLD	< LLD
Xe-135	Ci	4.53E-01	< LLD	< LLD	< LLD	4.53E-01	< LLD	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	4.53E-01	9.89E-01	< LLD	< LLD	1.44E+00	< LLD	< LLD	< LLD	< LLD	< LLD
2. Iodines and Halogens											
Br-82	Ci	9.82E-06	< LLD	< LLD	< LLD	9.82E-06	< LLD	< LLD	< LLD	< LLD	< LLD
I-131	Ci	1.55E-04	2.10E-04	1.94E-04	1.07E-04	6.66E-04	< LLD	< LLD	< LLD	< LLD	< LLD
I-133	Ci	7.40E-04	8.43E-04	8.81E-04	3.80E-04	2.84E-03	< LLD	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	9.05E-04	1.05E-03	1.08E-03	4.87E-04	3.52E-03	< LLD	< LLD	< LLD	< LLD	< LLD
3. Particulates											
Na-24	Ci	9.67E-05	2.43E-04	7.98E-05	< LLD	4.20E-04	< LLD	< LLD	< LLD	< LLD	< LLD
Co-58	Ci	< LLD	< LLD	1.20E-06	< LLD	1.20E-06	< LLD	< LLD	< LLD	< LLD	< LLD
Co-60	Ci	4.36E-05	1.62E-05	9.39E-06	6.62E-06	7.59E-05	< LLD	< LLD	< LLD	< LLD	< LLD
Y-91m	Ci	1.65E-03	8.95E-03	5.44E-03	< LLD	1.60E-02	< LLD	< LLD	< LLD	< LLD	< LLD
Ce-141	Ci	< LLD	3.46E-05	< LLD	< LLD	3.46E-05	< LLD	< LLD	< LLD	< LLD	< LLD
Other	Ci	1.12E-05	< LLD	< LLD	< LLD	1.12E-05	< LLD	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	1.80E-03	9.25E-03	5.53E-03	6.62E-06	1.66E-02	< LLD	< LLD	< LLD	< LLD	< LLD
4. Tritium	Ci	3.68E+01	3.67E+01	7.57E+01	3.94E+01	1.89E+02	< LLD	< LLD	< LLD	1.88E-03	1.88E-03
5. Carbon-14	Ci	4.05E+00	4.10E+00	4.14E+00	4.14E+00	1.64E+01	< LLD	< LLD	< LLD	< LLD	< LLD

Note: Only radionuclides with positive activity reported in this table.

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
(Not Irradiated Fuel)

Facility: HCGS Period: 2016

a. Waste Stream; Resins, Filters, and Evaporator Bottoms

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	6.13E+02	1.74E+01	3.29E+00	+/-25%
B	0	0	0	+/-25%
C	0	0	0	+/-25%
All	6.13E+02	1.74E+01	3.29E+00	+/-25%

Major Nuclides for Above Table: Percent Cutoff: 1%

Resins, Filters and Evaporator Bottoms
Waste Class A

Nuclide Name	Percent Abundance	Curies
C-14	2.19%	7.21E-02
Mn-54	1.44%	4.74E-02
Fe-55	40.46%	1.33E+00
Co-60	47.43%	1.56E+00
Ni-63	6.32%	2.08E-01

Resins, Filters and Evaporator Bottoms
Waste Class B

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Resins, Filters and Evaporator Bottoms
Waste Class C

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Resins, Filters and Evaporator Bottoms
Waste Class All

Nuclide Name	Percent Abundance	Curies
C-14	2.19%	7.21E-02
Mn-54	1.44%	4.74E-02
Fe-55	40.46%	1.33E+00
Co-60	47.43%	1.56E+00
Ni-63	6.32%	2.08E-01

N/A Not Applicable

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

b. Waste Stream; Dry Active Waste

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	2.22E+04	6.28E+02	2.77E+00	+/-25%
B	0	0	0	+/-25%
C	0	0	0	+/-25%
All	2.22E+04	6.28E+02	2.77E+00	+/-25%

Major Nuclides for Above Table: Percent Cutoff: 1%

Dry Active Waste
Waste Class A

Nuclide Name	Percent Abundance	Curies
Cr-51	2.73%	7.62E-02
Mn-54	2.24%	6.25E-02
Fe-55	50.74%	1.42E+00
Fe-59	1.47%	4.10E-02
Co-60	34.87%	9.74E-01
Ni-63	1.01%	2.81E-02
Ce-144	2.98%	8.34E-02

Dry Active Waste
Waste Class B

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Dry Active Waste
Waste Class C

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Dry Active Waste

Waste Class All

Nuclide Name	Percent Abundance	Curies
Cr-51	2.73%	7.62E-02
Mn-54	2.24%	6.25E-02
Fe-55	50.74%	1.42E+00
Fe-59	1.47%	4.10E-02
Co-60	34.87%	9.74E-01
Ni-63	1.01%	2.81E-02
Ce-144	2.98%	8.34E-02

N/A Not Applicable

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

c. Waste Stream; Irradiated Components

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	0	0	0	+/-25%
B	0	0	0	+/-25%
C	0	0	0	+/-25%
All	0	0	0	+/-25%

Major Nuclides for Above Table:		Percent Cutoff: 1%
Irradiated Components		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Irradiated Components		
Waste Class B		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Irradiated Components		
Waste Class C		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Irradiated Components		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

N/A Not Applicable

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

d. Waste Stream; Other Waste

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	8.73E+02	2.47E+01	7.06E-01	+/-25%
B	0	0	0	+/-25%
C	0	0	0	+/-25%
All	8.73E+02	2.47E+01	7.06E-01	+/-25%

Major Nuclides for Above Table: Percent Cutoff: 1%

Other Waste
Waste Class A

Nuclide Name	Percent Abundance	Curies
H-3	2.58%	2.04E-02
C-14	3.45%	2.72E-02
Fe-55	48.66%	3.83E-01
Co-60	35.5%	2.80E-01
Tc-99	4.31%	3.40E-02
Cs-137	5.31%	4.18E-02

Other Waste
Waste Class B

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Other Waste
Waste Class C

Nuclide Name	Percent Abundance	Curies
None	N/A	N/A

Other Waste
Waste Class All

Nuclide Name	Percent Abundance	Curies
H-3	2.58%	2.04E-02
C-14	3.45%	2.72E-02
Fe-55	48.66%	3.83E-01
Co-60	35.5%	2.80E-01
Tc-99	4.31%	3.40E-02
Cs-137	5.31%	4.18E-02

N/A Not Applicable

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

e. Waste Stream; Sum of All 4 Categories

Waste Class	Volume ft^3	Volume m^3	Curies Shipped	% Error (Ci)
A	2.37E+04	6.70E+02	6.76E+00	+/-25%
B	0	0	0	+/-25%
C	0	0	0	+/-25%
All	2.37E+04	6.70E+02	6.76E+00	+/-25%

Major Nuclides for Above Table: Percent Cutoff: 1%

Sum of All 4 Categories		
Waste Class A		
Nuclide Name	Percent Abundance	Curies
C-14	1.48%	1.02E-01
Cr-51	1.11%	7.62E-02
Mn-54	1.6%	1.10E-01
Fe-55	45.57%	3.14E+00
Co-60	40.96%	2.82E+00
Ni-63	3.44%	2.36E-01
Cs-137	1.29%	8.89E-02
Ce-144	1.28%	8.82E-02
Waste Class B		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Waste Class C		
Nuclide Name	Percent Abundance	Curies
None	N/A	N/A
Sum of All 4 Categories		
Waste Class All		
Nuclide Name	Percent Abundance	Curies
C-14	1.48%	1.02E-01
Cr-51	1.11%	7.62E-02
Mn-54	1.6%	1.10E-01
Fe-55	45.57%	3.14E+00
Co-60	40.96%	2.82E+00
Ni-63	3.44%	2.36E-01
Cs-137	1.29%	8.89E-02
Ce-144	1.28%	8.82E-02

N/A Not Applicable

TABLE 3A-3
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SOLID RADWASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (continued)
(Not Irradiated Fuel)

Number of Shipments	Mode Of Transportation	Destination
8	Hittman Transport Services, Inc.	Barnwell Disposal Facility Operated by Chem-Nuclear Systems, Inc.
1	Hittman Transport Services, Inc.	Energy Solutions – BCO Bear Creek Operations
10	R&R Trucking	Babcock Services, Inc. Oak Ridge Service Center

TABLE 4A-3

SUMMARY SHEET FOR LIQUID RADIOACTIVE EFFLUENTS RELEASED IN A BATCH MODE

Facility: HCGS Period: 2016

Liquid	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	14	4	9	32	59
Total time period for batch releases (min)	9.25E+02	2.34E+02	6.90E+02	2.27E+03	4.12E+03
Maximum time period for batch release (min)	8.00E+01	7.80E+01	1.30E+02	9.70E+01	1.30E+02
Average time period for batch release (min)	6.61E+01	5.85E+01	7.67E+01	7.10E+01	6.98E+01
Minimum time period for batch release (min)	4.60E+01	4.50E+01	4.70E+01	4.70E+01	4.50E+01
Average stream flow during periods of release of effluents into a flowing stream (Lpm)	8.23E+06	2.52E+07	8.79E+06	2.17E+06	5.94E+06

TABLE 4B-3

SUMMARY SHEET FOR GASEOUS RADIOACTIVE EFFLUENTS RELEASED IN A BATCH MODE

Facility: HCGS Period: 2016

Gaseous	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Total
Number of Batch Releases	0	0	0	2	2
Total time period for batch releases (min)	0.00	0.00	0.00	2.00E+03	2.00E+03
Maximum time period for batch release (min)	0.00	0.00	0.00	1.52E+03	1.52E+03
Average time period for batch release (min)	0.00	0.00	0.00	1.00E+03	1.00E+03
Minimum time period for batch release (min)	0.00	0.00	0.00	4.87E+02	4.87E+02

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APPENDIX B

Meteorological Data

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Salem/Hope Creek Meteorological Tower

Joint Frequency Distribution of Wind Direction and Speed
By Atmospheric Stability Class

33 Ft. Wind Level

300 – 33 Ft. Delta Temperature

January – March 2016

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SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	0	0	2	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	0	0	0	0	0	0	0	0	0
33.75 - 56.25	NE	0	0	0	0	0	0	0	1	0	0	0	1
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	0	1	3	1	0	5
146.25 - 168.75	SSE	0	0	0	0	0	0	1	1	0	0	0	2
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	0	0	2	0	0	0	0	2
236.25 - 258.75	WSW	0	0	0	0	0	2	3	0	0	0	0	5
258.75 - 281.25	W	0	0	0	0	1	0	1	4	3	0	0	9
281.25 - 303.75	WNW	0	0	0	0	0	0	0	1	0	1	0	2
303.75 - 326.25	NW	0	0	0	0	0	0	0	0	9	11	1	21
326.25 - 348.75	NNW	0	0	0	0	0	0	1	2	5	0	0	8
												Total	57

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.09
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.05
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.138	0.046	0.000	0.23
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.09
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.09
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.092	0.138	0.000	0.000	0.000	0.000	0.23
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.184	0.138	0.000	0.000	0.41
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.09
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.415	0.507	0.046	0.97
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.092	0.230	0.000	0.000	0.37
												Total	2.63

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	0	0	0	0	1	0	0	1
11.25 - 33.75	NNE	0	0	0	0	0	0	1	0	0	0	0	1
33.75 - 56.25	NE	0	0	0	0	0	1	0	0	0	0	0	1
56.25 - 78.75	ENE	0	0	0	0	0	0	0	1	0	0	0	1
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	0	0	0	0	0	0
146.25 - 168.75	SSE	0	0	0	0	0	0	1	0	0	0	0	1
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	1	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	3	1	0	0	0	0	4
258.75 - 281.25	W	0	0	0	0	0	2	3	1	2	1	0	9
281.25 - 303.75	WNW	0	0	0	0	1	0	0	1	9	1	0	12
303.75 - 326.25	NW	0	0	0	0	0	2	0	2	4	3	0	11
326.25 - 348.75	NNW	0	0	0	0	0	1	2	4	1	0	0	8

Total 50

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.05
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.138	0.046	0.000	0.000	0.000	0.000	0.18
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.092	0.138	0.046	0.092	0.046	0.000	0.41
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.046	0.415	0.046	0.000	0.55
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.092	0.184	0.138	0.000	0.51
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.046	0.092	0.184	0.046	0.000	0.000	0.37

Total 2.30

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	1	1	3	0	1	0	0	6
11.25 - 33.75	NNE	0	0	0	0	3	1	1	0	0	0	0	5
33.75 - 56.25	NE	0	0	0	0	1	2	1	1	0	0	0	5
56.25 - 78.75	ENE	0	0	0	0	1	0	0	0	0	0	0	1
78.75 - 101.25	E	0	0	0	0	2	0	0	0	0	0	0	2
101.25 - 123.75	ESE	0	0	0	0	0	1	0	0	0	0	0	1
123.75 - 146.25	SE	0	0	0	0	0	0	1	0	0	0	0	1
146.25 - 168.75	SSE	0	0	0	0	0	0	2	0	0	0	0	2
168.75 - 191.25	S	0	0	0	0	1	1	0	0	0	0	0	2
191.25 - 213.75	SSW	0	0	0	0	1	0	0	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	1	1	1	1	0	0	0	0	4
258.75 - 281.25	W	0	0	0	0	2	2	2	4	1	1	0	12
281.25 - 303.75	WNW	0	0	0	0	1	0	2	0	7	4	1	15
303.75 - 326.25	NW	0	0	0	0	1	3	1	7	4	2	0	18
326.25 - 348.75	NNW	0	0	0	0	1	2	3	2	1	0	0	9

Total 84

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.046	0.046	0.138	0.000	0.046	0.000	0.000	0.28
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.138	0.046	0.046	0.000	0.000	0.000	0.000	0.23
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.092	0.046	0.046	0.000	0.000	0.000	0.23
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.09
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.09
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.09
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.046	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.18
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.092	0.092	0.092	0.184	0.046	0.046	0.000	0.55
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.046	0.000	0.092	0.000	0.323	0.184	0.046	0.69
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.046	0.138	0.046	0.323	0.184	0.092	0.000	0.83
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.046	0.092	0.138	0.092	0.046	0.000	0.000	0.41

Total 3.87

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	1	6	15	6	5	6	14	8	0	61
11.25 - 33.75	NNE	0	0	3	5	16	13	16	2	3	8	3	69
33.75 - 56.25	NE	0	1	4	3	11	25	20	10	2	0	0	76
56.25 - 78.75	ENE	0	1	7	8	21	9	0	0	0	0	0	46
78.75 - 101.25	E	0	0	1	11	5	0	3	0	0	0	0	20
101.25 - 123.75	ESE	0	1	0	2	7	4	0	0	0	0	0	14
123.75 - 146.25	SE	0	0	1	2	1	3	2	2	3	1	0	15
146.25 - 168.75	SSE	0	0	3	5	9	4	0	3	4	2	0	30
168.75 - 191.25	S	0	0	0	5	8	3	4	0	2	2	0	24
191.25 - 213.75	SSW	0	0	1	6	5	0	3	0	0	3	0	18
213.75 - 236.25	SW	0	0	1	6	3	5	4	1	1	1	0	22
236.25 - 258.75	WSW	0	0	1	7	13	14	6	4	0	0	0	45
258.75 - 281.25	W	0	0	0	3	8	11	10	7	13	9	1	62
281.25 - 303.75	WNW	0	0	2	2	10	13	25	20	73	15	2	162
303.75 - 326.25	NW	0	0	0	2	7	15	24	31	39	6	0	124
326.25 - 348.75	NNW	0	0	2	3	11	8	9	9	7	0	0	49

Total 837

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.046	0.276	0.691	0.276	0.230	0.276	0.645	0.369	0.000	2.81
11.25 - 33.75	NNE	0.000	0.000	0.138	0.230	0.737	0.599	0.737	0.092	0.138	0.369	0.138	3.18
33.75 - 56.25	NE	0.000	0.046	0.184	0.138	0.507	1.152	0.922	0.461	0.092	0.000	0.000	3.50
56.25 - 78.75	ENE	0.000	0.046	0.323	0.369	0.968	0.415	0.000	0.000	0.000	0.000	0.000	2.12
78.75 - 101.25	E	0.000	0.000	0.046	0.507	0.230	0.000	0.138	0.000	0.000	0.000	0.000	0.92
101.25 - 123.75	ESE	0.000	0.046	0.000	0.092	0.323	0.184	0.000	0.000	0.000	0.000	0.000	0.65
123.75 - 146.25	SE	0.000	0.000	0.046	0.092	0.046	0.138	0.092	0.092	0.138	0.046	0.000	0.69
146.25 - 168.75	SSE	0.000	0.000	0.138	0.230	0.415	0.184	0.000	0.138	0.184	0.092	0.000	1.38
168.75 - 191.25	S	0.000	0.000	0.000	0.230	0.369	0.138	0.184	0.000	0.092	0.092	0.000	1.11
191.25 - 213.75	SSW	0.000	0.000	0.046	0.276	0.230	0.000	0.138	0.000	0.000	0.138	0.000	0.83
213.75 - 236.25	SW	0.000	0.000	0.046	0.276	0.138	0.230	0.184	0.046	0.046	0.046	0.000	1.01
236.25 - 258.75	WSW	0.000	0.000	0.046	0.323	0.599	0.645	0.276	0.184	0.000	0.000	0.000	2.07
258.75 - 281.25	W	0.000	0.000	0.000	0.138	0.369	0.507	0.461	0.323	0.599	0.415	0.046	2.86
281.25 - 303.75	WNW	0.000	0.000	0.092	0.092	0.461	0.599	1.152	0.922	3.364	0.691	0.092	7.47
303.75 - 326.25	NW	0.000	0.000	0.000	0.092	0.323	0.691	1.106	1.429	1.797	0.276	0.000	5.71
326.25 - 348.75	NNW	0.000	0.000	0.092	0.138	0.507	0.369	0.415	0.415	0.323	0.000	0.000	2.26

Total 38.57

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	3	2	3	15	17	10	0	1	0	0	51
11.25 - 33.75	NNE	0	0	4	6	20	13	10	2	0	0	0	55
33.75 - 56.25	NE	0	3	3	3	12	8	0	0	0	5	2	36
56.25 - 78.75	ENE	1	1	4	1	3	6	0	0	0	0	0	16
78.75 - 101.25	E	0	3	3	4	5	1	1	1	0	0	0	18
101.25 - 123.75	ESE	0	2	1	4	3	2	2	1	0	0	0	15
123.75 - 146.25	SE	0	2	0	4	15	4	6	4	4	2	0	41
146.25 - 168.75	SSE	0	0	5	3	3	10	9	9	10	2	0	51
168.75 - 191.25	S	1	0	4	4	11	5	1	3	2	2	0	33
191.25 - 213.75	SSW	0	2	6	4	7	9	6	7	6	11	1	59
213.75 - 236.25	SW	0	0	0	7	14	8	5	6	6	0	0	46
236.25 - 258.75	WSW	0	0	4	3	5	11	10	4	2	0	0	39
258.75 - 281.25	W	0	2	2	6	19	6	2	0	3	0	0	40
281.25 - 303.75	WNW	0	2	4	3	17	15	2	1	2	0	0	46
303.75 - 326.25	NW	0	0	6	6	25	31	13	4	2	0	0	87
326.25 - 348.75	NNW	0	2	7	5	20	20	19	9	4	0	0	86

Total 719

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.138	0.092	0.138	0.691	0.783	0.461	0.000	0.046	0.000	0.000	2.35
11.25 - 33.75	NNE	0.000	0.000	0.184	0.276	0.922	0.599	0.461	0.092	0.000	0.000	0.000	2.53
33.75 - 56.25	NE	0.000	0.138	0.138	0.138	0.553	0.369	0.000	0.000	0.000	0.230	0.092	1.66
56.25 - 78.75	ENE	0.046	0.046	0.184	0.046	0.138	0.276	0.000	0.000	0.000	0.000	0.000	0.74
78.75 - 101.25	E	0.000	0.138	0.138	0.184	0.230	0.046	0.046	0.046	0.000	0.000	0.000	0.83
101.25 - 123.75	ESE	0.000	0.092	0.046	0.184	0.138	0.092	0.092	0.046	0.000	0.000	0.000	0.69
123.75 - 146.25	SE	0.000	0.092	0.000	0.184	0.691	0.184	0.276	0.184	0.184	0.092	0.000	1.89
146.25 - 168.75	SSE	0.000	0.000	0.230	0.138	0.138	0.461	0.415	0.415	0.461	0.092	0.000	2.35
168.75 - 191.25	S	0.046	0.000	0.184	0.184	0.507	0.230	0.046	0.138	0.092	0.092	0.000	1.52
191.25 - 213.75	SSW	0.000	0.092	0.276	0.184	0.323	0.415	0.276	0.323	0.276	0.507	0.046	2.72
213.75 - 236.25	SW	0.000	0.000	0.000	0.323	0.645	0.369	0.230	0.276	0.276	0.000	0.000	2.12
236.25 - 258.75	WSW	0.000	0.000	0.184	0.138	0.230	0.507	0.461	0.184	0.092	0.000	0.000	1.80
258.75 - 281.25	W	0.000	0.092	0.092	0.276	0.876	0.276	0.092	0.000	0.138	0.000	0.000	1.84
281.25 - 303.75	WNW	0.000	0.092	0.184	0.138	0.783	0.691	0.092	0.046	0.092	0.000	0.000	2.12
303.75 - 326.25	NW	0.000	0.000	0.276	0.276	1.152	1.429	0.599	0.184	0.092	0.000	0.000	4.01
326.25 - 348.75	NNW	0.000	0.092	0.323	0.230	0.922	0.922	0.876	0.415	0.184	0.000	0.000	3.96

Total 33.13

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	3	1	8	7	0	0	0	0	0	20
11.25 - 33.75	NNE	0	3	2	4	12	8	0	0	0	0	0	29
33.75 - 56.25	NE	0	4	7	4	3	1	0	0	0	0	0	19
56.25 - 78.75	ENE	0	5	3	0	0	0	0	0	0	0	0	8
78.75 - 101.25	E	0	4	3	1	0	0	0	0	0	0	0	8
101.25 - 123.75	ESE	0	0	1	1	2	1	1	0	1	0	0	6
123.75 - 146.25	SE	0	1	0	3	10	8	2	6	2	6	12	42
146.25 - 168.75	SSE	0	1	1	0	12	9	7	5	7	5	0	35
168.75 - 191.25	S	0	1	5	3	5	0	2	3	2	3	8	27
191.25 - 213.75	SSW	0	1	1	2	5	4	3	1	3	1	5	22
213.75 - 236.25	SW	0	2	3	4	5	5	4	1	4	1	1	25
236.25 - 258.75	WSW	0	0	1	2	5	5	2	0	2	0	0	15
258.75 - 281.25	W	0	0	2	3	7	0	0	0	0	0	0	12
281.25 - 303.75	WNW	0	2	1	1	2	0	0	0	0	0	0	6
303.75 - 326.25	NW	0	2	0	4	6	0	0	0	0	0	0	12
326.25 - 348.75	NNW	0	3	0	0	1	1	0	0	0	0	0	5

Total 291

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.046	0.138	0.046	0.369	0.323	0.000	0.000	0.000	0.000	0.000	0.92
11.25 - 33.75	NNE	0.000	0.138	0.092	0.184	0.553	0.369	0.000	0.000	0.000	0.000	0.000	1.34
33.75 - 56.25	NE	0.000	0.184	0.323	0.184	0.138	0.046	0.000	0.000	0.000	0.000	0.000	0.88
56.25 - 78.75	ENE	0.000	0.230	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.37
78.75 - 101.25	E	0.000	0.184	0.138	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.37
101.25 - 123.75	ESE	0.000	0.000	0.046	0.046	0.092	0.046	0.046	0.000	0.046	0.000	0.000	0.28
123.75 - 146.25	SE	0.000	0.046	0.000	0.138	0.461	0.369	0.092	0.276	0.092	0.276	0.553	1.94
146.25 - 168.75	SSE	0.000	0.046	0.046	0.000	0.553	0.415	0.323	0.230	0.323	0.230	0.000	1.61
168.75 - 191.25	S	0.000	0.046	0.230	0.138	0.230	0.000	0.092	0.138	0.092	0.138	0.369	1.24
191.25 - 213.75	SSW	0.000	0.046	0.046	0.092	0.230	0.184	0.138	0.046	0.138	0.046	0.230	1.01
213.75 - 236.25	SW	0.000	0.092	0.138	0.184	0.230	0.230	0.184	0.046	0.184	0.046	0.046	1.15
236.25 - 258.75	WSW	0.000	0.000	0.046	0.092	0.230	0.230	0.092	0.000	0.092	0.000	0.000	0.69
258.75 - 281.25	W	0.000	0.000	0.092	0.138	0.323	0.000	0.000	0.000	0.000	0.000	0.000	0.55
281.25 - 303.75	WNW	0.000	0.092	0.046	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.28
303.75 - 326.25	NW	0.000	0.092	0.000	0.184	0.276	0.000	0.000	0.000	0.000	0.000	0.000	0.55
326.25 - 348.75	NNW	0.000	0.138	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.23

Total 13.41

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	3	1	8	7	0	0	0	0	0	0
11.25 - 33.75	NNE	0	3	2	4	12	8	0	0	0	0	0	3
33.75 - 56.25	NE	0	4	7	4	3	1	0	0	0	0	0	2
56.25 - 78.75	ENE	0	5	3	0	0	0	0	0	0	0	0	2
78.75 - 101.25	E	0	4	3	1	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	1	1	2	1	1	0	0	0	0	10
123.75 - 146.25	SE	0	1	0	3	10	8	2	6	9	10	3	71
146.25 - 168.75	SSE	0	1	1	0	12	9	7	5	2	0	0	22
168.75 - 191.25	S	0	1	5	3	5	0	2	3	0	0	0	8
191.25 - 213.75	SSW	0	1	1	2	5	4	3	1	0	0	0	9
213.75 - 236.25	SW	0	2	3	4	5	5	4	1	0	0	0	3
236.25 - 258.75	WSW	0	0	1	2	5	5	2	0	0	0	0	1
258.75 - 281.25	W	0	0	2	3	7	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	2	1	1	2	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	2	0	4	6	0	0	0	0	0	0	0
326.25 - 348.75	NNW	0	3	0	0	1	1	0	0	0	0	0	1

Total 132

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.046	0.138	0.046	0.369	0.323	0.000	0.000	0.000	0.000	0.000	0.00
11.25 - 33.75	NNE	0.000	0.138	0.092	0.184	0.553	0.369	0.000	0.000	0.000	0.000	0.000	0.14
33.75 - 56.25	NE	0.000	0.184	0.323	0.184	0.138	0.046	0.000	0.000	0.000	0.000	0.000	0.09
56.25 - 78.75	ENE	0.000	0.230	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.09
78.75 - 101.25	E	0.000	0.184	0.138	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.046	0.046	0.092	0.046	0.046	0.000	0.000	0.000	0.000	0.46
123.75 - 146.25	SE	0.000	0.046	0.000	0.138	0.461	0.369	0.092	0.276	0.415	0.461	0.138	3.27
146.25 - 168.75	SSE	0.000	0.046	0.046	0.000	0.553	0.415	0.323	0.230	0.092	0.000	0.000	1.01
168.75 - 191.25	S	0.000	0.046	0.230	0.138	0.230	0.000	0.092	0.138	0.000	0.000	0.000	0.37
191.25 - 213.75	SSW	0.000	0.046	0.046	0.092	0.230	0.184	0.138	0.046	0.000	0.000	0.000	0.41
213.75 - 236.25	SW	0.000	0.092	0.138	0.184	0.230	0.230	0.184	0.046	0.000	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.046	0.092	0.230	0.230	0.092	0.000	0.000	0.000	0.000	0.05
258.75 - 281.25	W	0.000	0.000	0.092	0.138	0.323	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.092	0.046	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.092	0.000	0.184	0.276	0.000	0.000	0.000	0.000	0.000	0.000	0.00
326.25 - 348.75	NNW	0.000	0.138	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.05

Total 6.08

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	5	9	11	47	38	20	6	17	8	0	141
11.25 - 33.75	NNE	0	6	11	19	63	43	28	4	3	8	3	162
33.75 - 56.25	NE	0	12	21	14	30	38	21	12	2	5	2	140
56.25 - 78.75	ENE	1	12	17	9	25	15	0	1	0	0	0	74
78.75 - 101.25	E	0	11	10	17	12	1	4	1	0	0	0	48
101.25 - 123.75	ESE	0	3	3	8	14	9	4	1	1	0	0	46
123.75 - 146.25	SE	0	4	1	12	36	23	13	19	21	20	15	175
146.25 - 168.75	SSE	0	2	10	8	36	32	27	23	23	9	0	143
168.75 - 191.25	S	1	2	14	15	30	9	9	9	6	7	8	94
191.25 - 213.75	SSW	0	4	9	14	23	17	16	9	9	15	6	110
213.75 - 236.25	SW	0	4	7	21	27	23	19	9	11	2	1	98
236.25 - 258.75	WSW	0	0	7	15	29	41	25	8	4	0	0	113
258.75 - 281.25	W	0	2	6	15	44	21	18	16	22	11	1	144
281.25 - 303.75	WNW	0	6	8	7	33	28	29	23	91	21	3	243
303.75 - 326.25	NW	0	4	6	16	45	51	38	44	58	22	1	273
326.25 - 348.75	NNW	0	8	9	8	34	33	34	26	18	0	0	166

Total 2,170

MISSING HOURS: 14
JOINT DATA RECOVERY: 99.4%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - MARCH 2016 (Q1)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.230	0.415	0.507	2.166	1.751	0.922	0.276	0.783	0.369	0.000	6.50
11.25 - 33.75	NNE	0.000	0.276	0.507	0.876	2.903	1.982	1.290	0.184	0.138	0.369	0.138	7.47
33.75 - 56.25	NE	0.000	0.553	0.968	0.645	1.382	1.751	0.968	0.553	0.092	0.230	0.092	6.45
56.25 - 78.75	ENE	0.046	0.553	0.783	0.415	1.152	0.691	0.000	0.046	0.000	0.000	0.000	3.41
78.75 - 101.25	E	0.000	0.507	0.461	0.783	0.553	0.046	0.184	0.046	0.000	0.000	0.000	2.21
101.25 - 123.75	ESE	0.000	0.138	0.138	0.369	0.645	0.415	0.184	0.046	0.046	0.000	0.000	2.12
123.75 - 146.25	SE	0.000	0.184	0.046	0.553	1.659	1.060	0.599	0.876	0.968	0.922	0.691	8.06
146.25 - 168.75	SSE	0.000	0.092	0.461	0.369	1.659	1.475	1.244	1.060	1.060	0.415	0.000	6.59
168.75 - 191.25	S	0.046	0.092	0.645	0.691	1.382	0.415	0.415	0.415	0.276	0.323	0.369	4.33
191.25 - 213.75	SSW	0.000	0.184	0.415	0.645	1.060	0.783	0.737	0.415	0.415	0.691	0.276	5.07
213.75 - 236.25	SW	0.000	0.184	0.323	0.968	1.244	1.060	0.876	0.415	0.507	0.092	0.046	4.52
236.25 - 258.75	WSW	0.000	0.000	0.323	0.691	1.336	1.889	1.152	0.369	0.184	0.000	0.000	5.21
258.75 - 281.25	W	0.000	0.092	0.276	0.691	2.028	0.968	0.829	0.737	1.014	0.507	0.046	6.64
281.25 - 303.75	WNW	0.000	0.276	0.369	0.323	1.521	1.290	1.336	1.060	4.194	0.968	0.138	11.20
303.75 - 326.25	NW	0.000	0.184	0.276	0.737	2.074	2.350	1.751	2.028	2.673	1.014	0.046	12.58
326.25 - 348.75	NNW	0.000	0.369	0.415	0.369	1.567	1.521	1.567	1.198	0.829	0.000	0.000	7.65

Total 100.00

MISSING HOURS: 14
JOINT DATA RECOVERY: 99.4%

Salem/Hope Creek Meteorological Tower

Joint Frequency Distribution of Wind Direction and Speed By Atmospheric Stability Class

33 Ft. Wind Level

300 – 33 Ft. Delta Temperature

April – June 2016

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SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	0	5	4	1	5	0	0	15
11.25 - 33.75	NNE	0	0	0	0	0	3	0	1	0	0	0	4
33.75 - 56.25	NE	0	0	0	0	0	3	2	0	0	0	0	5
56.25 - 78.75	ENE	0	0	0	0	0	1	0	0	0	0	0	1
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	1	3	2	2	3	0	11
146.25 - 168.75	SSE	0	0	0	0	0	3	1	2	0	0	0	6
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	1	0	0	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	1	1	0	0	0	0	2
258.75 - 281.25	W	0	0	0	0	0	0	2	2	7	0	0	11
281.25 - 303.75	WNW	0	0	0	0	0	0	0	4	10	1	0	15
303.75 - 326.25	NW	0	0	0	0	0	0	5	4	6	5	1	21
326.25 - 348.75	NNW	0	0	0	0	0	3	4	4	3	0	0	14

Total 106

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.230	0.184	0.046	0.230	0.000	0.000	0.69
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.138	0.000	0.046	0.000	0.000	0.000	0.18
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.138	0.092	0.000	0.000	0.000	0.000	0.23
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.046	0.138	0.092	0.092	0.138	0.000	0.51
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.138	0.046	0.092	0.000	0.000	0.000	0.28
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.09
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.092	0.092	0.322	0.000	0.000	0.51
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.184	0.460	0.046	0.000	0.69
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.230	0.184	0.276	0.230	0.046	0.97
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.138	0.184	0.184	0.138	0.000	0.000	0.64

Total 4.88

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	3	6	2	1	1	0	0	13
11.25 - 33.75	NNE	0	0	0	0	1	3	2	0	0	0	0	6
33.75 - 56.25	NE	0	0	0	0	3	1	1	2	0	0	0	7
56.25 - 78.75	ENE	0	0	0	0	0	2	0	0	0	0	0	2
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	1	0	0	0	2	0	0	3
146.25 - 168.75	SSE	0	0	0	0	2	6	2	0	0	0	0	10
168.75 - 191.25	S	0	0	0	0	1	2	0	0	0	0	0	3
191.25 - 213.75	SSW	0	0	0	0	1	0	0	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	3	0	0	0	0	0	0	3
236.25 - 258.75	WSW	0	0	0	0	2	3	2	0	0	0	0	7
258.75 - 281.25	W	0	0	0	0	2	0	3	1	2	0	1	9
281.25 - 303.75	WNW	0	0	0	0	1	0	2	1	3	2	0	9
303.75 - 326.25	NW	0	0	0	0	2	3	2	1	4	0	1	13
326.25 - 348.75	NNW	0	0	0	0	1	5	0	2	0	0	0	8

Total 95

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.138	0.276	0.092	0.046	0.046	0.000	0.000	0.60
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.046	0.138	0.092	0.000	0.000	0.000	0.000	0.28
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.138	0.046	0.046	0.092	0.000	0.000	0.000	0.32
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.09
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.092	0.000	0.000	0.14
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.092	0.276	0.092	0.000	0.000	0.000	0.000	0.46
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.14
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.14
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.092	0.138	0.092	0.000	0.000	0.000	0.000	0.32
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.092	0.000	0.138	0.046	0.092	0.000	0.046	0.41
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.046	0.000	0.092	0.046	0.138	0.092	0.000	0.41
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.092	0.138	0.092	0.046	0.184	0.000	0.046	0.60
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.046	0.230	0.000	0.092	0.000	0.000	0.000	0.37

Total 4.37

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	5	1	0	1	1	0	0	8
11.25 - 33.75	NNE	0	0	0	1	2	0	2	0	1	0	0	6
33.75 - 56.25	NE	0	0	0	0	1	3	2	2	0	0	0	8
56.25 - 78.75	ENE	0	0	0	0	7	1	1	0	0	0	0	9
78.75 - 101.25	E	0	0	0	1	1	0	1	0	0	0	0	3
101.25 - 123.75	ESE	0	0	0	0	1	0	0	0	0	0	0	1
123.75 - 146.25	SE	0	0	0	0	0	0	0	2	4	0	1	7
146.25 - 168.75	SSE	0	0	0	0	2	2	1	1	2	0	0	8
168.75 - 191.25	S	0	0	0	1	6	0	0	0	0	0	0	7
191.25 - 213.75	SSW	0	0	0	1	2	1	0	0	0	0	0	4
213.75 - 236.25	SW	0	0	0	0	3	2	1	0	0	0	0	6
236.25 - 258.75	WSW	0	0	0	0	2	5	4	1	0	1	0	13
258.75 - 281.25	W	0	0	0	0	0	4	3	1	0	2	0	10
281.25 - 303.75	WNW	0	0	0	0	3	3	1	4	5	1	0	17
303.75 - 326.25	NW	0	0	0	1	2	0	1	2	1	2	0	9
326.25 - 348.75	NNW	0	0	0	0	4	3	2	0	1	0	0	10

Total 126

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.230	0.046	0.000	0.046	0.046	0.000	0.000	0.37
11.25 - 33.75	NNE	0.000	0.000	0.000	0.046	0.092	0.000	0.092	0.000	0.046	0.000	0.000	0.28
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.138	0.092	0.092	0.000	0.000	0.000	0.37
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.322	0.046	0.046	0.000	0.000	0.000	0.000	0.41
78.75 - 101.25	E	0.000	0.000	0.000	0.046	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.14
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.092	0.184	0.000	0.046	0.32
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.092	0.092	0.046	0.046	0.092	0.000	0.000	0.37
168.75 - 191.25	S	0.000	0.000	0.000	0.046	0.276	0.000	0.000	0.000	0.000	0.000	0.000	0.32
191.25 - 213.75	SSW	0.000	0.000	0.000	0.046	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.18
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.138	0.092	0.046	0.000	0.000	0.000	0.000	0.28
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.092	0.230	0.184	0.046	0.000	0.046	0.000	0.60
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.184	0.138	0.046	0.000	0.092	0.000	0.46
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.138	0.138	0.046	0.184	0.230	0.046	0.000	0.78
303.75 - 326.25	NW	0.000	0.000	0.000	0.046	0.092	0.000	0.046	0.092	0.046	0.092	0.000	0.41
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.184	0.138	0.092	0.000	0.046	0.000	0.000	0.46

Total 5.80

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	2	4	8	5	13	5	9	0	0	47
11.25 - 33.75	NNE	0	3	2	5	13	14	3	5	3	0	0	48
33.75 - 56.25	NE	0	3	5	10	37	37	8	1	0	0	0	101
56.25 - 78.75	ENE	0	0	5	14	46	13	3	0	0	0	0	81
78.75 - 101.25	E	0	2	9	5	20	1	2	0	0	0	0	39
101.25 - 123.75	ESE	0	1	5	10	10	5	3	0	0	0	0	34
123.75 - 146.25	SE	0	0	0	2	7	9	16	22	11	0	0	67
146.25 - 168.75	SSE	0	3	3	6	14	13	26	19	34	7	1	126
168.75 - 191.25	S	0	2	2	5	13	15	14	6	7	0	0	64
191.25 - 213.75	SSW	0	0	3	9	23	13	4	4	3	0	0	59
213.75 - 236.25	SW	0	0	2	12	13	5	11	3	0	0	0	46
236.25 - 258.75	WSW	0	1	3	7	14	14	8	9	8	2	1	67
258.75 - 281.25	W	0	0	2	7	2	13	9	8	3	1	1	46
281.25 - 303.75	WNW	0	0	3	7	2	3	4	4	4	0	5	32
303.75 - 326.25	NW	0	0	0	4	5	4	7	6	7	3	2	38
326.25 - 348.75	NNW	0	0	2	3	9	4	10	7	8	0	0	43

Total 938

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.046	0.092	0.184	0.368	0.230	0.598	0.230	0.414	0.000	0.000	2.16
11.25 - 33.75	NNE	0.000	0.138	0.092	0.230	0.598	0.644	0.138	0.230	0.138	0.000	0.000	2.21
33.75 - 56.25	NE	0.000	0.138	0.230	0.460	1.703	1.703	0.368	0.046	0.000	0.000	0.000	4.65
56.25 - 78.75	ENE	0.000	0.000	0.230	0.644	2.117	0.598	0.138	0.000	0.000	0.000	0.000	3.73
78.75 - 101.25	E	0.000	0.092	0.414	0.230	0.920	0.046	0.092	0.000	0.000	0.000	0.000	1.79
101.25 - 123.75	ESE	0.000	0.046	0.230	0.460	0.460	0.230	0.138	0.000	0.000	0.000	0.000	1.56
123.75 - 146.25	SE	0.000	0.000	0.000	0.092	0.322	0.414	0.736	1.012	0.506	0.000	0.000	3.08
146.25 - 168.75	SSE	0.000	0.138	0.138	0.276	0.644	0.598	1.197	0.874	1.565	0.322	0.046	5.80
168.75 - 191.25	S	0.000	0.092	0.092	0.230	0.598	0.690	0.644	0.276	0.322	0.000	0.000	2.95
191.25 - 213.75	SSW	0.000	0.000	0.138	0.414	1.058	0.598	0.184	0.184	0.138	0.000	0.000	2.72
213.75 - 236.25	SW	0.000	0.000	0.092	0.552	0.598	0.230	0.506	0.138	0.000	0.000	0.000	2.12
236.25 - 258.75	WSW	0.000	0.046	0.138	0.322	0.644	0.644	0.368	0.414	0.368	0.092	0.046	3.08
258.75 - 281.25	W	0.000	0.000	0.092	0.322	0.092	0.598	0.414	0.368	0.138	0.046	0.046	2.12
281.25 - 303.75	WNW	0.000	0.000	0.138	0.322	0.092	0.138	0.184	0.184	0.184	0.000	0.230	1.47
303.75 - 326.25	NW	0.000	0.000	0.000	0.184	0.230	0.184	0.322	0.276	0.322	0.138	0.092	1.75
326.25 - 348.75	NNW	0.000	0.000	0.092	0.138	0.414	0.184	0.460	0.322	0.368	0.000	0.000	1.98

Total 43.17

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	3	5	5	5	11	5	3	6	0	0	43
11.25 - 33.75	NNE	0	3	8	5	15	6	1	0	0	0	0	38
33.75 - 56.25	NE	0	5	2	5	13	1	2	0	0	0	0	28
56.25 - 78.75	ENE	0	5	12	3	2	1	0	0	0	0	0	23
78.75 - 101.25	E	0	1	7	9	4	0	0	0	0	0	0	21
101.25 - 123.75	ESE	0	3	0	6	11	3	0	0	0	0	0	23
123.75 - 146.25	SE	0	0	2	4	9	12	11	7	10	1	0	56
146.25 - 168.75	SSE	0	0	1	4	15	15	7	13	5	0	0	60
168.75 - 191.25	S	0	1	1	5	16	5	6	1	4	2	0	41
191.25 - 213.75	SSW	0	1	2	3	20	14	7	4	14	3	0	68
213.75 - 236.25	SW	0	1	4	8	14	19	15	10	1	0	0	72
236.25 - 258.75	WSW	0	1	4	6	23	12	8	0	2	0	0	56
258.75 - 281.25	W	0	2	6	3	4	8	3	4	0	0	0	30
281.25 - 303.75	WNW	0	2	3	1	5	10	3	1	0	0	0	25
303.75 - 326.25	NW	0	6	7	8	9	12	16	7	1	0	0	66
326.25 - 348.75	NNW	0	0	4	5	9	7	9	4	1	0	0	39

Total 689

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.138	0.230	0.230	0.230	0.506	0.230	0.138	0.276	0.000	0.000	1.98
11.25 - 33.75	NNE	0.000	0.138	0.368	0.230	0.690	0.276	0.046	0.000	0.000	0.000	0.000	1.75
33.75 - 56.25	NE	0.000	0.230	0.092	0.230	0.598	0.046	0.092	0.000	0.000	0.000	0.000	1.29
56.25 - 78.75	ENE	0.000	0.230	0.552	0.138	0.092	0.046	0.000	0.000	0.000	0.000	0.000	1.06
78.75 - 101.25	E	0.000	0.046	0.322	0.414	0.184	0.000	0.000	0.000	0.000	0.000	0.000	0.97
101.25 - 123.75	ESE	0.000	0.138	0.000	0.276	0.506	0.138	0.000	0.000	0.000	0.000	0.000	1.06
123.75 - 146.25	SE	0.000	0.000	0.092	0.184	0.414	0.552	0.506	0.322	0.460	0.046	0.000	2.58
146.25 - 168.75	SSE	0.000	0.000	0.046	0.184	0.690	0.690	0.322	0.598	0.230	0.000	0.000	2.76
168.75 - 191.25	S	0.000	0.046	0.046	0.230	0.736	0.230	0.276	0.046	0.184	0.092	0.000	1.89
191.25 - 213.75	SSW	0.000	0.046	0.092	0.138	0.920	0.644	0.322	0.184	0.644	0.138	0.000	3.13
213.75 - 236.25	SW	0.000	0.046	0.184	0.368	0.644	0.874	0.690	0.460	0.046	0.000	0.000	3.31
236.25 - 258.75	WSW	0.000	0.046	0.184	0.276	1.058	0.552	0.368	0.000	0.092	0.000	0.000	2.58
258.75 - 281.25	W	0.000	0.092	0.276	0.138	0.184	0.368	0.138	0.184	0.000	0.000	0.000	1.38
281.25 - 303.75	WNW	0.000	0.092	0.138	0.046	0.230	0.460	0.138	0.046	0.000	0.000	0.000	1.15
303.75 - 326.25	NW	0.000	0.276	0.322	0.368	0.414	0.552	0.736	0.322	0.046	0.000	0.000	3.04
326.25 - 348.75	NNW	0.000	0.000	0.184	0.230	0.414	0.322	0.414	0.184	0.046	0.000	0.000	1.79

Total 31.71

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	1	1	4	9	1	0	0	0	0	16
11.25 - 33.75	NNE	0	0	0	0	2	2	0	0	0	0	0	4
33.75 - 56.25	NE	0	1	0	6	4	0	0	0	0	0	0	11
56.25 - 78.75	ENE	0	2	1	1	3	1	0	0	0	0	0	8
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	3	1	3	1	0	0	0	0	0	8
123.75 - 146.25	SE	0	0	0	1	10	12	6	6	2	1	0	38
146.25 - 168.75	SSE	0	0	1	0	3	7	0	1	1	0	0	13
168.75 - 191.25	S	0	1	0	0	1	2	0	0	0	0	0	4
191.25 - 213.75	SSW	0	1	2	0	1	3	1	1	0	0	0	9
213.75 - 236.25	SW	0	0	0	2	7	1	0	0	0	0	0	10
236.25 - 258.75	WSW	0	0	1	4	9	9	0	0	0	0	0	23
258.75 - 281.25	W	0	1	0	1	1	3	0	0	0	0	0	6
281.25 - 303.75	WNW	0	2	1	2	2	1	0	0	0	0	0	8
303.75 - 326.25	NW	0	1	2	3	2	2	0	0	0	0	0	10
326.25 - 348.75	NNW	0	0	1	1	5	2	0	0	0	0	0	9

Total 178

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.046	0.046	0.184	0.414	0.046	0.000	0.000	0.000	0.000	0.74
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.18
33.75 - 56.25	NE	0.000	0.046	0.000	0.276	0.184	0.000	0.000	0.000	0.000	0.000	0.000	0.51
56.25 - 78.75	ENE	0.000	0.092	0.046	0.046	0.138	0.046	0.000	0.000	0.000	0.000	0.000	0.37
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
101.25 - 123.75	ESE	0.000	0.000	0.138	0.046	0.138	0.046	0.000	0.000	0.000	0.000	0.000	0.37
123.75 - 146.25	SE	0.000	0.000	0.000	0.046	0.460	0.552	0.276	0.276	0.092	0.046	0.000	1.75
146.25 - 168.75	SSE	0.000	0.000	0.046	0.000	0.138	0.322	0.000	0.046	0.046	0.000	0.000	0.60
168.75 - 191.25	S	0.000	0.046	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.18
191.25 - 213.75	SSW	0.000	0.046	0.092	0.000	0.046	0.138	0.046	0.046	0.000	0.000	0.000	0.41
213.75 - 236.25	SW	0.000	0.000	0.000	0.092	0.322	0.046	0.000	0.000	0.000	0.000	0.000	0.46
236.25 - 258.75	WSW	0.000	0.000	0.046	0.184	0.414	0.414	0.000	0.000	0.000	0.000	0.000	1.06
258.75 - 281.25	W	0.000	0.046	0.000	0.046	0.046	0.138	0.000	0.000	0.000	0.000	0.000	0.28
281.25 - 303.75	WNW	0.000	0.092	0.046	0.092	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.37
303.75 - 326.25	NW	0.000	0.046	0.092	0.138	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.46
326.25 - 348.75	NNW	0.000	0.000	0.046	0.046	0.230	0.092	0.000	0.000	0.000	0.000	0.000	0.41

Total 8.19

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	0	0	0	0	0	0	0	0
11.25 - 33.75	NNE	0	0	0	0	0	0	0	0	0	0	0	0
33.75 - 56.25	NE	0	0	0	1	0	0	0	0	0	0	0	1
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	1	1	1	1	0	0	0	0	0	4
123.75 - 146.25	SE	0	0	0	1	2	2	3	9	1	0	0	18
146.25 - 168.75	SSE	0	0	0	0	1	0	0	0	0	0	0	1
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	1	0	4	1	0	0	0	0	0	6
236.25 - 258.75	WSW	0	0	1	0	2	3	0	0	0	0	0	6
258.75 - 281.25	W	0	0	1	0	1	0	0	0	0	0	0	2
281.25 - 303.75	WNW	0	0	0	1	0	0	0	0	0	0	0	1
303.75 - 326.25	NW	0	0	1	0	0	0	0	0	0	0	0	1
326.25 - 348.75	NNW	0	0	0	0	0	0	0	0	0	0	0	0

Total 41

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
33.75 - 56.25	NE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
101.25 - 123.75	ESE	0.000	0.000	0.046	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.18
123.75 - 146.25	SE	0.000	0.000	0.000	0.046	0.092	0.092	0.138	0.414	0.046	0.000	0.000	0.83
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.046	0.000	0.184	0.046	0.000	0.000	0.000	0.000	0.000	0.28
236.25 - 258.75	WSW	0.000	0.000	0.046	0.000	0.092	0.138	0.000	0.000	0.000	0.000	0.000	0.28
258.75 - 281.25	W	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.09
281.25 - 303.75	WNW	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
303.75 - 326.25	NW	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Total 1.89

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
TOTAL HOURS

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											
		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	4	8	10	25	37	25	11	22	0	0	142
11.25 - 33.75	NNE	0	6	10	11	33	28	8	6	4	0	0	106
33.75 - 56.25	NE	0	9	7	22	58	45	15	5	0	0	0	161
56.25 - 78.75	ENE	0	7	18	18	58	19	4	0	0	0	0	124
78.75 - 101.25	E	0	3	16	15	28	1	3	0	0	0	0	66
101.25 - 123.75	ESE	0	4	9	18	26	10	3	0	0	0	0	70
123.75 - 146.25	SE	0	0	2	8	29	36	39	48	32	5	1	200
146.25 - 168.75	SSE	0	3	5	10	37	46	37	36	42	7	1	224
168.75 - 191.25	S	0	4	3	11	37	24	20	7	11	2	0	119
191.25 - 213.75	SSW	0	2	7	13	48	31	12	9	17	3	0	142
213.75 - 236.25	SW	0	1	7	22	44	28	27	13	1	0	0	143
236.25 - 258.75	WSW	0	2	9	17	52	47	23	10	10	3	1	174
258.75 - 281.25	W	0	3	9	11	10	28	20	16	12	3	2	114
281.25 - 303.75	WNW	0	4	7	11	13	17	10	14	22	4	5	107
303.75 - 326.25	NW	0	7	10	16	20	21	31	20	19	10	4	158
326.25 - 348.75	NNW	0	0	7	9	28	24	25	17	13	0	0	123

Total 2,173

MISSING HOURS: 11
JOINT DATA RECOVERY: 98.5%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
APRIL - JUNE 2016 (Q2)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
FREQUENCY (%)

WIND DIRECTION		WIND SPEED GROUPS (m/sec)											
		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.184	0.368	0.460	1.150	1.703	1.150	0.506	1.012	0.000	0.000	6.53
11.25 - 33.75	NNE	0.000	0.276	0.460	0.506	1.519	1.289	0.368	0.276	0.184	0.000	0.000	4.88
33.75 - 56.25	NE	0.000	0.414	0.322	1.012	2.669	2.071	0.690	0.230	0.000	0.000	0.000	7.41
56.25 - 78.75	ENE	0.000	0.322	0.828	0.828	2.669	0.874	0.184	0.000	0.000	0.000	0.000	5.71
78.75 - 101.25	E	0.000	0.138	0.736	0.690	1.289	0.046	0.138	0.000	0.000	0.000	0.000	3.04
101.25 - 123.75	ESE	0.000	0.184	0.414	0.828	1.197	0.460	0.138	0.000	0.000	0.000	0.000	3.22
123.75 - 146.25	SE	0.000	0.000	0.092	0.368	1.335	1.657	1.795	2.209	1.473	0.230	0.046	9.20
146.25 - 168.75	SSE	0.000	0.138	0.230	0.460	1.703	2.117	1.703	1.657	1.933	0.322	0.046	10.31
168.75 - 191.25	S	0.000	0.184	0.138	0.506	1.703	1.104	0.920	0.322	0.506	0.092	0.000	5.48
191.25 - 213.75	SSW	0.000	0.092	0.322	0.598	2.209	1.427	0.552	0.414	0.782	0.138	0.000	6.53
213.75 - 236.25	SW	0.000	0.046	0.322	1.012	2.025	1.289	1.243	0.598	0.046	0.000	0.000	6.58
236.25 - 258.75	WSW	0.000	0.092	0.414	0.782	2.393	2.163	1.058	0.460	0.460	0.138	0.046	8.01
258.75 - 281.25	W	0.000	0.138	0.414	0.506	0.460	1.289	0.920	0.736	0.552	0.138	0.092	5.25
281.25 - 303.75	WNW	0.000	0.184	0.322	0.506	0.598	0.782	0.460	0.644	1.012	0.184	0.230	4.92
303.75 - 326.25	NW	0.000	0.322	0.460	0.736	0.920	0.966	1.427	0.920	0.874	0.460	0.184	7.27
326.25 - 348.75	NNW	0.000	0.000	0.322	0.414	1.289	1.104	1.150	0.782	0.598	0.000	0.000	5.66

Total 100

MISSING HOURS: 11
JOINT DATA RECOVERY: 99.5%

Salem/Hope Creek Meteorological Tower

Joint Frequency Distribution of Wind Direction and Speed By Atmospheric Stability Class

33 Ft. Wind Level

300 – 33 Ft. Delta Temperature

July – September 2016

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SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	2	1	3	0	0	1	0	0	7
11.25 - 33.75	NNE	0	0	0	0	0	0	1	0	0	0	0	1
33.75 - 56.25	NE	0	0	0	0	0	0	9	5	4	0	0	18
56.25 - 78.75	ENE	0	0	0	1	1	0	0	0	0	0	0	2
78.75 - 101.25	E	0	0	0	1	0	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	6	5	4	0	0	15
146.25 - 168.75	SSE	0	0	0	0	1	2	0	1	0	0	0	4
168.75 - 191.25	S	0	0	0	2	1	3	0	0	0	0	0	6
191.25 - 213.75	SSW	0	0	0	1	0	0	0	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	0	0	2	0	0	0	0	0	2
236.25 - 258.75	WSW	0	0	0	0	4	1	0	0	0	0	0	5
258.75 - 281.25	W	0	0	0	1	1	1	0	0	0	0	0	3
281.25 - 303.75	WNW	0	0	0	1	0	0	0	0	0	0	0	1
303.75 - 326.25	NW	0	0	1	0	2	1	2	2	0	0	0	8
326.25 - 348.75	NNW	0	0	0	2	1	2	5	0	0	0	0	10

Total 84

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.093	0.047	0.140	0.000	0.000	0.047	0.000	0.000	0.33
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.05
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.420	0.233	0.187	0.000	0.000	0.84
56.25 - 78.75	ENE	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.09
78.75 - 101.25	E	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.280	0.233	0.187	0.000	0.000	0.70
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.047	0.093	0.000	0.047	0.000	0.000	0.000	0.19
168.75 - 191.25	S	0.000	0.000	0.000	0.093	0.047	0.140	0.000	0.000	0.000	0.000	0.000	0.28
191.25 - 213.75	SSW	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.09
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.187	0.047	0.000	0.000	0.000	0.000	0.000	0.23
258.75 - 281.25	W	0.000	0.000	0.000	0.047	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.14
281.25 - 303.75	WNW	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
303.75 - 326.25	NW	0.000	0.000	0.047	0.000	0.093	0.047	0.093	0.093	0.000	0.000	0.000	0.37
326.25 - 348.75	NNW	0.000	0.000	0.000	0.093	0.047	0.093	0.233	0.000	0.000	0.000	0.000	0.47

Total 3.92

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	0	0	0	0	2	0	0	0	0	3
11.25 - 33.75	NNE	0	0	0	0	0	0	2	0	0	0	0	2
33.75 - 56.25	NE	0	0	0	0	0	0	0	0	1	0	0	1
56.25 - 78.75	ENE	0	0	0	0	0	1	0	0	0	0	0	1
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	2	7	2	0	0	11
146.25 - 168.75	SSE	0	0	0	0	3	5	2	2	4	0	0	16
168.75 - 191.25	S	0	0	0	0	1	7	0	1	0	0	0	9
191.25 - 213.75	SSW	0	0	0	0	3	0	0	1	0	0	0	4
213.75 - 236.25	SW	0	0	0	0	4	1	0	0	0	0	0	5
236.25 - 258.75	WSW	0	0	0	0	0	5	2	2	0	0	0	9
258.75 - 281.25	W	0	0	0	1	0	0	0	0	0	0	0	1
281.25 - 303.75	WNW	0	0	0	0	0	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	0	0	0	1	0	1	0	0	0	0	2
326.25 - 348.75	NNW	0	0	0	1	0	1	1	0	0	0	0	3

Total 67

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.047	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.14
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.09
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.05
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.093	0.327	0.093	0.000	0.000	0.51
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.140	0.233	0.093	0.093	0.187	0.000	0.000	0.75
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.047	0.327	0.000	0.047	0.000	0.000	0.000	0.42
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.140	0.000	0.000	0.047	0.000	0.000	0.000	0.19
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.187	0.047	0.000	0.000	0.000	0.000	0.000	0.23
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.233	0.093	0.093	0.000	0.000	0.000	0.42
258.75 - 281.25	W	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.047	0.000	0.047	0.000	0.000	0.000	0.000	0.09
326.25 - 348.75	NNW	0.000	0.000	0.000	0.047	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.14

Total 3.13

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	1	4	5	3	0	0	0	0	13
11.25 - 33.75	NNE	0	0	0	1	1	2	2	1	0	0	0	7
33.75 - 56.25	NE	0	0	0	1	2	2	2	0	2	0	0	9
56.25 - 78.75	ENE	0	0	0	2	2	3	0	0	0	0	0	7
78.75 - 101.25	E	0	0	0	0	5	1	0	0	0	0	0	6
101.25 - 123.75	ESE	0	0	0	0	1	0	0	0	0	0	0	1
123.75 - 146.25	SE	0	0	0	0	1	3	3	3	4	0	0	14
146.25 - 168.75	SSE	0	0	0	2	5	6	2	0	3	0	0	18
168.75 - 191.25	S	0	0	1	0	5	2	1	2	0	0	0	11
191.25 - 213.75	SSW	0	0	0	1	5	0	3	3	0	0	0	12
213.75 - 236.25	SW	0	0	0	0	11	8	1	0	0	0	0	20
236.25 - 258.75	WSW	0	0	0	0	6	7	2	1	0	0	0	16
258.75 - 281.25	W	0	0	0	0	1	3	3	0	0	0	0	7
281.25 - 303.75	WNW	0	0	0	0	1	3	3	0	0	0	0	7
303.75 - 326.25	NW	0	0	0	1	2	4	4	4	1	0	0	16
326.25 - 348.75	NNW	0	0	0	0	6	3	0	0	3	0	0	12

Total 176

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.047	0.187	0.233	0.140	0.000	0.000	0.000	0.000	0.61
11.25 - 33.75	NNE	0.000	0.000	0.000	0.047	0.047	0.093	0.093	0.047	0.000	0.000	0.000	0.33
33.75 - 56.25	NE	0.000	0.000	0.000	0.047	0.093	0.093	0.093	0.000	0.093	0.000	0.000	0.42
56.25 - 78.75	ENE	0.000	0.000	0.000	0.093	0.093	0.140	0.000	0.000	0.000	0.000	0.000	0.33
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.233	0.047	0.000	0.000	0.000	0.000	0.000	0.28
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.05
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.047	0.140	0.140	0.140	0.187	0.000	0.000	0.65
146.25 - 168.75	SSE	0.000	0.000	0.000	0.093	0.233	0.280	0.093	0.000	0.140	0.000	0.000	0.84
168.75 - 191.25	S	0.000	0.000	0.047	0.000	0.233	0.093	0.047	0.093	0.000	0.000	0.000	0.51
191.25 - 213.75	SSW	0.000	0.000	0.000	0.047	0.233	0.000	0.140	0.140	0.000	0.000	0.000	0.56
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.513	0.373	0.047	0.000	0.000	0.000	0.000	0.93
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.280	0.327	0.093	0.047	0.000	0.000	0.000	0.75
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.047	0.140	0.140	0.000	0.000	0.000	0.000	0.33
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.047	0.140	0.140	0.000	0.000	0.000	0.000	0.33
303.75 - 326.25	NW	0.000	0.000	0.000	0.047	0.093	0.187	0.187	0.187	0.047	0.000	0.000	0.75
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.280	0.140	0.000	0.000	0.140	0.000	0.000	0.56

Total 8.21

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	1	1	2	0	9	6	1	1	0	0	0	21
11.25 - 33.75	NNE	0	0	0	2	7	4	9	2	0	0	0	24
33.75 - 56.25	NE	0	0	4	3	16	12	9	4	7	1	0	56
56.25 - 78.75	ENE	1	0	1	3	15	6	11	6	4	1	0	48
78.75 - 101.25	E	0	0	1	5	7	4	2	5	3	0	0	27
101.25 - 123.75	ESE	0	0	1	0	4	0	0	0	0	0	0	5
123.75 - 146.25	SE	0	0	3	5	4	7	5	14	27	2	0	67
146.25 - 168.75	SSE	0	0	0	6	21	11	24	22	41	3	0	128
168.75 - 191.25	S	0	0	2	10	16	18	31	24	14	1	0	116
191.25 - 213.75	SSW	0	0	1	9	25	32	18	13	5	0	0	103
213.75 - 236.25	SW	0	1	0	8	28	26	21	10	0	0	0	94
236.25 - 258.75	WSW	0	1	4	8	17	31	7	4	0	0	0	72
258.75 - 281.25	W	0	0	2	2	17	15	8	0	0	0	0	44
281.25 - 303.75	WNW	0	0	2	4	9	9	7	4	0	0	0	35
303.75 - 326.25	NW	0	3	5	4	12	17	14	3	0	0	0	58
326.25 - 348.75	NNW	1	1	6	11	21	6	4	3	2	0	0	55

Total 953

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.047	0.047	0.093	0.000	0.420	0.280	0.047	0.047	0.000	0.000	0.000	0.98
11.25 - 33.75	NNE	0.000	0.000	0.000	0.093	0.327	0.187	0.420	0.093	0.000	0.000	0.000	1.12
33.75 - 56.25	NE	0.000	0.000	0.187	0.140	0.747	0.560	0.420	0.187	0.327	0.047	0.000	2.61
56.25 - 78.75	ENE	0.047	0.000	0.047	0.140	0.700	0.280	0.513	0.280	0.187	0.047	0.000	2.24
78.75 - 101.25	E	0.000	0.000	0.047	0.233	0.327	0.187	0.093	0.233	0.140	0.000	0.000	1.26
101.25 - 123.75	ESE	0.000	0.000	0.047	0.000	0.187	0.000	0.000	0.000	0.000	0.000	0.000	0.23
123.75 - 146.25	SE	0.000	0.000	0.140	0.233	0.187	0.327	0.233	0.653	1.260	0.093	0.000	3.13
146.25 - 168.75	SSE	0.000	0.000	0.000	0.280	0.980	0.513	1.120	1.027	1.913	0.140	0.000	5.97
168.75 - 191.25	S	0.000	0.000	0.093	0.467	0.747	0.840	1.447	1.120	0.653	0.047	0.000	5.41
191.25 - 213.75	SSW	0.000	0.000	0.047	0.420	1.167	1.493	0.840	0.607	0.233	0.000	0.000	4.81
213.75 - 236.25	SW	0.000	0.047	0.000	0.373	1.307	1.213	0.980	0.467	0.000	0.000	0.000	4.39
236.25 - 258.75	WSW	0.000	0.047	0.187	0.373	0.793	1.447	0.327	0.187	0.000	0.000	0.000	3.36
258.75 - 281.25	W	0.000	0.000	0.093	0.093	0.793	0.700	0.373	0.000	0.000	0.000	0.000	2.05
281.25 - 303.75	WNW	0.000	0.000	0.093	0.187	0.420	0.420	0.327	0.187	0.000	0.000	0.000	1.63
303.75 - 326.25	NW	0.000	0.140	0.233	0.187	0.560	0.793	0.653	0.140	0.000	0.000	0.000	2.71
326.25 - 348.75	NNW	0.047	0.047	0.280	0.513	0.980	0.280	0.187	0.140	0.093	0.000	0.000	2.57

Total 44.47

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	3	5	11	12	0	0	0	0	0	32
11.25 - 33.75	NNE	0	0	4	6	19	10	0	0	0	0	0	39
33.75 - 56.25	NE	0	2	11	7	14	6	2	0	0	0	0	42
56.25 - 78.75	ENE	0	5	8	10	6	1	0	0	0	0	0	30
78.75 - 101.25	E	0	5	11	9	5	1	0	0	0	0	0	31
101.25 - 123.75	ESE	0	1	2	5	17	9	2	0	0	0	0	36
123.75 - 146.25	SE	0	0	2	0	1	7	11	6	1	0	0	28
146.25 - 168.75	SSE	0	2	1	1	9	5	9	2	0	0	0	29
168.75 - 191.25	S	0	0	1	3	7	3	4	2	0	0	0	20
191.25 - 213.75	SSW	0	1	2	2	12	16	17	1	0	0	0	51
213.75 - 236.25	SW	0	0	11	10	28	22	10	0	0	0	0	81
236.25 - 258.75	WSW	0	1	5	8	32	12	4	0	0	0	0	62
258.75 - 281.25	W	0	3	3	7	13	4	0	1	1	0	0	32
281.25 - 303.75	WNW	0	3	4	8	11	8	2	0	0	0	0	36
303.75 - 326.25	NW	0	2	3	1	21	11	8	0	0	0	0	46
326.25 - 348.75	NNW	0	1	3	2	6	3	5	3	0	0	0	23

Total 618

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.047	0.140	0.233	0.513	0.560	0.000	0.000	0.000	0.000	0.000	1.49
11.25 - 33.75	NNE	0.000	0.000	0.187	0.280	0.887	0.467	0.000	0.000	0.000	0.000	0.000	1.82
33.75 - 56.25	NE	0.000	0.093	0.513	0.327	0.653	0.280	0.093	0.000	0.000	0.000	0.000	1.96
56.25 - 78.75	ENE	0.000	0.233	0.373	0.467	0.280	0.047	0.000	0.000	0.000	0.000	0.000	1.40
78.75 - 101.25	E	0.000	0.233	0.513	0.420	0.233	0.047	0.000	0.000	0.000	0.000	0.000	1.45
101.25 - 123.75	ESE	0.000	0.047	0.093	0.233	0.793	0.420	0.093	0.000	0.000	0.000	0.000	1.68
123.75 - 146.25	SE	0.000	0.000	0.093	0.000	0.047	0.327	0.513	0.280	0.047	0.000	0.000	1.31
146.25 - 168.75	SSE	0.000	0.093	0.047	0.047	0.420	0.233	0.420	0.093	0.000	0.000	0.000	1.35
168.75 - 191.25	S	0.000	0.000	0.047	0.140	0.327	0.140	0.187	0.093	0.000	0.000	0.000	0.93
191.25 - 213.75	SSW	0.000	0.047	0.093	0.093	0.560	0.747	0.793	0.047	0.000	0.000	0.000	2.38
213.75 - 236.25	SW	0.000	0.000	0.513	0.467	1.307	1.027	0.467	0.000	0.000	0.000	0.000	3.78
236.25 - 258.75	WSW	0.000	0.047	0.233	0.373	1.493	0.560	0.187	0.000	0.000	0.000	0.000	2.89
258.75 - 281.25	W	0.000	0.140	0.140	0.327	0.607	0.187	0.000	0.047	0.047	0.000	0.000	1.49
281.25 - 303.75	WNW	0.000	0.140	0.187	0.373	0.513	0.373	0.093	0.000	0.000	0.000	0.000	1.68
303.75 - 326.25	NW	0.000	0.093	0.140	0.047	0.980	0.513	0.373	0.000	0.000	0.000	0.000	2.15
326.25 - 348.75	NNW	0.000	0.047	0.140	0.093	0.280	0.140	0.233	0.140	0.000	0.000	0.000	1.07

Total 28.84

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	2	4	18	22	0	0	0	0	0	47
11.25 - 33.75	NNE	0	0	3	3	17	11	0	0	0	0	0	34
33.75 - 56.25	NE	0	1	7	9	22	3	0	0	0	0	0	42
56.25 - 78.75	ENE	0	2	1	8	3	0	0	0	0	0	0	14
78.75 - 101.25	E	0	2	9	5	1	0	0	0	0	0	0	17
101.25 - 123.75	ESE	0	3	0	6	1	0	0	0	0	0	0	10
123.75 - 146.25	SE	0	0	0	0	1	0	0	0	0	0	0	1
146.25 - 168.75	SSE	0	0	0	0	0	2	1	0	0	0	0	3
168.75 - 191.25	S	0	0	0	2	1	0	0	0	0	0	0	3
191.25 - 213.75	SSW	0	0	2	0	1	0	0	0	0	0	0	3
213.75 - 236.25	SW	0	1	2	1	4	0	0	0	0	0	0	8
236.25 - 258.75	WSW	0	1	2	4	3	0	1	0	0	0	0	11
258.75 - 281.25	W	0	0	2	2	1	1	0	0	0	0	0	6
281.25 - 303.75	WNW	0	2	1	0	1	0	1	0	0	0	0	5
303.75 - 326.25	NW	0	0	1	1	3	5	0	0	0	0	0	10
326.25 - 348.75	NNW	0	0	1	1	6	6	0	0	0	0	0	14

Total 228

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.047	0.093	0.187	0.840	1.027	0.000	0.000	0.000	0.000	0.000	2.19
11.25 - 33.75	NNE	0.000	0.000	0.140	0.140	0.793	0.513	0.000	0.000	0.000	0.000	0.000	1.59
33.75 - 56.25	NE	0.000	0.047	0.327	0.420	1.027	0.140	0.000	0.000	0.000	0.000	0.000	1.96
56.25 - 78.75	ENE	0.000	0.093	0.047	0.373	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.65
78.75 - 101.25	E	0.000	0.093	0.420	0.233	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.79
101.25 - 123.75	ESE	0.000	0.140	0.000	0.280	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.47
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.05
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.093	0.047	0.000	0.000	0.000	0.000	0.14
168.75 - 191.25	S	0.000	0.000	0.000	0.093	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.14
191.25 - 213.75	SSW	0.000	0.000	0.093	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.14
213.75 - 236.25	SW	0.000	0.047	0.093	0.047	0.187	0.000	0.000	0.000	0.000	0.000	0.000	0.37
236.25 - 258.75	WSW	0.000	0.047	0.093	0.187	0.140	0.000	0.047	0.000	0.000	0.000	0.000	0.51
258.75 - 281.25	W	0.000	0.000	0.093	0.093	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.28
281.25 - 303.75	WNW	0.000	0.093	0.047	0.000	0.047	0.000	0.047	0.000	0.000	0.000	0.000	0.23
303.75 - 326.25	NW	0.000	0.000	0.047	0.047	0.140	0.233	0.000	0.000	0.000	0.000	0.000	0.47
326.25 - 348.75	NNW	0.000	0.000	0.047	0.047	0.280	0.280	0.000	0.000	0.000	0.000	0.000	0.65

Total 10.64

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	1	1	0	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	2	5	1	0	0	0	0	0	8
33.75 - 56.25	NE	0	0	0	0	5	1	0	0	0	0	0	6
56.25 - 78.75	ENE	0	0	0	1	0	0	0	0	0	0	0	1
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	0	0	0	0	0	0
146.25 - 168.75	SSE	0	0	0	0	0	0	0	0	0	0	0	0
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	0	0	0	0	0	0	0	0
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	0	0	0	0	0	0	0	0	0	0	0
303.75 - 326.25	NW	0	0	0	0	0	0	0	0	0	0	0	0
326.25 - 348.75	NNW	0	0	0	0	0	0	0	0	0	0	0	0

Total 17

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.09
11.25 - 33.75	NNE	0.000	0.000	0.000	0.093	0.233	0.047	0.000	0.000	0.000	0.000	0.000	0.37
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.233	0.047	0.000	0.000	0.000	0.000	0.000	0.28
56.25 - 78.75	ENE	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Total 0.79

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	1	4	7	12	44	49	6	1	1	0	0	125
11.25 - 33.75	NNE	0	0	7	14	49	28	14	3	0	0	0	115
33.75 - 56.25	NE	0	3	22	20	59	24	22	9	14	1	0	174
56.25 - 78.75	ENE	1	7	10	25	27	11	11	6	4	1	0	103
78.75 - 101.25	E	0	7	21	20	18	6	2	5	3	0	0	82
101.25 - 123.75	ESE	0	4	3	11	23	9	2	0	0	0	0	52
123.75 - 146.25	SE	0	0	5	5	7	17	27	35	38	2	0	136
146.25 - 168.75	SSE	0	2	1	9	39	31	38	27	48	3	0	198
168.75 - 191.25	S	0	0	4	17	31	33	36	29	14	1	0	165
191.25 - 213.75	SSW	0	1	5	13	46	48	38	18	5	0	0	174
213.75 - 236.25	SW	0	2	13	19	75	59	32	10	0	0	0	210
236.25 - 258.75	WSW	0	3	11	20	62	56	16	7	0	0	0	175
258.75 - 281.25	W	0	3	7	13	33	24	11	1	1	0	0	93
281.25 - 303.75	WNW	0	5	7	13	22	20	13	4	0	0	0	84
303.75 - 326.25	NW	0	5	10	7	41	38	29	9	1	0	0	140
326.25 - 348.75	NNW	1	2	10	17	40	21	15	6	5	0	0	117

Total 2,143

MISSING HOURS: 65
JOINT DATA RECOVERY: 97.1%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JULY - SEPTEMBER 2016 (Q3)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.047	0.187	0.327	0.560	2.053	2.287	0.280	0.047	0.047	0.000	0.000	5.83
11.25 - 33.75	NNE	0.000	0.000	0.327	0.653	2.287	1.307	0.653	0.140	0.000	0.000	0.000	5.37
33.75 - 56.25	NE	0.000	0.140	1.027	0.933	2.753	1.120	1.027	0.420	0.653	0.047	0.000	8.12
56.25 - 78.75	ENE	0.047	0.327	0.467	1.167	1.260	0.513	0.513	0.280	0.187	0.047	0.000	4.81
78.75 - 101.25	E	0.000	0.327	0.980	0.933	0.840	0.280	0.093	0.233	0.140	0.000	0.000	3.83
101.25 - 123.75	ESE	0.000	0.187	0.140	0.513	1.073	0.420	0.093	0.000	0.000	0.000	0.000	2.43
123.75 - 146.25	SE	0.000	0.000	0.233	0.233	0.327	0.793	1.260	1.633	1.773	0.093	0.000	6.35
146.25 - 168.75	SSE	0.000	0.093	0.047	0.420	1.820	1.447	1.773	1.260	2.240	0.140	0.000	9.24
168.75 - 191.25	S	0.000	0.000	0.187	0.793	1.447	1.540	1.680	1.353	0.653	0.047	0.000	7.70
191.25 - 213.75	SSW	0.000	0.047	0.233	0.607	2.147	2.240	1.773	0.840	0.233	0.000	0.000	8.12
213.75 - 236.25	SW	0.000	0.093	0.607	0.887	3.500	2.753	1.493	0.467	0.000	0.000	0.000	9.80
236.25 - 258.75	WSW	0.000	0.140	0.513	0.933	2.893	2.613	0.747	0.327	0.000	0.000	0.000	8.17
258.75 - 281.25	W	0.000	0.140	0.327	0.607	1.540	1.120	0.513	0.047	0.047	0.000	0.000	4.34
281.25 - 303.75	WNW	0.000	0.233	0.327	0.607	1.027	0.933	0.607	0.187	0.000	0.000	0.000	3.92
303.75 - 326.25	NW	0.000	0.233	0.467	0.327	1.913	1.773	1.353	0.420	0.047	0.000	0.000	6.53
326.25 - 348.75	NNW	0.047	0.093	0.467	0.793	1.867	0.980	0.700	0.280	0.233	0.000	0.000	5.46

Total 100.00

MISSING HOURS: 65
JOINT DATA RECOVERY: 97.1%

Salem/Hope Creek Meteorological Tower

Joint Frequency Distribution of Wind Direction and Speed By Atmospheric Stability Class

33 Ft. Wind Level

300 – 33 Ft. Delta Temperature
October – December 2016

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SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	1	2	0	0	1	0	0	0	4
11.25 - 33.75	NNE	0	0	0	1	2	1	0	0	0	0	0	4
33.75 - 56.25	NE	0	0	0	0	4	1	6	1	0	0	0	12
56.25 - 78.75	ENE	0	0	0	2	5	7	3	0	0	0	0	17
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	1	1	1	0	0	0	0	3
146.25 - 168.75	SSE	0	0	0	0	0	0	1	0	0	0	0	1
168.75 - 191.25	S	0	0	0	0	0	0	0	0	0	0	0	0
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	1	0	0	0	0	0	0	0	0	1
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	0	0	0	0	0	0	0	0	0	0
281.25 - 303.75	WNW	0	0	0	1	0	4	0	4	0	0	0	9
303.75 - 326.25	NW	0	0	1	3	1	4	1	0	1	0	0	11
326.25 - 348.75	NNW	0	0	0	0	3	3	2	1	4	0	0	13

Total 75

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.046	0.092	0.000	0.000	0.046	0.000	0.000	0.000	0.18
11.25 - 33.75	NNE	0.000	0.000	0.000	0.046	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.18
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.184	0.046	0.276	0.046	0.000	0.000	0.000	0.55
56.25 - 78.75	ENE	0.000	0.000	0.000	0.092	0.230	0.322	0.138	0.000	0.000	0.000	0.000	0.78
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.14
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
281.25 - 303.75	WNW	0.000	0.000	0.000	0.046	0.000	0.184	0.000	0.184	0.000	0.000	0.000	0.41
303.75 - 326.25	NW	0.000	0.000	0.046	0.138	0.046	0.184	0.046	0.000	0.046	0.000	0.000	0.51
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.138	0.138	0.092	0.046	0.184	0.000	0.000	0.60

Total 3.45

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	0	1	2	2	3	1	0	9
11.25 - 33.75	NNE	0	0	0	0	0	1	1	0	0	0	0	2
33.75 - 56.25	NE	0	0	0	0	0	0	2	0	0	0	0	2
56.25 - 78.75	ENE	0	0	0	0	0	0	0	0	0	0	0	0
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	0	0	1	0	0	0	0	1
146.25 - 168.75	SSE	0	0	0	0	0	0	0	0	0	0	0	0
168.75 - 191.25	S	0	0	0	0	1	0	0	0	0	0	0	1
191.25 - 213.75	SSW	0	0	0	0	0	0	0	0	0	0	0	0
213.75 - 236.25	SW	0	0	0	0	2	0	0	0	0	0	0	2
236.25 - 258.75	WSW	0	0	0	0	0	1	0	0	0	0	0	1
258.75 - 281.25	W	0	0	0	1	0	3	1	1	3	0	0	9
281.25 - 303.75	WNW	0	0	0	0	0	2	1	4	3	0	0	10
303.75 - 326.25	NW	0	0	0	0	0	2	4	4	5	1	0	16
326.25 - 348.75	NNW	0	0	0	0	3	3	5	3	2	0	0	16

Total 69

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.000	0.046	0.092	0.092	0.138	0.046	0.000	0.41
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.09
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.09
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.09
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.05
258.75 - 281.25	W	0.000	0.000	0.000	0.046	0.000	0.138	0.046	0.046	0.138	0.000	0.000	0.41
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.000	0.092	0.046	0.184	0.138	0.000	0.000	0.46
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.000	0.092	0.184	0.184	0.230	0.046	0.000	0.74
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.138	0.138	0.230	0.138	0.092	0.000	0.000	0.74

Total 3.18

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	2	4	2	2	8	0	1	19
11.25 - 33.75	NNE	0	0	0	0	2	4	2	0	0	0	0	8
33.75 - 56.25	NE	0	0	0	0	1	0	0	1	0	0	0	2
56.25 - 78.75	ENE	0	0	0	0	1	1	0	0	0	0	0	2
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	2	0	0	0	0	0	0	2
146.25 - 168.75	SSE	0	0	0	0	1	0	1	0	0	0	0	2
168.75 - 191.25	S	0	0	0	0	3	0	0	0	0	0	0	3
191.25 - 213.75	SSW	0	0	0	0	0	0	1	0	0	0	0	1
213.75 - 236.25	SW	0	0	0	1	5	4	0	0	0	0	0	10
236.25 - 258.75	WSW	0	0	0	1	2	3	0	0	0	0	0	6
258.75 - 281.25	W	0	0	1	0	1	5	0	1	5	0	0	13
281.25 - 303.75	WNW	0	0	0	0	4	4	2	1	3	6	0	20
303.75 - 326.25	NW	0	0	0	0	1	3	3	5	5	2	0	19
326.25 - 348.75	NNW	0	0	0	0	2	7	6	6	2	0	0	23

Total 131

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.092	0.184	0.092	0.092	0.368	0.000	0.046	0.88
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.092	0.184	0.092	0.000	0.000	0.000	0.000	0.37
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.046	0.000	0.000	0.000	0.09
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.09
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.09
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.09
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.14
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.000	0.000	0.046	0.230	0.184	0.000	0.000	0.000	0.000	0.000	0.46
236.25 - 258.75	WSW	0.000	0.000	0.000	0.046	0.092	0.138	0.000	0.000	0.000	0.000	0.000	0.28
258.75 - 281.25	W	0.000	0.000	0.046	0.000	0.046	0.230	0.000	0.046	0.230	0.000	0.000	0.60
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.184	0.184	0.092	0.046	0.138	0.276	0.000	0.92
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.046	0.138	0.138	0.230	0.230	0.092	0.000	0.88
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.092	0.322	0.276	0.276	0.092	0.000	0.000	1.06

Total 6.03

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	0	0	6	10	2	3	1	5	0	28
11.25 - 33.75	NNE	0	4	3	2	7	5	2	3	0	0	0	26
33.75 - 56.25	NE	0	0	1	5	10	7	7	3	0	0	0	33
56.25 - 78.75	ENE	0	0	1	1	4	6	0	0	0	0	0	12
78.75 - 101.25	E	0	0	1	2	4	0	0	0	0	0	0	7
101.25 - 123.75	ESE	0	0	2	0	2	0	0	0	0	0	0	4
123.75 - 146.25	SE	0	0	3	2	4	10	10	2	1	1	0	33
146.25 - 168.75	SSE	0	1	1	1	6	5	13	12	3	4	1	47
168.75 - 191.25	S	0	0	1	2	3	5	5	12	9	0	0	37
191.25 - 213.75	SSW	0	0	0	0	7	9	5	1	2	1	0	25
213.75 - 236.25	SW	0	0	1	2	6	6	2	1	0	0	0	18
236.25 - 258.75	WSW	0	0	1	4	10	10	7	1	1	0	0	34
258.75 - 281.25	W	0	1	1	4	7	11	22	26	29	6	1	108
281.25 - 303.75	WNW	0	0	1	1	11	13	26	19	27	15	4	117
303.75 - 326.25	NW	0	1	4	0	9	13	20	26	20	5	1	99
326.25 - 348.75	NNW	0	1	3	3	8	9	6	13	10	0	0	53

Total 681

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.046	0.000	0.000	0.276	0.461	0.092	0.138	0.046	0.230	0.000	1.29
11.25 - 33.75	NNE	0.000	0.184	0.138	0.092	0.322	0.230	0.092	0.138	0.000	0.000	0.000	1.20
33.75 - 56.25	NE	0.000	0.000	0.046	0.230	0.461	0.322	0.322	0.138	0.000	0.000	0.000	1.52
56.25 - 78.75	ENE	0.000	0.000	0.046	0.046	0.184	0.276	0.000	0.000	0.000	0.000	0.000	0.55
78.75 - 101.25	E	0.000	0.000	0.046	0.092	0.184	0.000	0.000	0.000	0.000	0.000	0.000	0.32
101.25 - 123.75	ESE	0.000	0.000	0.092	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.18
123.75 - 146.25	SE	0.000	0.000	0.138	0.092	0.184	0.461	0.461	0.092	0.046	0.046	0.000	1.52
146.25 - 168.75	SSE	0.000	0.046	0.046	0.046	0.276	0.230	0.599	0.553	0.138	0.184	0.046	2.16
168.75 - 191.25	S	0.000	0.000	0.046	0.092	0.138	0.230	0.230	0.553	0.415	0.000	0.000	1.70
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.322	0.415	0.230	0.046	0.092	0.046	0.000	1.15
213.75 - 236.25	SW	0.000	0.000	0.046	0.092	0.276	0.276	0.092	0.046	0.000	0.000	0.000	0.83
236.25 - 258.75	WSW	0.000	0.000	0.046	0.184	0.461	0.461	0.322	0.046	0.046	0.000	0.000	1.57
258.75 - 281.25	W	0.000	0.046	0.046	0.184	0.322	0.507	1.013	1.198	1.336	0.276	0.046	4.97
281.25 - 303.75	WNW	0.000	0.000	0.046	0.046	0.507	0.599	1.198	0.875	1.244	0.691	0.184	5.39
303.75 - 326.25	NW	0.000	0.046	0.184	0.000	0.415	0.599	0.921	1.198	0.921	0.230	0.046	4.56
326.25 - 348.75	NNW	0.000	0.046	0.138	0.138	0.368	0.415	0.276	0.599	0.461	0.000	0.000	2.44

Total 31.37

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	3	0	11	28	8	6	6	9	5	0	76
11.25 - 33.75	NNE	0	1	3	12	30	8	2	1	0	0	0	57
33.75 - 56.25	NE	0	1	1	10	11	2	0	0	0	0	0	25
56.25 - 78.75	ENE	0	3	2	6	13	1	0	0	0	0	0	25
78.75 - 101.25	E	0	4	5	2	2	1	0	0	0	0	0	14
101.25 - 123.75	ESE	0	0	2	4	6	1	1	0	0	0	0	14
123.75 - 146.25	SE	0	1	0	4	10	21	8	7	4	0	0	55
146.25 - 168.75	SSE	0	1	4	4	7	6	14	6	2	0	0	44
168.75 - 191.25	S	0	1	5	7	14	4	3	1	0	0	0	35
191.25 - 213.75	SSW	0	1	4	6	14	18	5	1	5	1	0	55
213.75 - 236.25	SW	0	0	3	8	19	16	9	10	6	1	0	72
236.25 - 258.75	WSW	1	1	2	7	27	20	5	5	1	0	0	69
258.75 - 281.25	W	0	1	1	8	18	26	6	5	6	1	0	72
281.25 - 303.75	WNW	0	3	3	13	21	38	12	3	2	0	0	95
303.75 - 326.25	NW	0	2	2	5	37	41	13	6	5	0	0	111
326.25 - 348.75	NNW	0	0	2	8	25	15	8	8	4	0	0	70

Total 889

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.138	0.000	0.507	1.290	0.368	0.276	0.276	0.415	0.230	0.000	3.50
11.25 - 33.75	NNE	0.000	0.046	0.138	0.553	1.382	0.368	0.092	0.046	0.000	0.000	0.000	2.63
33.75 - 56.25	NE	0.000	0.046	0.046	0.461	0.507	0.092	0.000	0.000	0.000	0.000	0.000	1.15
56.25 - 78.75	ENE	0.000	0.138	0.092	0.276	0.599	0.046	0.000	0.000	0.000	0.000	0.000	1.15
78.75 - 101.25	E	0.000	0.184	0.230	0.092	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.64
101.25 - 123.75	ESE	0.000	0.000	0.092	0.184	0.276	0.046	0.046	0.000	0.000	0.000	0.000	0.64
123.75 - 146.25	SE	0.000	0.046	0.000	0.184	0.461	0.967	0.368	0.322	0.184	0.000	0.000	2.53
146.25 - 168.75	SSE	0.000	0.046	0.184	0.184	0.322	0.276	0.645	0.276	0.092	0.000	0.000	2.03
168.75 - 191.25	S	0.000	0.046	0.230	0.322	0.645	0.184	0.138	0.046	0.000	0.000	0.000	1.61
191.25 - 213.75	SSW	0.000	0.046	0.184	0.276	0.645	0.829	0.230	0.046	0.230	0.046	0.000	2.53
213.75 - 236.25	SW	0.000	0.000	0.138	0.368	0.875	0.737	0.415	0.461	0.276	0.046	0.000	3.32
236.25 - 258.75	WSW	0.046	0.046	0.092	0.322	1.244	0.921	0.230	0.230	0.046	0.000	0.000	3.18
258.75 - 281.25	W	0.000	0.046	0.046	0.368	0.829	1.198	0.276	0.230	0.276	0.046	0.000	3.32
281.25 - 303.75	WNW	0.000	0.138	0.138	0.599	0.967	1.750	0.553	0.138	0.092	0.000	0.000	4.38
303.75 - 326.25	NW	0.000	0.092	0.092	0.230	1.704	1.889	0.599	0.276	0.230	0.000	0.000	5.11
326.25 - 348.75	NNW	0.000	0.000	0.092	0.368	1.152	0.691	0.368	0.368	0.184	0.000	0.000	3.22

Total 40.95

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	1	2	16	14	0	0	0	0	0	33
11.25 - 33.75	NNE	0	2	5	2	11	10	0	0	0	0	0	30
33.75 - 56.25	NE	0	1	0	1	15	0	0	0	0	0	0	17
56.25 - 78.75	ENE	0	1	7	3	1	1	0	0	0	0	0	13
78.75 - 101.25	E	0	4	4	5	1	0	0	0	0	0	0	14
101.25 - 123.75	ESE	0	0	2	11	13	1	0	0	0	0	0	27
123.75 - 146.25	SE	0	1	2	1	6	2	2	6	4	0	0	24
146.25 - 168.75	SSE	0	0	5	3	3	5	1	0	1	0	0	18
168.75 - 191.25	S	0	0	3	3	1	2	0	3	1	0	0	13
191.25 - 213.75	SSW	0	1	1	1	2	1	0	0	1	0	0	7
213.75 - 236.25	SW	0	0	1	1	6	0	1	0	0	0	0	9
236.25 - 258.75	WSW	0	0	1	1	10	5	0	0	0	0	0	17
258.75 - 281.25	W	0	2	2	3	4	3	0	0	0	0	0	14
281.25 - 303.75	WNW	0	0	1	0	7	0	0	0	0	0	0	8
303.75 - 326.25	NW	0	1	3	1	9	5	0	0	0	0	0	19
326.25 - 348.75	NNW	0	1	2	2	11	3	0	0	0	0	0	19

Total 282

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.046	0.092	0.737	0.645	0.000	0.000	0.000	0.000	0.000	1.52
11.25 - 33.75	NNE	0.000	0.092	0.230	0.092	0.507	0.461	0.000	0.000	0.000	0.000	0.000	1.38
33.75 - 56.25	NE	0.000	0.046	0.000	0.046	0.691	0.000	0.000	0.000	0.000	0.000	0.000	0.78
56.25 - 78.75	ENE	0.000	0.046	0.322	0.138	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.60
78.75 - 101.25	E	0.000	0.184	0.184	0.230	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.64
101.25 - 123.75	ESE	0.000	0.000	0.092	0.507	0.599	0.046	0.000	0.000	0.000	0.000	0.000	1.24
123.75 - 146.25	SE	0.000	0.046	0.092	0.046	0.276	0.092	0.092	0.276	0.184	0.000	0.000	1.11
146.25 - 168.75	SSE	0.000	0.000	0.230	0.138	0.138	0.230	0.046	0.000	0.046	0.000	0.000	0.83
168.75 - 191.25	S	0.000	0.000	0.138	0.138	0.046	0.092	0.000	0.138	0.046	0.000	0.000	0.60
191.25 - 213.75	SSW	0.000	0.046	0.046	0.046	0.092	0.046	0.000	0.000	0.046	0.000	0.000	0.32
213.75 - 236.25	SW	0.000	0.000	0.046	0.046	0.276	0.000	0.046	0.000	0.000	0.000	0.000	0.41
236.25 - 258.75	WSW	0.000	0.000	0.046	0.046	0.461	0.230	0.000	0.000	0.000	0.000	0.000	0.78
258.75 - 281.25	W	0.000	0.092	0.092	0.138	0.184	0.138	0.000	0.000	0.000	0.000	0.000	0.64
281.25 - 303.75	WNW	0.000	0.000	0.046	0.000	0.322	0.000	0.000	0.000	0.000	0.000	0.000	0.37
303.75 - 326.25	NW	0.000	0.046	0.138	0.046	0.415	0.230	0.000	0.000	0.000	0.000	0.000	0.88
326.25 - 348.75	NNW	0.000	0.046	0.092	0.092	0.507	0.138	0.000	0.000	0.000	0.000	0.000	0.88

Total 12.99

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	1	1	0	0	0	0	0	2
11.25 - 33.75	NNE	0	0	0	2	3	0	0	0	0	0	0	5
33.75 - 56.25	NE	0	0	0	2	3	0	0	0	0	0	0	5
56.25 - 78.75	ENE	0	0	0	0	1	0	0	0	0	0	0	1
78.75 - 101.25	E	0	0	0	0	0	0	0	0	0	0	0	0
101.25 - 123.75	ESE	0	0	1	0	2	0	0	0	0	0	0	3
123.75 - 146.25	SE	0	0	0	0	3	5	3	0	0	0	0	11
146.25 - 168.75	SSE	0	0	1	2	1	0	0	0	1	0	0	5
168.75 - 191.25	S	0	0	0	1	0	0	0	0	0	0	0	1
191.25 - 213.75	SSW	0	0	1	0	0	0	0	0	0	0	0	1
213.75 - 236.25	SW	0	1	0	0	0	0	0	0	0	0	0	1
236.25 - 258.75	WSW	0	0	0	0	0	0	0	0	0	0	0	0
258.75 - 281.25	W	0	0	1	0	0	0	0	0	0	0	0	1
281.25 - 303.75	WNW	0	1	1	1	1	0	0	0	0	0	0	4
303.75 - 326.25	NW	0	0	1	0	1	0	0	0	0	0	0	2
326.25 - 348.75	NNW	0	1	1	0	0	0	0	0	0	0	0	2

Total 44

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.09
11.25 - 33.75	NNE	0.000	0.000	0.000	0.092	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.23
33.75 - 56.25	NE	0.000	0.000	0.000	0.092	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.23
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
101.25 - 123.75	ESE	0.000	0.000	0.046	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.14
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.138	0.230	0.138	0.000	0.000	0.000	0.000	0.51
146.25 - 168.75	SSE	0.000	0.000	0.046	0.092	0.046	0.000	0.000	0.000	0.046	0.000	0.000	0.23
168.75 - 191.25	S	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
191.25 - 213.75	SSW	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
213.75 - 236.25	SW	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
258.75 - 281.25	W	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.05
281.25 - 303.75	WNW	0.000	0.046	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.18
303.75 - 326.25	NW	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.09
326.25 - 348.75	NNW	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.09

Total 2.03

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	4	1	14	55	38	12	14	21	11	1	171
11.25 - 33.75	NNE	0	7	11	19	55	29	7	4	0	0	0	132
33.75 - 56.25	NE	0	2	2	18	44	10	15	5	0	0	0	96
56.25 - 78.75	ENE	0	4	10	12	25	16	3	0	0	0	0	70
78.75 - 101.25	E	0	8	10	9	8	1	0	0	0	0	0	36
101.25 - 123.75	ESE	0	0	7	15	23	2	1	0	0	0	0	48
123.75 - 146.25	SE	0	2	5	7	26	39	25	15	9	1	0	129
146.25 - 168.75	SSE	0	2	11	10	18	16	30	18	7	4	1	117
168.75 - 191.25	S	0	1	9	13	22	11	8	16	10	0	0	90
191.25 - 213.75	SSW	0	2	6	7	23	28	11	2	8	2	0	89
213.75 - 236.25	SW	0	1	6	12	38	26	12	11	6	1	0	113
236.25 - 258.75	WSW	1	1	4	13	49	39	12	6	2	0	0	127
258.75 - 281.25	W	0	4	6	16	30	48	29	33	43	7	1	217
281.25 - 303.75	WNW	0	4	6	16	44	61	41	31	35	21	4	263
303.75 - 326.25	NW	0	4	11	9	58	68	41	41	36	8	1	277
326.25 - 348.75	NNW	0	3	8	13	52	40	27	31	22	0	0	196

Total 2,171

MISSING HOURS: 37
JOINT DATA RECOVERY: 98.3%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
OCTOBER - DECEMBER 2016 (Q4)
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.184	0.046	0.645	2.533	1.750	0.553	0.645	0.967	0.507	0.046	7.88
11.25 - 33.75	NNE	0.000	0.322	0.507	0.875	2.533	1.336	0.322	0.184	0.000	0.000	0.000	6.08
33.75 - 56.25	NE	0.000	0.092	0.092	0.829	2.027	0.461	0.691	0.230	0.000	0.000	0.000	4.42
56.25 - 78.75	ENE	0.000	0.184	0.461	0.553	1.152	0.737	0.138	0.000	0.000	0.000	0.000	3.22
78.75 - 101.25	E	0.000	0.368	0.461	0.415	0.368	0.046	0.000	0.000	0.000	0.000	0.000	1.66
101.25 - 123.75	ESE	0.000	0.000	0.322	0.691	1.059	0.092	0.046	0.000	0.000	0.000	0.000	2.21
123.75 - 146.25	SE	0.000	0.092	0.230	0.322	1.198	1.796	1.152	0.691	0.415	0.046	0.000	5.94
146.25 - 168.75	SSE	0.000	0.092	0.507	0.461	0.829	0.737	1.382	0.829	0.322	0.184	0.046	5.39
168.75 - 191.25	S	0.000	0.046	0.415	0.599	1.013	0.507	0.368	0.737	0.461	0.000	0.000	4.15
191.25 - 213.75	SSW	0.000	0.092	0.276	0.322	1.059	1.290	0.507	0.092	0.368	0.092	0.000	4.10
213.75 - 236.25	SW	0.000	0.046	0.276	0.553	1.750	1.198	0.553	0.507	0.276	0.046	0.000	5.20
236.25 - 258.75	WSW	0.046	0.046	0.184	0.599	2.257	1.796	0.553	0.276	0.092	0.000	0.000	5.85
258.75 - 281.25	W	0.000	0.184	0.276	0.737	1.382	2.211	1.336	1.520	1.981	0.322	0.046	10.00
281.25 - 303.75	WNW	0.000	0.184	0.276	0.737	2.027	2.810	1.889	1.428	1.612	0.967	0.184	12.11
303.75 - 326.25	NW	0.000	0.184	0.507	0.415	2.672	3.132	1.889	1.889	1.658	0.368	0.046	12.76
326.25 - 348.75	NNW	0.000	0.138	0.368	0.599	2.395	1.842	1.244	1.428	1.013	0.000	0.000	9.03

Total 100.00

MISSING HOURS: 37
JOINT DATA RECOVERY: 98.3%

Salem/Hope Creek Meteorological Tower

Joint Frequency Distribution of Wind Direction and Speed By Atmospheric Stability Class

33 Ft. Wind Level

300 – 33 Ft. Delta Temperature

January – December 2016

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SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	3	3	8	6	2	6	0	0	28
11.25 - 33.75	NNE	0	0	0	1	2	4	1	1	0	0	0	9
33.75 - 56.25	NE	0	0	0	0	4	4	17	7	4	0	0	36
56.25 - 78.75	ENE	0	0	0	3	6	8	3	0	0	0	0	20
78.75 - 101.25	E	0	0	0	1	0	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	1	2	10	8	9	4	0	34
146.25 - 168.75	SSE	0	0	0	0	1	5	3	4	0	0	0	13
168.75 - 191.25	S	0	0	0	2	1	3	0	0	0	0	0	6
191.25 - 213.75	SSW	0	0	0	1	1	0	0	0	0	0	0	2
213.75 - 236.25	SW	0	0	1	0	0	2	2	0	0	0	0	5
236.25 - 258.75	WSW	0	0	0	0	4	4	4	0	0	0	0	12
258.75 - 281.25	W	0	0	0	1	2	1	3	6	10	0	0	23
281.25 - 303.75	WNW	0	0	0	2	0	4	0	9	10	2	0	27
303.75 - 326.25	NW	0	0	2	3	3	5	8	6	16	16	2	61
326.25 - 348.75	NNW	0	0	0	2	4	8	12	7	12	0	0	45

Total 322

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: LE -1.90 DEG C/100M, STABILITY CLASS A
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.035	0.035	0.092	0.069	0.023	0.069	0.000	0.000	0.32
11.25 - 33.75	NNE	0.000	0.000	0.000	0.012	0.023	0.046	0.012	0.012	0.000	0.000	0.000	0.10
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.046	0.046	0.196	0.081	0.046	0.000	0.000	0.42
56.25 - 78.75	ENE	0.000	0.000	0.000	0.035	0.069	0.092	0.035	0.000	0.000	0.000	0.000	0.23
78.75 - 101.25	E	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.01
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.012	0.023	0.116	0.092	0.104	0.046	0.000	0.39
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.012	0.058	0.035	0.046	0.000	0.000	0.000	0.15
168.75 - 191.25	S	0.000	0.000	0.000	0.023	0.012	0.035	0.000	0.000	0.000	0.000	0.000	0.07
191.25 - 213.75	SSW	0.000	0.000	0.000	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.02
213.75 - 236.25	SW	0.000	0.000	0.012	0.000	0.000	0.023	0.023	0.000	0.000	0.000	0.000	0.06
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.14
258.75 - 281.25	W	0.000	0.000	0.000	0.012	0.023	0.012	0.035	0.069	0.116	0.000	0.000	0.27
281.25 - 303.75	WNW	0.000	0.000	0.000	0.023	0.000	0.046	0.000	0.104	0.116	0.023	0.000	0.31
303.75 - 326.25	NW	0.000	0.000	0.023	0.035	0.035	0.058	0.092	0.069	0.185	0.185	0.023	0.70
326.25 - 348.75	NNW	0.000	0.000	0.000	0.023	0.046	0.092	0.139	0.081	0.139	0.000	0.000	0.52

Total 3.72

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	1	0	0	3	7	6	3	5	1	0	26
11.25 - 33.75	NNE	0	0	0	0	1	4	6	0	0	0	0	11
33.75 - 56.25	NE	0	0	0	0	3	2	3	2	1	0	0	11
56.25 - 78.75	ENE	0	0	0	0	0	3	0	1	0	0	0	4
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	0	0	0	0	0	0	0	0	0	0
123.75 - 146.25	SE	0	0	0	0	1	0	3	7	4	0	0	15
146.25 - 168.75	SSE	0	0	0	0	5	11	5	2	4	0	0	27
168.75 - 191.25	S	0	0	0	0	3	9	0	1	0	0	0	13
191.25 - 213.75	SSW	0	0	0	0	4	0	1	1	0	0	0	6
213.75 - 236.25	SW	0	0	0	0	9	1	0	0	0	0	0	10
236.25 - 258.75	WSW	0	0	0	0	2	12	5	2	0	0	0	21
258.75 - 281.25	W	0	0	0	2	2	5	7	3	7	1	1	28
281.25 - 303.75	WNW	0	0	0	0	2	2	3	6	15	3	0	31
303.75 - 326.25	NW	0	0	0	0	3	7	7	7	13	4	1	42
326.25 - 348.75	NNW	0	0	0	1	4	10	8	9	3	0	0	35

Total 281

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.89 TO -1.70 DEG C/100M, STABILITY CLASS B
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.012	0.000	0.000	0.035	0.081	0.069	0.035	0.058	0.012	0.000	0.30
11.25 - 33.75	NNE	0.000	0.000	0.000	0.000	0.012	0.046	0.069	0.000	0.000	0.000	0.000	0.13
33.75 - 56.25	NE	0.000	0.000	0.000	0.000	0.035	0.023	0.035	0.023	0.012	0.000	0.000	0.13
56.25 - 78.75	ENE	0.000	0.000	0.000	0.000	0.000	0.035	0.000	0.012	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.01
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.012	0.000	0.035	0.081	0.046	0.000	0.000	0.17
146.25 - 168.75	SSE	0.000	0.000	0.000	0.000	0.058	0.127	0.058	0.023	0.046	0.000	0.000	0.31
168.75 - 191.25	S	0.000	0.000	0.000	0.000	0.035	0.104	0.000	0.012	0.000	0.000	0.000	0.15
191.25 - 213.75	SSW	0.000	0.000	0.000	0.000	0.046	0.000	0.012	0.012	0.000	0.000	0.000	0.07
213.75 - 236.25	SW	0.000	0.000	0.000	0.000	0.104	0.012	0.000	0.000	0.000	0.000	0.000	0.12
236.25 - 258.75	WSW	0.000	0.000	0.000	0.000	0.023	0.139	0.058	0.023	0.000	0.000	0.000	0.24
258.75 - 281.25	W	0.000	0.000	0.000	0.023	0.023	0.058	0.081	0.035	0.081	0.012	0.012	0.32
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.023	0.023	0.035	0.069	0.173	0.035	0.000	0.36
303.75 - 326.25	NW	0.000	0.000	0.000	0.000	0.035	0.081	0.081	0.081	0.150	0.046	0.012	0.49
326.25 - 348.75	NNW	0.000	0.000	0.000	0.012	0.046	0.116	0.092	0.104	0.035	0.000	0.000	0.40

Total 3.25

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	1	12	11	8	3	10	0	1	46
11.25 - 33.75	NNE	0	0	0	2	8	7	7	1	1	0	0	26
33.75 - 56.25	NE	0	0	0	1	5	7	5	4	2	0	0	24
56.25 - 78.75	ENE	0	0	0	2	11	5	1	0	0	0	0	19
78.75 - 101.25	E	0	0	0	1	9	1	1	0	0	0	0	12
101.25 - 123.75	ESE	0	0	0	0	2	1	0	0	0	0	0	3
123.75 - 146.25	SE	0	0	0	0	3	3	4	5	8	0	1	24
146.25 - 168.75	SSE	0	0	0	2	8	8	6	1	5	0	0	30
168.75 - 191.25	S	0	0	1	1	15	3	1	2	0	0	0	23
191.25 - 213.75	SSW	0	0	0	2	8	1	4	3	0	0	0	18
213.75 - 236.25	SW	0	0	0	1	19	14	2	0	0	0	0	36
236.25 - 258.75	WSW	0	0	0	2	11	16	7	2	0	1	0	39
258.75 - 281.25	W	0	0	1	0	4	14	8	6	6	3	0	42
281.25 - 303.75	WNW	0	0	0	0	9	10	8	5	15	11	1	59
303.75 - 326.25	NW	0	0	0	2	6	10	9	18	11	6	0	62
326.25 - 348.75	NNW	0	0	0	0	13	15	11	8	7	0	0	54

Total 517

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.69 TO -1.50 DEG C/100M, STABILITY CLASS C
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.012	0.139	0.127	0.092	0.035	0.116	0.000	0.012	0.53
11.25 - 33.75	NNE	0.000	0.000	0.000	0.023	0.092	0.081	0.081	0.012	0.012	0.000	0.000	0.30
33.75 - 56.25	NE	0.000	0.000	0.000	0.012	0.058	0.081	0.058	0.046	0.023	0.000	0.000	0.28
56.25 - 78.75	ENE	0.000	0.000	0.000	0.023	0.127	0.058	0.012	0.000	0.000	0.000	0.000	0.22
78.75 - 101.25	E	0.000	0.000	0.000	0.012	0.104	0.012	0.012	0.000	0.000	0.000	0.000	0.14
101.25 - 123.75	ESE	0.000	0.000	0.000	0.000	0.023	0.012	0.000	0.000	0.000	0.000	0.000	0.03
123.75 - 146.25	SE	0.000	0.000	0.000	0.000	0.035	0.035	0.046	0.058	0.092	0.000	0.012	0.28
146.25 - 168.75	SSE	0.000	0.000	0.000	0.023	0.092	0.092	0.069	0.012	0.058	0.000	0.000	0.35
168.75 - 191.25	S	0.000	0.000	0.012	0.012	0.173	0.035	0.012	0.023	0.000	0.000	0.000	0.27
191.25 - 213.75	SSW	0.000	0.000	0.000	0.023	0.092	0.012	0.046	0.035	0.000	0.000	0.000	0.21
213.75 - 236.25	SW	0.000	0.000	0.000	0.012	0.219	0.162	0.023	0.000	0.000	0.000	0.000	0.42
236.25 - 258.75	WSW	0.000	0.000	0.000	0.023	0.127	0.185	0.081	0.023	0.000	0.012	0.000	0.45
258.75 - 281.25	W	0.000	0.000	0.012	0.000	0.046	0.162	0.092	0.069	0.069	0.035	0.000	0.49
281.25 - 303.75	WNW	0.000	0.000	0.000	0.000	0.104	0.116	0.092	0.058	0.173	0.127	0.012	0.68
303.75 - 326.25	NW	0.000	0.000	0.000	0.023	0.069	0.116	0.104	0.208	0.127	0.069	0.000	0.72
326.25 - 348.75	NNW	0.000	0.000	0.000	0.000	0.150	0.173	0.127	0.092	0.081	0.000	0.000	0.62

Total 5.97

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	1	3	5	10	38	27	21	15	24	13	0	157
11.25 - 33.75	NNE	0	7	8	14	43	36	30	12	6	8	3	167
33.75 - 56.25	NE	0	4	14	21	74	81	44	18	9	1	0	266
56.25 - 78.75	ENE	1	1	14	26	86	34	14	6	4	1	0	187
78.75 - 101.25	E	0	2	12	23	36	5	7	5	3	0	0	93
101.25 - 123.75	ESE	0	2	8	12	23	9	3	0	0	0	0	57
123.75 - 146.25	SE	0	0	7	11	16	29	33	40	42	4	0	182
146.25 - 168.75	SSE	0	4	7	18	50	33	63	56	82	16	2	331
168.75 - 191.25	S	0	2	5	22	40	41	54	42	32	3	0	241
191.25 - 213.75	SSW	0	0	5	24	60	54	30	18	10	4	0	205
213.75 - 236.25	SW	0	1	4	28	50	42	38	15	1	1	0	180
236.25 - 258.75	WSW	0	2	9	26	54	69	28	18	9	2	1	218
258.75 - 281.25	W	0	1	5	16	34	50	49	41	45	16	3	260
281.25 - 303.75	WNW	0	0	8	14	32	38	62	47	104	30	11	346
303.75 - 326.25	NW	0	4	9	10	33	49	65	66	66	14	3	319
326.25 - 348.75	NNW	1	2	13	20	49	27	29	32	27	0	0	200

Total 3,409

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -1.49 TO -0.50 DEG C/100M, STABILITY CLASS D
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.012	0.035	0.058	0.116	0.439	0.312	0.243	0.173	0.277	0.150	0.000	1.81
11.25 - 33.75	NNE	0.000	0.081	0.092	0.162	0.497	0.416	0.347	0.139	0.069	0.092	0.035	1.93
33.75 - 56.25	NE	0.000	0.046	0.162	0.243	0.855	0.936	0.508	0.208	0.104	0.012	0.000	3.07
56.25 - 78.75	ENE	0.012	0.012	0.162	0.300	0.993	0.393	0.162	0.069	0.046	0.012	0.000	2.16
78.75 - 101.25	E	0.000	0.023	0.139	0.266	0.416	0.058	0.081	0.058	0.035	0.000	0.000	1.07
101.25 - 123.75	ESE	0.000	0.023	0.092	0.139	0.266	0.104	0.035	0.000	0.000	0.000	0.000	0.66
123.75 - 146.25	SE	0.000	0.000	0.081	0.127	0.185	0.335	0.381	0.462	0.485	0.046	0.000	2.10
146.25 - 168.75	SSE	0.000	0.046	0.081	0.208	0.578	0.381	0.728	0.647	0.947	0.185	0.023	3.82
168.75 - 191.25	S	0.000	0.023	0.058	0.254	0.462	0.474	0.624	0.485	0.370	0.035	0.000	2.78
191.25 - 213.75	SSW	0.000	0.000	0.058	0.277	0.693	0.624	0.347	0.208	0.116	0.046	0.000	2.37
213.75 - 236.25	SW	0.000	0.012	0.046	0.323	0.578	0.485	0.439	0.173	0.012	0.012	0.000	2.08
236.25 - 258.75	WSW	0.000	0.023	0.104	0.300	0.624	0.797	0.323	0.208	0.104	0.023	0.012	2.52
258.75 - 281.25	W	0.000	0.012	0.058	0.185	0.393	0.578	0.566	0.474	0.520	0.185	0.035	3.00
281.25 - 303.75	WNW	0.000	0.000	0.092	0.162	0.370	0.439	0.716	0.543	1.201	0.347	0.127	4.00
303.75 - 326.25	NW	0.000	0.046	0.104	0.116	0.381	0.566	0.751	0.762	0.762	0.162	0.035	3.68
326.25 - 348.75	NNW	0.012	0.023	0.150	0.231	0.566	0.312	0.335	0.370	0.312	0.000	0.000	2.31

Total 39.38

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	10	10	24	59	48	21	9	16	5	0	202
11.25 - 33.75	NNE	0	4	19	29	84	37	13	3	0	0	0	189
33.75 - 56.25	NE	0	11	17	25	50	17	4	0	0	5	2	131
56.25 - 78.75	ENE	1	14	26	20	24	9	0	0	0	0	0	94
78.75 - 101.25	E	0	13	26	24	16	3	1	1	0	0	0	84
101.25 - 123.75	ESE	0	6	5	19	37	15	5	1	0	0	0	88
123.75 - 146.25	SE	0	3	4	12	35	44	36	24	19	3	0	180
146.25 - 168.75	SSE	0	3	11	12	34	36	39	30	17	2	0	184
168.75 - 191.25	S	1	2	11	19	48	17	14	7	6	4	0	129
191.25 - 213.75	SSW	0	5	14	15	53	57	35	13	25	15	1	233
213.75 - 236.25	SW	0	1	18	33	75	65	39	26	13	1	0	271
236.25 - 258.75	WSW	1	3	15	24	87	55	27	9	5	0	0	226
258.75 - 281.25	W	0	8	12	24	54	44	11	10	10	1	0	174
281.25 - 303.75	WNW	0	10	14	25	54	71	19	5	4	0	0	202
303.75 - 326.25	NW	0	10	18	20	92	95	50	17	8	0	0	310
326.25 - 348.75	NNW	0	3	16	20	60	45	41	24	9	0	0	218

Total 2,915

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: -0.49 TO 1.50 DEG C/100M, STABILITY CLASS E
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.116	0.116	0.277	0.682	0.554	0.243	0.104	0.185	0.058	0.000	2.33
11.25 - 33.75	NNE	0.000	0.046	0.219	0.335	0.970	0.427	0.150	0.035	0.000	0.000	0.000	2.18
33.75 - 56.25	NE	0.000	0.127	0.196	0.289	0.578	0.196	0.046	0.000	0.000	0.058	0.023	1.51
56.25 - 78.75	ENE	0.012	0.162	0.300	0.231	0.277	0.104	0.000	0.000	0.000	0.000	0.000	1.09
78.75 - 101.25	E	0.000	0.150	0.300	0.277	0.185	0.035	0.012	0.012	0.000	0.000	0.000	0.97
101.25 - 123.75	ESE	0.000	0.069	0.058	0.219	0.427	0.173	0.058	0.012	0.000	0.000	0.000	1.02
123.75 - 146.25	SE	0.000	0.035	0.046	0.139	0.404	0.508	0.416	0.277	0.219	0.035	0.000	2.08
146.25 - 168.75	SSE	0.000	0.035	0.127	0.139	0.393	0.416	0.451	0.347	0.196	0.023	0.000	2.13
168.75 - 191.25	S	0.012	0.023	0.127	0.219	0.554	0.196	0.162	0.081	0.069	0.046	0.000	1.49
191.25 - 213.75	SSW	0.000	0.058	0.162	0.173	0.612	0.658	0.404	0.150	0.289	0.173	0.012	2.69
213.75 - 236.25	SW	0.000	0.012	0.208	0.381	0.866	0.751	0.451	0.300	0.150	0.012	0.000	3.13
236.25 - 258.75	WSW	0.012	0.035	0.173	0.277	1.005	0.635	0.312	0.104	0.058	0.000	0.000	2.61
258.75 - 281.25	W	0.000	0.092	0.139	0.277	0.624	0.508	0.127	0.116	0.116	0.012	0.000	2.01
281.25 - 303.75	WNW	0.000	0.116	0.162	0.289	0.624	0.820	0.219	0.058	0.046	0.000	0.000	2.33
303.75 - 326.25	NW	0.000	0.116	0.208	0.231	1.063	1.097	0.578	0.196	0.092	0.000	0.000	3.58
326.25 - 348.75	NNW	0.000	0.035	0.185	0.231	0.693	0.520	0.474	0.277	0.104	0.000	0.000	2.52

Total 33.67

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	2	7	8	46	52	1	0	0	0	0	116
11.25 - 33.75	NNE	0	5	10	9	42	31	0	0	0	0	0	97
33.75 - 56.25	NE	0	7	14	20	44	4	0	0	0	0	0	89
56.25 - 78.75	ENE	0	10	12	12	7	2	0	0	0	0	0	43
78.75 - 101.25	E	0	10	16	11	3	0	0	0	0	0	0	40
101.25 - 123.75	ESE	0	3	6	19	19	3	1	0	0	0	0	51
123.75 - 146.25	SE	0	2	2	5	27	22	10	18	14	3	2	105
146.25 - 168.75	SSE	0	1	7	3	18	23	9	6	2	0	0	69
168.75 - 191.25	S	0	2	8	8	8	4	2	6	8	1	0	47
191.25 - 213.75	SSW	0	3	6	3	9	8	4	2	6	0	0	41
213.75 - 236.25	SW	0	3	6	8	22	6	5	1	1	0	0	52
236.25 - 258.75	WSW	0	1	5	11	27	19	3	0	0	0	0	66
258.75 - 281.25	W	0	3	6	9	13	7	0	0	0	0	0	38
281.25 - 303.75	WNW	0	6	4	3	12	1	1	0	0	0	0	27
303.75 - 326.25	NW	0	4	6	9	20	12	0	0	0	0	0	51
326.25 - 348.75	NNW	0	4	4	4	23	12	0	0	0	0	0	47

Total 979

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: 1.51 TO 4.00 DEG C/100M, STABILITY CLASS F
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.023	0.081	0.092	0.531	0.601	0.012	0.000	0.000	0.000	0.000	1.34
11.25 - 33.75	NNE	0.000	0.058	0.116	0.104	0.485	0.358	0.000	0.000	0.000	0.000	0.000	1.12
33.75 - 56.25	NE	0.000	0.081	0.162	0.231	0.508	0.046	0.000	0.000	0.000	0.000	0.000	1.03
56.25 - 78.75	ENE	0.000	0.116	0.139	0.139	0.081	0.023	0.000	0.000	0.000	0.000	0.000	0.50
78.75 - 101.25	E	0.000	0.116	0.185	0.127	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.46
101.25 - 123.75	ESE	0.000	0.035	0.069	0.219	0.219	0.035	0.012	0.000	0.000	0.000	0.000	0.59
123.75 - 146.25	SE	0.000	0.023	0.023	0.058	0.312	0.254	0.116	0.208	0.162	0.035	0.023	1.21
146.25 - 168.75	SSE	0.000	0.012	0.081	0.035	0.208	0.266	0.104	0.069	0.023	0.000	0.000	0.80
168.75 - 191.25	S	0.000	0.023	0.092	0.092	0.092	0.046	0.023	0.069	0.092	0.012	0.000	0.54
191.25 - 213.75	SSW	0.000	0.035	0.069	0.035	0.104	0.092	0.046	0.023	0.069	0.000	0.000	0.47
213.75 - 236.25	SW	0.000	0.035	0.069	0.092	0.254	0.069	0.058	0.012	0.012	0.000	0.000	0.60
236.25 - 258.75	WSW	0.000	0.012	0.058	0.127	0.312	0.219	0.035	0.000	0.000	0.000	0.000	0.76
258.75 - 281.25	W	0.000	0.035	0.069	0.104	0.150	0.081	0.000	0.000	0.000	0.000	0.000	0.44
281.25 - 303.75	WNW	0.000	0.069	0.046	0.035	0.139	0.012	0.012	0.000	0.000	0.000	0.000	0.31
303.75 - 326.25	NW	0.000	0.046	0.069	0.104	0.231	0.139	0.000	0.000	0.000	0.000	0.000	0.59
326.25 - 348.75	NNW	0.000	0.046	0.046	0.046	0.266	0.139	0.000	0.000	0.000	0.000	0.000	0.54

Total 11.31

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0	0	0	0	2	2	0	0	0	0	0	4
11.25 - 33.75	NNE	0	0	1	4	10	1	0	0	0	0	0	16
33.75 - 56.25	NE	0	0	0	3	9	2	0	0	0	0	0	14
56.25 - 78.75	ENE	0	0	0	2	1	0	1	0	0	0	0	4
78.75 - 101.25	E	0	0	0	0	1	0	0	0	0	0	0	1
101.25 - 123.75	ESE	0	0	2	3	5	7	0	0	0	0	0	17
123.75 - 146.25	SE	0	1	0	1	15	22	17	21	10	10	3	100
146.25 - 168.75	SSE	0	1	2	6	3	4	6	3	3	0	0	28
168.75 - 191.25	S	0	1	0	1	3	4	0	0	0	0	0	9
191.25 - 213.75	SSW	0	1	1	0	2	2	4	0	0	0	0	10
213.75 - 236.25	SW	0	1	1	0	5	2	1	0	0	0	0	10
236.25 - 258.75	WSW	0	0	1	0	3	3	0	0	0	0	0	7
258.75 - 281.25	W	0	0	2	0	1	0	0	0	0	0	0	3
281.25 - 303.75	WNW	0	1	1	2	1	0	0	0	0	0	0	5
303.75 - 326.25	NW	0	0	2	0	1	0	0	0	0	0	0	3
326.25 - 348.75	NNW	0	1	1	0	1	0	0	0	0	0	0	3

Total 234

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
LAPSE RATE: GT 4.00 DEG C/100M, STABILITY CLASS G
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.000	0.000	0.000	0.000	0.023	0.023	0.000	0.000	0.000	0.000	0.000	0.05
11.25 - 33.75	NNE	0.000	0.000	0.012	0.046	0.116	0.012	0.000	0.000	0.000	0.000	0.000	0.18
33.75 - 56.25	NE	0.000	0.000	0.000	0.035	0.104	0.023	0.000	0.000	0.000	0.000	0.000	0.16
56.25 - 78.75	ENE	0.000	0.000	0.000	0.023	0.012	0.000	0.012	0.000	0.000	0.000	0.000	0.05
78.75 - 101.25	E	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.01
101.25 - 123.75	ESE	0.000	0.000	0.023	0.035	0.058	0.081	0.000	0.000	0.000	0.000	0.000	0.20
123.75 - 146.25	SE	0.000	0.012	0.000	0.012	0.173	0.254	0.196	0.243	0.116	0.116	0.035	1.16
146.25 - 168.75	SSE	0.000	0.012	0.023	0.069	0.035	0.046	0.069	0.035	0.035	0.000	0.000	0.32
168.75 - 191.25	S	0.000	0.012	0.000	0.012	0.035	0.046	0.000	0.000	0.000	0.000	0.000	0.10
191.25 - 213.75	SSW	0.000	0.012	0.012	0.000	0.023	0.023	0.046	0.000	0.000	0.000	0.000	0.12
213.75 - 236.25	SW	0.000	0.012	0.012	0.000	0.058	0.023	0.012	0.000	0.000	0.000	0.000	0.12
236.25 - 258.75	WSW	0.000	0.000	0.012	0.000	0.035	0.035	0.000	0.000	0.000	0.000	0.000	0.08
258.75 - 281.25	W	0.000	0.000	0.023	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.03
281.25 - 303.75	WNW	0.000	0.012	0.012	0.023	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.06
303.75 - 326.25	NW	0.000	0.000	0.023	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.03
326.25 - 348.75	NNW	0.000	0.012	0.012	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.03

Total 2.70

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
TOTAL HOURS

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	1	16	22	46	163	155	63	32	61	19	1	579
11.25 - 33.75	NNE	0	16	38	59	190	120	57	17	7	8	3	515
33.75 - 56.25	NE	0	22	45	70	189	117	73	31	16	6	2	571
56.25 - 78.75	ENE	2	25	52	65	135	61	19	7	4	1	0	371
78.75 - 101.25	E	0	25	54	60	66	9	9	6	3	0	0	232
101.25 - 123.75	ESE	0	11	21	53	86	35	9	1	0	0	0	216
123.75 - 146.25	SE	0	6	13	29	98	122	113	123	106	24	6	640
146.25 - 168.75	SSE	0	9	27	41	119	120	131	102	113	18	2	682
168.75 - 191.25	S	1	7	25	53	118	81	71	58	46	8	0	468
191.25 - 213.75	SSW	0	9	26	45	137	122	78	37	41	19	1	515
213.75 - 236.25	SW	0	6	30	70	180	132	87	42	15	2	0	564
236.25 - 258.75	WSW	1	6	30	63	188	178	74	31	14	3	1	589
258.75 - 281.25	W	0	12	26	52	110	121	78	66	78	21	4	568
281.25 - 303.75	WNW	0	17	27	46	110	126	93	72	148	46	12	697
303.75 - 326.25	NW	0	18	37	44	158	178	139	114	114	40	6	848
326.25 - 348.75	NNW	1	10	34	47	154	117	101	80	58	0	0	602

Total 8,657

MISSING HOURS: 127
JOINT DATA RECOVERY: 98.6%

SALEM / HOPE CREEK
JOINT FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED BY ATMOSPHERIC STABILITY CLASS
JANUARY - DECEMBER 2016
WIND LEVEL: 33 FT
DELTA T: (300-33 FT)
ALL STABILITY CLASSES
FREQUENCY (%)

		WIND SPEED GROUPS (m/sec)											
WIND DIRECTION		< 0.5	0.5 - 1.0	1.1 - 1.5	1.6 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0	5.1 - 6.0	6.1 - 8.0	8.1 - 10.0	> 10.0	Total
Degrees	Sect.												
348.75 - 11.25	N	0.012	0.185	0.254	0.531	1.883	1.790	0.728	0.370	0.705	0.219	0.012	6.69
11.25 - 33.75	NNE	0.000	0.185	0.439	0.682	2.195	1.386	0.658	0.196	0.081	0.092	0.035	5.95
33.75 - 56.25	NE	0.000	0.254	0.520	0.809	2.183	1.352	0.843	0.358	0.185	0.069	0.023	6.60
56.25 - 78.75	ENE	0.023	0.289	0.601	0.751	1.559	0.705	0.219	0.081	0.046	0.012	0.000	4.29
78.75 - 101.25	E	0.000	0.289	0.624	0.693	0.762	0.104	0.104	0.069	0.035	0.000	0.000	2.68
101.25 - 123.75	ESE	0.000	0.127	0.243	0.612	0.993	0.404	0.104	0.012	0.000	0.000	0.000	2.50
123.75 - 146.25	SE	0.000	0.069	0.150	0.335	1.132	1.409	1.305	1.421	1.224	0.277	0.069	7.39
146.25 - 168.75	SSE	0.000	0.104	0.312	0.474	1.375	1.386	1.513	1.178	1.305	0.208	0.023	7.88
168.75 - 191.25	S	0.012	0.081	0.289	0.612	1.363	0.936	0.820	0.670	0.531	0.092	0.000	5.41
191.25 - 213.75	SSW	0.000	0.104	0.300	0.520	1.583	1.409	0.901	0.427	0.474	0.219	0.012	5.95
213.75 - 236.25	SW	0.000	0.069	0.347	0.809	2.079	1.525	1.005	0.485	0.173	0.023	0.000	6.51
236.25 - 258.75	WSW	0.012	0.069	0.347	0.728	2.172	2.056	0.855	0.358	0.162	0.035	0.012	6.80
258.75 - 281.25	W	0.000	0.139	0.300	0.601	1.271	1.398	0.901	0.762	0.901	0.243	0.046	6.56
281.25 - 303.75	WNW	0.000	0.196	0.312	0.531	1.271	1.455	1.074	0.832	1.710	0.531	0.139	8.05
303.75 - 326.25	NW	0.000	0.208	0.427	0.508	1.825	2.056	1.606	1.317	1.317	0.462	0.069	9.80
326.25 - 348.75	NNW	0.012	0.116	0.393	0.543	1.779	1.352	1.167	0.924	0.670	0.000	0.000	6.95

Total 100.00

MISSING HOURS: 127
JOINT DATA RECOVERY: 98.6%

APPENDIX C

Maximum Permissible Concentration (MPC) Data

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The following radionuclide concentrations were obtained from 10 CFR 20 Appendix B, Table II, Column 2 as revised January 1, 1991.

Maximum Permissible Concentrations			
Element	**Isotope**	**Soluble Conc. (μCi/ml)**	**Insoluble Conc. (μCi/ml)**
Actinium (89)	Ac-227	2E-6	3E-4
	Ac-228	9E-5	9E-5
Americium (95)	Am-241	4E-6	3E-5
	Am-242m	4E-6	9E-5
	Am-242	1E-4	1E-4
	Am-243	4E-6	3E-5
	Am-244	5E-3	5E-3
Antimony (51)	Sb-122	3E-5	3E-5
	Sb-124	2E-5	2E-5
	Sb-125	1E-4	1E-4
	Sb-126	3E-6	3E-6
Arsenic (33)	As-73	5E-4	5E-4
	As-74	5E-5	5E-5
	As-76	2E-5	2E-5
	As-77	8E-5	8E-5
Astatine (85)	At-211	2E-6	7E-5
Barium (56)	Ba-131	2E-4	2E-4
	Ba-140	3E-5	2E-5
Berkelium (97)	Bk-249	6E-4	6E-4
	Bk-250	2E-4	2E-4
Beryllium (4)	Be-7	2E-3	2E-3
Bismuth (83)	Bi-206	4E-5	4E-5
	Bi-207	6E-5	6E-5
	Bi-210	4E-5	4E-5
	Bi-212	4E-4	4E-4
Bromine (35)	Br-82	3E-4	4E-5
	Br-83	3E-6	3E-6
Cadmium (48)	Cd-109	2E-4	2E-4
	Cd-115m	3E-5	3E-5
	Cd-115	3E-5	4E-5
Calcium (20)	Ca-45	9E-6	2E-4
	Ca-47	5E-5	3E-5
Californium (98)	Cf-249	4E-6	2E-5
	Cf-250	1E-5	3E-5
	Cf-251	4E-6	3E-5
	Cf-252	7E-6	7E-6
	Cf-253	1E-4	1E-4
	Cf-254	1E-7	1E-7
Carbon (6)	C-14	8E-4	-------
Cerium (58)	Ce-141	9E-5	9E-5
	Ce-143	4E-5	4E-5
	Ce-144	1E-5	1E-5
Cesium (55)	Cs-131	2E-3	9E-4

Maximum Permissible Concentrations			
Element	Isotope	Soluble Conc. (μCi/ml)	Insoluble Conc. (μCi/ml)
	Cs-134m	6E-3	1E-3
	Cs-134	9E-6	4E-5
	Cs-135	1E-4	2E-4
	Cs-136	9E-5	6E-5
	Cs-137	2E-5	4E-5
Chlorine (17)	Cl-36	8E-5	6E-5
	Cl-38	4E-4	4E-4
Chromium (24)	Cr-51	2E-3	2E-3
Cobalt (27)	Co-57	5E-4	4E-4
	Co-58m	3E-3	2E-3
	Co-58	1E-4	9E-5
	Co-60	5E-5	3E-5
Copper (29)	Cu-64	3E-4	2E-4
Curium (96)	Cm-242	2E-5	2E-5
	Cm-243	5E-6	2E-5
	Cm-244	7E-6	3E-5
	Cm-245	4E-6	3E-5
	Cm-246	4E-6	3E-5
	Cm-247	4E-6	2E-5
	Cm-248	4E-7	1E-6
	Cm-249	2E-3	2E-3
Dysprosium (66)	Dy-165	4E-4	4E-4
	Dy-166	4E-5	4E-5
Einsteinium (99)	Es-253	2E-5	2E-5
	Es-254m	2E-5	2E-5
	Es-254	1E-5	1E-5
	Es-255	3E-5	3E-5
Erbium (68)	Er-169	9E-5	9E-5
	Er-171	1E-4	1E-4
Europium (63)	Eu-152 (9.2 hrs)	6E-5	6E-5
	Eu-152 (13 yrs)	8E-5	8E-5
	Eu-154	2E-5	2E-5
	Eu-155	2E-4	2E-4
Fermium (100)	Fm-254	1E-4	1E-4
	Fm-255	3E-5	3E-5
	Fm-256	9E-7	9E-7
Fluorine (9)	F-18	8E-4	5E-4
Gadolinium (64)	Gd-153	2E-4	2E-4
	Gd-159	8E-5	8E-5
Gallium (31)	Ga-72	4E-5	4E-5
Germanium (32)	Ge-71	2E-3	2E-3
Gold (79)	Au-196	2E-4	1E-4
	Au-198	5E-5	5E-5
	Au-199	2E-4	2E-4
Hafnium (72)	Hf-181	7E-5	7E-5
Holmium (67)	Ho-166	3E-5	3E-5
Hydrogen (3)	H-3	3E-3	3E-3
Indium (49)	In-113m	1E-3	1E-3

Maximum Permissible Concentrations			
Element	**Isotope**	**Soluble Conc. (μCi/ml)**	**Insoluble Conc. (μCi/ml)**
	In-114m	2E-5	2E-5
	In-115m	4E-4	4E-4
	In-115	9E-5	9E-5
Iodine (53)	I-125	2E-7	2E-4
	I-126	3E-7	9E-5
	I-129	6E-8	2E-4
	I-130	3E-6	3E-6
	I-131	3E-7	6E-5
	I-132	8E-6	2E-4
	I-133	1E-6	4E-5
	I-134	2E-5	6E-4
	I-135	4E-6	7E-5
Iridium (77)	Ir-190	2E-4	2E-4
	Ir-192	4E-5	4E-5
	Ir-194	3E-5	3E-5
Iron (26)	Fe-55	8E-4	2E-3
	Fe-59	6E-5	5E-5
Lanthanum (57)	La-140	2E-5	2E-5
Lead (82)	Pb-203	4E-4	4E-4
	Pb-210	1E-7	2E-4
	Pb-212	2E-5	2E-5
Lutetium (71)	Lu-177	1E-4	1E-4
Manganese (25)	Mn-52	3E-5	3E-5
	Mn-54	1E-4	1E-4
	Mn-56	1E-4	1E-4
Mercury (80)	Hg-197m	2E-4	2E-4
	Hg-197	3E-4	5E-4
	Hg-203	2E-5	1E-4
Molybdenum (42)	Mo-99	2E-4	4E-5
Neodymium (60)	Nd-144	7E-5	8E-5
	Nd-147	6E-5	6E-5
	Nd-149	3E-4	3E-4
Neptunium (93)	Np-237	3E-6	3E-5
	Np-239	1E-4	1E-4
Nickel (28)	Ni-59	2E-4	2E-3
	Ni-63	3E-5	7E-4
	Ni-65	1E-4	1E-4
Niobium (41)	Nb-93m	4E-4	4E-4
	Nb-95	1E-4	1E-4
	Nb-97	9E-4	9E-4
Osmium (76)	Os-185	7E-5	7E-5
	Os-191m	3E-3	2E-3
	Os-191	2E-4	2E-4
	Os-193	6E-5	5E-5
Palladium (46)	Pd-103	3E-4	3E-4
	Pd-109	9E-5	7E-5
Phosphorus (15)	P-32	2E-5	2E-5

Maximum Permissible Concentrations			
Element	Isotope	Soluble Conc. (μCi/ml)	Insoluble Conc. (μCi/ml)
Platinum (78)	Pt-191	1E-4	1E-4
	Pt-193m	1E-3	1E-3
	Pt-193	9E-4	2E-3
	Pt-197m	1E-3	9E-4
	Pt-197	1E-4	1E-4
Plutonium (94)	Pu-238	5E-6	3E-5
	Pu-239	5E-6	3E-5
	Pu-240	5E-6	3E-5
	Pu-241	2E-4	1E-3
	Pu-242	5E-6	3E-5
	Pu-243	3E-4	3E-4
Polonium (84)	Po-210	7E-7	3E-5
Potassium (19)	K-42	3E-4	2E-5
Praseodymium(59)	Pr-142	3E-5	3E-5
	Pr-143	5E-5	5E-5
Promethium (61)	Pm-147	2E-4	2E-4
	Pm-149	4E-5	4E-5
Protactinium(91)	Pa-230	2E-4	2E-4
	Pa-231	9E-7	2E-5
	Pa-233	1E-4	1E-4
Radium (88)	Ra-223	7E-7	4E-6
	Ra-224	2E-6	5E-6
	Ra-226	3E-8	3E-5
	Ra-228	3E-8	3E-5
Rhenium (75)	Re-183	6E-4	3E-4
	Re-186	9E-5	5E-5
	Re-187	3E-3	2E-3
	Re-188	6E-5	3E-5
Rhodium (45)	Rh-103m	1E-2	1E-2
	Rh-105	1E-4	1E-4
Rubidium (37)	Rb-86	7E-5	2E-5
	Rb-87	1E-4	2E-4
Ruthenium (44)	Ru-97	4E-4	3E-4
	Ru-103	8E-5	8E-5
	Ru-103m	3E-6	3E-6
	Ru-105	1E-4	1E-4
	Ru-106	1E-5	1E-5
Samarium (62)	Sm-147	6E-5	7E-5
	Sm-151	4E-4	4E-4
	Sm-153	8E-5	8E-5
Scandium (21)	Sc-46	4E-5	4E-5
	Sc-47	9E-5	9E-5
	Sc-48	3E-5	3E-5
Selenium (34)	Se-75	3E-4	3E-4
Silicon (14)	Si-31	9E-4	2E-4
Silver (47)	Ag-105	1E-4	1E-4
	Ag-110m	3E-5	3E-5

Maximum Permissible Concentrations			
Element	Isotope	Soluble Conc. (μCi/ml)	Insoluble Conc. (μCi/ml)
	Ag-111	4E-5	4E-5
Sodium (11)	Na-22	4E-5	3E-5
	Na-24	2E-4	3E-5
Strontium (38)	Sr-85m	7E-3	7E-3
	Sr-85	1E-4	2E-4
	Sr-89	3E-6	3E-5
	Sr-90	3E-7	4E-5
	Sr-91	7E-5	5E-5
	Sr-92	7E-5	6E-5
Sulfur (16)	S-35	6E-5	3E-4
Tantalum (73)	Ta-182	4E-5	4E-5
Technetium (43)	Tc-96m	1E-2	1E-2
	Tc-96	1E-4	5E-5
	Tc-97m	4E-4	2E-4
	Tc-97	2E-3	8E-4
	Tc-99m	6E-3	3E-3
	Tc-99	3E-4	2E-4
Tellurium (52)	Te-125m	2E-4	1E-4
	Te-127m	6E-5	5E-5
	Te-127	3E-4	2E-4
	Te-129m	3E-5	2E-5
	Te-129	8E-4	8E-4
	Te-131m	6E-5	4E-5
	Te-132	3E-5	2E-5
Terbium (65)	Tb-160	4E-5	4E-5
Thallium (81)	Tl-200	4E-4	2E-4
	Tl-201	3E-4	2E-4
	Tl-202	1E-4	7E-5
	Tl-204	1E-4	6E-5
Thorium (90)	Th-227	2E-5	2E-5
	Th-228	7E-6	1E-5
	Th-230	2E-6	3E-5
	Th-231	2E-4	2E-4
	Th-232	2E-6	4E-5
	Th-natural	2E-6	2E-5
	Th-234	2E-5	2E-5
Thulium (69)	Tm-170	5E-5	5E-5
	Tm-171	5E-4	5E-4
Tin (50)	Sn-113	9E-5	8E-5
	Sn-124	2E-5	2E-5
Tungsten (74)	W-181	4E-4	3E-4
	W-185	1E-4	1E-4
	W-187	7E-5	6E-5
Uranium (92)	U-230	5E-6	5E-6
	U-232	3E-5	3E-5
	U-233	3E-5	3E-5
	U-234	3E-5	3E-5
	U-235	3E-5	3E-5

Maximum Permissible Concentrations			
Element	**Isotope**	**Soluble Conc. (μCi/ml)**	**Insoluble Conc. (μCi/ml)**
	U-236	3E-5	3E-5
	U-238	4E-5	4E-5
	U-240	3E-5	3E-5
	U-natural	3E-5	3E-5
Vanadium (23)	V-48	3E-5	3E-5
Ytterbium (70)	Yb-175	1E-4	1E-4
Yttrium	Y-90	2E-5	2E-5
	Y-91m	3E-3	3E-3
	Y-91	3E-5	3E-5
	Y-92	6E-5	6E-5
	Y-93	3E-5	3E-5
Zinc (30)	Zn-65	1E-4	2E-4
	Zn-69m	7E-5	6E-5
	Zn-69	2E-3	2E-3
Zirconium (40)	Zr-93	8E-4	8E-4
	Zr-95	6E-5	6E-5
	Zr-97	2E-5	2E-5
Any single radio-nuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radio - active half-life greater than 2 hours		3E-6	3E-6
Any single radio- nuclide not listed above, which decays by alpha emission or spontaneous fission.		3E-8	3E-8

Notes:

1. If the identity of any radionuclide is not known, the limiting values for purposes of this table shall be: 3E-8 μCi/ml.

2. If the identity and concentration of each radionuclide were known, the limiting values should be derived as follows: Determine, for each radionuclide in the mixture, the ratio between the quantity present in the mixture and the limit otherwise established in Appendix B for the specific radionuclide not in a mixture. The sum of such ratios for all the radionuclides in the mixture may not exceed "1" (i.e. "unity").

APPENDIX D

2016 Radiological Groundwater Protection Program (RGPP) Report

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2016 Radiological Groundwater Protection Program (RGPP) Report

Results of the Integrated Tritium Management Program

With

2016 Radiological Groundwater Protection Program (RGPP)

And

2016 Monitoring Well and Remedial Action Work Plan

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I. Introduction

This report presents results of the 2016 groundwater monitoring activities performed by PSEG Nuclear at both the Hope Creek Generating Station (HCGS) and Salem Generating Station (SGS); collectively referred to as "the Station". Well locations at the Station are shown on Figures 1 and 2, respectively. To tie together the various groundwater monitoring programs at the Station, PSEG implemented the Integrated Tritium Management Program (ITMP) which integrates the following four broad programs:

- The Radiological Groundwater Protection Program (RGPP) is a program that was developed to ensure the timely detection of an unpermitted release of radioactive material;
- The Remedial Action Work Plan (RAWP) is a program that monitors the remediation of the historical release from the SGS Unit 1 Spent Fuel Pool;
- Investigation wells were installed as part of independent investigations into groundwater quality, that are not included as part of the RGPP or RAWP; and
- Early Site Permit (ESP) wells which are periphery wells that were installed outside of the protected area to support the potential licensing of a new nuclear plant.

Well construction details for the HCGS RGPP wells and SGS RGPP wells are presented on Tables 1 and 2, respectively. Well construction details for the wells that are not specifically part of the RGPP are presented on Table 3.

PSEG initiated the RGPP in 2006 to characterize groundwater at, and in the vicinity of, the Station with respect to historical releases of radionuclides and to provide the mechanism to detect such releases, if one were to occur. The RGPP is a voluntary program implemented by PSEG in conjunction with the nuclear industry initiatives and associated guidance (NEI 2007). The other key elements that comprise the RGPP and contribute to public safety are spill/leak prevention, effective remediation of spills and leaks, and effective stakeholder communication.

In 2002, PSEG operations personnel at SGS identified a release of tritiated water from the SGS Unit 1 Spent Fuel Pool to the environment. PSEG developed a RAWP to remediate the tritium in groundwater, which was reviewed by the United States Nuclear Regulatory Commission (USNRC) and approved by the New Jersey Department of Environmental Protection (NJDEP) Bureau of Nuclear Engineering (BNE). A Groundwater Recovery System (GRS) was installed to control the migration of groundwater in the shallow, water-bearing unit and to reduce the remaining mass of tritiated groundwater. The operation and performance of the GRS is documented in the Remedial Action Progress Reports (RAPRs) provided to the NRC and NJDEP BNE by PSEG. PSEG generates an effluent release permit for the residual tritium in groundwater discharging to the Delaware River. The permit values are included in the liquid effluent data reported earlier in this document.

The Station is located in a flat, largely undeveloped region of southern New Jersey, which is bordered to the west and south by the Delaware River and to the east and north by extensive marshlands. The Station obtains cooling water from the Delaware River.

The Station is underlain by over 1,000 feet of inter-layered sand, silt and clay. PSEG owns eight production/potable wells, which range in depth from 260 feet below ground surface (bgs) to 1,800 feet bgs. These wells are installed in deeper formations isolated by confining units beneath the Vincentown Formation.

The results from a computer based well search identified the nearest off-site permitted potable well is located approximately 3.5 miles away. Shallow groundwater and the Vincentown aquifer (the two most shallow water bearing units underlying the Station) flow toward and discharge to the Delaware River, thus reducing the potential that Station operations have or will influence off-site potable wells.

II. Radiological Groundwater Protection Program

This section of the annual report is prepared to summarize the status, activities, and groundwater analytical results collected in 2016 at the Site. This report also describes any changes made to the monitoring program during the 2016 reporting year.

1. Objectives of the Radiological Groundwater Protection Program

The long-term sampling program objectives are as follows:

- Identify suitable locations to monitor and evaluate potential impacts from Station operations before significant radiological impact to the environment or potential drinking water sources can occur.
- Refine the conceptual understanding of local hydrogeology and maintain current knowledge of potential flow paths on the surface and in groundwater beneath the Station.
- Evaluate systems, structures, components (SSCs) and work practices, which have the potential to release licensed radioactive material to the groundwater and develop strategies to mitigation potential releases to the environment.
- Perform routine groundwater monitoring and evaluate analytical results.
- Report any leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
- Take necessary corrective actions to protect groundwater resources.

2. Sample Collection

In 2006, the RGPP monitoring wells (Tables 1 and 2) were installed at the Station as part of site investigation activities. Details pertaining to these activities are documented in the Site Investigation Reports (Arcadis 2006A and 2006B). Groundwater samples are collected from all RGPP monitoring wells at least semi-annually, with additional monitoring conducted as appropriate. The groundwater sample collection schedule is adaptively managed to ensure that representative data are collected to provide the information necessary to evaluate groundwater quality conditions. Monitoring wells are sampled following the low-flow purging and sampling techniques in accordance with the Field Sampling Procedures Manual (NJDEP 2005). This methodology is consistent with protocols established in the RAWP.

In a June 9, 2016 letter to NJDEP, PSEG proposed a modification to the groundwater monitoring program performed at SGS as a part of the RAWP (Arcadis 2004) and the Remedial Investigation Work Plan Addendum (Arcadis 2013). The groundwater sampling program has effectively monitored the attenuation and remediation of tritium concentrations in groundwater at SGS. Based on the understanding acquired from approximately 10 years of monitoring groundwater and the reduced tritium concentrations, PSEG recommended a change to the groundwater monitoring plan while maintaining the protectiveness of the program and ability to monitor the effectiveness of the groundwater remediation.

The new sampling program proposed a minimum sampling frequency based on the following criteria for tritium concentrations from three consecutive samples from each well collected prior to April 2016 (unless specified otherwise):

- If tritium concentration is greater than 20,000 pCi/L, then collect samples monthly;
- If tritium concentration is greater than 5,000 pCi/L but less than 20,000 pCi/L, then collect samples quarterly; and
- If tritium concentration is less than 5,000 pCi/L, then collect samples semi-annually.

The proposed sampling frequency, with exceptions, was approved by the NJDEP in a letter dated July 12, 2016. These exceptions were incorporated into the optimized groundwater sampling program beginning in July 2016. Additionally, the sample frequency may be increased based on management discretion to further evaluate groundwater quality.

A. HCGS RGPP Wells Sampling Frequency

The sampling frequency for the HCGS RGPP wells is as follows:

- Wells BK, BL, BS, and BT: The sampling frequency for these wells is unchanged, and they will continue to be sampled on a semi-annual basis.
- Wells BP and BR: The sampling frequency for these wells was reduced from monthly to semi-annually in February 2016. As part of the above referenced sampling optimization, wells BP and BR will continue to be sampled on a semi-annual basis.
- Wells BI and BQ: The sampling frequency for these wells was reduced from monthly to quarterly in February 2016. As part of the above referenced sampling optimization, wells BI and BQ will continue to be sampled on a quarterly basis.
- Wells BJ, BM, BN, and BO: The sampling frequency for these wells was reduced from monthly to quarterly sampling as of July 2016.
- Well BH: The sampling frequency for well BH was reduced from quarterly to semi-annually in July 2016.

B. SGS RGPP Wells Sampling Frequency

The sampling frequency for the SGS RGPP wells is as follows:

- Wells BA, BB, BF, and BU: The sampling frequency for these wells is unchanged, and they will continue to be sampled on a semi-annual basis.
- Well BE: The sampling frequency for well BE is unchanged, and it will continue to be sampled on a quarterly basis.
- Wells T, U, BC, BD, and BG: The sampling frequency for these wells was reduced from monthly to quarterly sampling in July 2016.
- Wells Y, Z, and AL: The sampling frequency for these wells was reduced from monthly to semi-annually sampling as of July 2016.

3. New RGPP Wells

No new wells were added as part of the RGPP during 2016.

4. Sample Analysis

Groundwater samples collected from RGPP wells are analyzed for plant-related gamma emitting radionuclides (semi-annually), strontium (annually), iron 55 (biennially) and tritium (every sample) by an off-site radiochemical analytical laboratory.

The samples are maintained under chain of custody procedures throughout sample handling, screening, shipping and laboratory analysis process. Samples are submitted to the respective Station's onsite chemistry laboratory

for radiological analysis screening prior to shipment to Teledyne Brown Engineering (TBE) located in Knoxville, Tennessee, for radiological analysis. Analytical laboratories are subject to internal quality assurance programs and inter-laboratory cross-check programs. Station personnel review and evaluate analytical data obtained from the laboratory.

5. Data Evaluation

Analytical results are reviewed for adverse trends or anomalies. Investigations and corrective action program notifications (CAP) are made as required by program procedures. The radiological data collected since the inception of the RGPP program is the basis for the baseline statistical evaluation to which current operational data are compared. Several factors are important in the interpretation and evaluation of the radiological data:

A. Detection limits

The Offsite Dose Calculation Manual (ODCM) specifies detection capabilities for each isotope that may be produced by the Station. While the detection capability for tritium specified in the ODCM is 3,000 picocuries per liter (pCi/L) in water, RGPP tritium analyses are performed to a lower value of 200 pCi/L. Each well has a statistically derived action level. When an action level is exceeded, PSEG may increase monitoring frequency and evaluates potential sources of the elevated tritium. Relevant groundwater evaluation criteria are listed in Table 4.

B. Laboratory Measurements Uncertainty

Statistically, the value of a measurement is expressed as a range with a stated level of confidence. PSEG is required to report results with a 95% level of confidence.

Analytical uncertainties are reported at the 95% confidence level in this report and are consistent with the methodologies used to report data in the AREOR.

6. RGPP Data Quality

Groundwater samples consist of at least four aliquots. One of the aliquots is submitted to the respective Site's on-site chemistry laboratory for initial screening, which includes tritium and gamma spectroscopy analysis. The second aliquot is sent to TBE for tritium analysis. In accordance with NJDEP request, the third aliquot is submitted for split sample analysis to GEL Laboratories located in Charleston, South Carolina. The fourth aliquot is held as a back-up, "retained" sample until all the analytical results are received and determined to be valid.

All radionuclide results are compared to the following limitations defined as part of the RGPP:

- Internal Administrative Control Limits are defined within the RGPP procedures. They are developed based on a statistical analysis of the historical baseline concentrations of tritium in each specific well and are used to identify tritium concentrations that warrant further investigation for that specific well. Solely exceeding an Administrative Control Limit does not initiate external communication, unless the external reporting limit is also exceeded.

- The Courtesy Communication Limit is a tritium concentration, below regulatory requirements, based on agreements with NJDEP-BNE, USNRC and other stakeholders ensuring the stakeholders are cognizant of potential issues. If a confirmed tritium result, collected from a RGPP well, exceeds the Courtesy Communication Limit of 3,000 pCi/L, PSEG provides a courtesy communication by telephone no later than the end of the next business day to NJDEP-BNE. The NRC Site Resident is also informed. This is not a regulatory required communication.

- Voluntary Communication Limits are those concentrations of radionuclides that require voluntary communication and reporting to regulators and/or stakeholders based on NEI 07-07, the ODCMs, and Site procedures.

III. Discussion

The locations of the RGPP monitoring wells located at HCGS and SGS are depicted on Figures 1 and 2, respectively. Additionally, well construction details for the HCGS RGPP wells and SGS RGPP wells are presented on Tables 1 and 2, respectively. The relevant radiological parameters used to evaluate the groundwater analytical results are provided in Table 4. The groundwater tritium analytical results for HCGS and SGS are shown on Tables 5 and 6, respectively.

1. Groundwater Results - RGPP

Groundwater samples were collected from all RGPP monitoring wells during 2016 in accordance with the Station and PSEG's Laboratory and Testing Services (LTS) procedures for the RGPP. Sample results are discussed below.

A. HCGS RGPP Wells

Tritium analytical results for groundwater samples collected during 2016 from HCGS RGPP monitoring wells are summarized below and are presented in Table 5.

- Tritium was not detected in groundwater samples collected from 8 of the 13 HCGS RGPP wells (wells BH, BK, BL, BP, BQ, BR, BS, and BT).

- As discussed above, the sampling frequency for well BI was reduced from monthly to quarterly in February 2016. Tritium was not detected in samples collected in January, February, August, and November 2016. Tritium was detected in the sample collected in May 2016 at a concentration of 263 pCi/L. Well BI is located west of the reactor containment and is a sentinel (source) well for facilities and buried piping.
- Well BJ was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well BJ was reduced to quarterly. Tritium concentrations detected in well BJ ranged from 977 pCi/L (August 2016) to 1,470 pCi/L (February 2016) and averaged 1,203 pCi/L, during 2016. Well BJ is located near the HCGS main permitted gaseous effluent vent (i.e., south plant vent).
- Well BM was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well BM was reduced to quarterly. Tritium was not detected in the sample collected in November 2016. Tritium was detected at concentrations ranging from 207 pCi/L (April 2016) to 366 pCi/L (January 2016). Well BM is located west of the abandoned Unit 2 reactor building and is a sentinel (source) well for facilities and buried piping.
- Although the sampling frequency for well BN was reduced from monthly to quarterly beginning in July 2016, additional samples were collected in July, August, September, October, and November 2016 to confirm previous analytical results. Tritium concentrations detected in well BN ranged from 389 pCi/L (November 2016) to 954 pCi/L (January 2016) and averaged 583 pCi/L. Well BN is located northeast of the Materials Control Center and is a sentinel (source) well for the Auxiliary Boiler building and buried piping.
- Well BO was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well BO was reduced to quarterly. Tritium was not detected in samples taken in April, May, and November 2016. Detected concentrations ranged from 214 pCi/L (August 2016) to 751 pCi/L (January 2016). Well BO is located northeast of the Materials Control Center and is a sentinel (source) well for the Auxiliary Boiler building and buried piping.
- There were no analytical results for which a Courtesy Communication (greater than 3,000 pCi/L tritium) was required as part of the HCGS RGPP.

With the exception of tritium, no plant-related radionuclides were detected in any HCGS RGPP well sampled in 2016.

B. SGS RGPP Wells

Tritium analytical results for groundwater samples collected during 2016 from SGS RGPP monitoring wells are summarized below and are presented on Table 6.

- Tritium was not detected in groundwater samples collected from 6 of the 13 SGS RGPP wells (wells BA, BB, BF, BU, T, and Y).
- Well AL was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well AL was reduced to semi-annually. Tritium was detected at concentrations ranging from 316 pCi/L (November 2016) to 825 pCi/L (May 2016) and averaged 637 pCi/L. Well AL is located south of the SGS Unit 1 reactor building and is a sentinel (source) well.
- Although the sampling frequency for well BC was reduced from monthly to quarterly beginning in July 2016, additional samples were collected in July, August, September, October, and November 2016 to confirm previous analytical results. Tritium was detected at concentrations ranging from 458 pCi/L (November 2016) to 1,950 pCi/L (March 2016) and averaged 1,107 pCi/L. Well BC is a sentinel (source)/perimeter well located southwest of Facilities, Refueling Water Storage Tank, Auxiliary Feedwater Storage Tank and Primary Water Storage Tank (RAP) tanks and piping.
- Well BD was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well BD was reduced to quarterly. Tritium was detected at concentrations ranging from 298 pCi/L (January 2016) to 569 pCi/L (February 2016) and averaged 450 pCi/L. Well BD is located to the west of SGS Unit 2 reactor building and is a sentinel (source) well for Facilities, RAP tanks, and piping.
- Well BE was sampled quarterly during 2016. Tritium was not detected in the samples collected in August and November 2016. Tritium was detected at concentrations of 184 pCi/L (May 2016) and 322 pCi/L (February 2016). Well BE is located to the west of SGS Unit 2 reactor building and is a perimeter well.
- Well BG was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well BG was reduced to quarterly. Tritium was not detected in the sample collected in November 2016. Tritium was detected at concentrations ranging from 242 pCi/L (March 2016) to 402 pCi/L (May 2016) and averaged 312 pCi/L. Well BG is located northwest of SGS Unit 2 reactor building and is a perimeter well.
- Well U was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well U was reduced to quarterly. Tritium was not detected in the sample collected in June 2016. Tritium was detected at concentrations ranging from 215 pCi/L (August 2016) to

654 pCi/L (March 2016). Well U is located north of SGS Unit 2 reactor building and is a sentinel (source) well for the House Heating Boilers.

- Well Z was sampled monthly from January 2016 through June 2016. After which, the sampling frequency for well Z was reduced to semi-annually. Tritium was detected at concentrations ranging from 344 pCi/L (January 2016) to 599 pCi/L (June 2016) and averaged 477 pCi/L. Well Z is located west of the SGS Unit 1 & 2 reactor buildings and is a perimeter well.
- There were no analytical results for which a Courtesy Communication (greater than 3,000 pCi/L tritium) was required as part of the SGS RGPP.

With the exception of tritium, no plant-related gamma emitters or other plant related radionuclides were detected during 2016 in any SGS RGPP wells.

2. Mass Flux Estimation of Tritium to the Delaware River

PSEG uses transect methods to calculate the mass flux of tritium to the Delaware River in the shallow, water bearing unit and the deeper basal sand unit and Vincentown Formation. To calculate the mass flux, the tritium concentration was conservatively estimated using the average concentration detected in monitoring wells located nearest to the Delaware River during each quarter. During 2016, the mass flux within the shallow, water bearing unit and deeper groundwater was estimated to be 0.01 Ci and 0.11 Ci, respectively. Therefore, the total potential estimated mass flux of tritium in groundwater reaching the Delaware River during 2016 was 0.12 Ci.

The calculated mass flux of 0.12 Ci (total of four quarterly estimates) was included in the Station's liquid effluent discharge and reported in the data tables of the ARERR.

3. Investigations

A. Groundwater Monitoring Well Data (Non-RGPP)

As previously discussed, PSEG Nuclear monitors a series of wells located at the Site. The ITMP is comprised of the RGPP wells, the RAWP wells, the ESP wells and a series of monitoring wells that were installed to investigate groundwater quality, but are not included as part of the RGPP or RAWP. Well construction details and tritium analytical results for the wells described above that are not specifically part of the RGPP are presented on Table 3 and Table 7, respectively.

B. SGS Service Water Return Header Isolation Valve Project Dewatering Activities

PSEG operated a dewatering system from August 2014 through November 2014 and from July 2015 through June 2016 to remove groundwater from an excavation where the Service Water return header joins the Circulating Water Return line. Dewatering was performed to maintain excavation integrity in addition to ensure suitable working conditions during project activities.

Specifically, during 2016, PSEG operated the dewatering system from January 1, 2016 through June 28, 2016. Dewatering occurred 24 hours a day and utilized 20 feet deep well points surrounding the excavation and sump pumps from within the excavation. Collectively, the dewatering activities removed approximately 20 gallons per minute (gpm) of groundwater from the shallow, water-bearing unit.

SGS Chemistry collected samples of the recovered groundwater for tritium and gamma analysis. When tritium was detected, liquid effluent release permits were generated. PSEG estimated 5,169,220 gallons of water and 0.1098 Ci of tritium were removed through dewatering activities during the reporting period. Gamma emitting isotopes were not detected in any of the dewatering groundwater samples.

C. Focused Remediation at Well AC

On April 4, 2016, PSEG resumed the focused remediation at well AC by purging approximately 550 gallons of groundwater per week. PSEG temporarily suspended focused remediation activities on October 28, 2016 to eliminate potential complications caused by freezing weather conditions. Purged groundwater was transferred to the non-radiological liquid waste basin for release through the PSEG permitted liquid effluent outfall. During 2016 focused remediation activities, a total of approximately 15,975 gallons were purged and approximately 0.00308 curies of tritium were removed from groundwater.

D. Well AF-V Installation

In accordance with the NJDEP-approved *Well AF-V Installation Work Plan* (Arcadis 2016) PSEG installed monitoring well AF-V to characterize the deeper confined groundwater of the basal sand unit and Vincentown Formation east of well AA-V.

Well AF-V was installed in November 2016 and was constructed, in accordance with N.J.A.C. 7:9D, with an 8-inch diameter outer steel casing installed to approximately 50 feet bgs. The outer casing was grouted in place using tremie grout techniques. A borehole was then advanced through the bottom of the outer casing in to the Vincentown Formation (approximately 93 feet bgs). A geologist logged the description of each split-spoon sample according to the Unified Soil Classification System. Well AF-V was

constructed with a screened interval from 71- to 91-feet bgs. The monitoring well was constructed using 4-inch diameter, flush-jointed, threaded Schedule 40 polyvinyl chloride riser and wire wrapped screen. The well was completed with a stick-up protective surface casing and two protective bollards.

After the installation, well AF-V was developed using a submersible pump until purge water was visually free of turbidity. Soil cuttings generated during installation activities were placed in drums and staged for management by PSEG. Water generated during development activities was contained in 55-gallon drums. After suspended solids settled, the water was screened for disposal and decanted into the non-radiological liquid waste basin (NRLWB) for release through the PSEG permitted liquid effluent outfall.

Well AF-V was first sampled on January 4, 2017. Therefore, the results will be presented in the *RAPR, First and Second Quarters 2017*.

E. Past Spills and Leaks: Impacts to Groundwater

In 2016, there were no known active unmonitored or unevaluated releases into the groundwater at the Station.

As part of installation of service water isolation valves, tritium was detected intermittently in the dewatering effluent associated with the excavation. Conservative effluent release permits were created to capture the tritium released and the associated dose impacts. The results of these permits are contained in the release totals earlier in the report.

In conclusion, PSEG has not detected an unmonitored release of radionuclides to the environment from the 2016 operation of the Site.

IV. RGPP 2017 Status

The RGPP long-term sampling program will be modified as required to meet the RGPP objectives. Baseline sampling and analysis of groundwater is planned to continue on the following schedule:

- Tritium will be analyzed at least semi-annually each calendar year to a detection capability less than or equal to 200 pCi/L;
- Plant-related gamma emitters will be analyzed semi-annually to the environmental detection limits specified in the ODCM;
- RGPP monitoring well sample frequency will be adjusted as needed based on analytical results.

V. References

1. Arcadis, 2004. Remedial Investigation Work Plan. PSEG Nuclear LLC. Salem Generating Station, Hancocks Bridge, New Jersey.
2. Arcadis, 2006A. Site Investigation Report July 2006. PSEG Nuclear LLC. Hope Creek Generating Station, Hancock's Bridge, New Jersey.
3. Arcadis, 2006B. Site Investigation Report July 2006. PSEG Nuclear LLC. Salem Generating Station, Hancock's Bridge, New Jersey.
4. Arcadis, 2013. Revised Salem Unit 2 Remedial Investigation Work Plan Addendum. PSEG Nuclear LLC. December 2013.
5. Arcadis, 2014. Remedial Action Work Plan Addendum. PSEG Nuclear LLC. Salem, Hancock's Bridge, New Jersey. April 10, 2014.
6. Arcadis, 2016. Well AF-V Installation Work Plan. PSEG Nuclear LLC.
7. NEI, 2007. NEI 07-07, Industry Groundwater Protection Initiative – Final Guidance Document, Nuclear Energy Institute, Washington, DC, June 2007.

Table 1. RGPP Well Construction Details, HCGS

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet amsl)	Monitoring Purpose	Source Targets
Well BH	May-06	Sch-40 PVC	4	37.0	27.0 - 37.0	101.16	11.24	Perimeter	NA
Well BI	May-06	Sch-40 PVC	4	37.0	27.0 - 37.0	103.07	13.15	Source	Facilities; Piping
Well BJ	May-06	Sch-40 PVC	4	38.0	28.0 - 38.0	102.97	13.05	Source	Condensate Storage & Transfer; Facilities; Piping
Well BK	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	101.42	11.50	Perimeter	NA
Well BL	May-06	Sch-40 PVC	4	37.0	27.0 - 37.0	102.69	12.77	Perimeter	NA
Well BM	May-06	Sch-40 PVC	4	37.5	27.5 - 37.5	102.75	12.83	Source	Facilities; Piping
Well BN	May-06	Sch-40 PVC	4	12.5	7.5 - 12.5	102.64	12.72	Source	Auxiliary Boiler Building; Piping
Well BO	May-06	Sch-40 PVC	4	35.0	25.0 - 35.0	97.98	8.06	Perimeter/Source	Building Sewage
Well BP	May-06	Sch-40 PVC	4	38.0	28.0 - 38.0	99.06	9.14	Perimeter/Source	Building Sewage
Well BQ	May-06	Sch-40 PVC	4	42.0	32.0 - 42.0	105.62	15.70	Source	Auxiliary Boiler Building; Dry Cask Storage Building; Piping
Well BR	May-06	Sch-40 PVC	4	40.5	30.5 - 40.5	104.28	14.36	Perimeter/Source	Piping; Dry Cask Storage Building
Well BS	May-06	Sch-40 PVC	4	35.0	25.0 - 35.0	100.55	10.63	Upgradient	NA
Well BT	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	99.60	9.68	Upgradient	NA

Notes:

MP	Measuring Point
bgs	Below ground surface
RPD	Relative to plant datum
amsl	Above mean sea level (NAVD 1988)
NA	Not applicable

Table 2. RGPP Well Construction Details, SGS

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet amsl)	Monitoring Purpose	Source Targets
Well T	Jun-03	Sch-40 PVC	2	31.2	21.2 - 31.2	104.13	14.21	Source	Facilities; House Heating Boiler
Well U[1]	May-03	Sch-40 PVC	2	32.2	27.2 - 32.2	101.46	11.54	Source	Facilities; House Heating Boiler
Well Y	Sep-03	Sch-40 PVC	2	37.0	27.0 - 37.0	101.81	11.89	Perimeter	NA
Well Z	Sep-03	Sch-40 PVC	2	37.5	27.5 - 37.5	101.86	11.94	Perimeter	NA
Well AL	Jan-04	Sch-40 PVC	2	25.3	15.3 - 25.3	99.13	9.21	Perimeter	NA
Well BA	May-06	Sch-40 PVC	4	39.5	29.5 - 39.5	101.07	11.15	Perimeter	NA
Well BB[1]	May-06	Sch-40 PVC	4	47.0	37.0 - 47.0	102.18	12.26	Perimeter	NA
Well BC	May-06	Sch-40 PVC	4	38.0	28.0 - 38.0	98.78	8.86	Source / Perimeter	Facilities; RAP Tanks; Piping
Well BD	May-06	Sch-40 PVC	4	40.5	30.5 - 40.5	98.78	8.86	Source	Facilities; RAP Tanks; Piping
Well BE	May-06	Sch-40 PVC	4	37.0	27.0 - 37.0	98.31	8.39	Perimeter	NA
Well BF[1]	May-06	Sch-40 PVC	4	42.0	32.0 - 42.0	101.45	11.53	Perimeter	NA
Well BG[1]	May-06	Sch-40 PVC	4	37.0	27.0 - 37.0	103.34	13.42	Perimeter	NA
Well BU	May-06	Sch-40 PVC	4	36.0	26.0 - 36.0	100.16	10.24	Upgradient	NA

Notes:
MP Measuring Point
bgs Below ground surface
RPD Relative to plant datum
amsl Above mean sea level (NAVD 1988)
NA Not applicable
[1] Monitoring wells U, BB, BF, and BG were surveyed in July/August 2013 following retrofitting or repair activities.

Table 3. Well Construction Details, Investigation and Monitoring Wells

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	Monitored Hydrogeologic Unit	MP Elevation (feet RPD)	MP Elevation (feet amsl)
Well K	Feb-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown[1]	102.00	12.08
Well L	Jan-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown[1]	101.46	11.54
Well M	May-03	Sch-40 PVC	1	20.0	10.0 - 20.0	Cofferdam[2]	102.17	12.25
Well N	Jan-03	Sch-40 PVC	2	20.0	10.0 - 20.0	Cofferdam[2]	101.65	11.73
Well O	Jan-03	Sch-40 PVC	2	20.0	10.0 - 20.0	Cofferdam[2]	101.33	11.41
Well P	Mar-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown[1]	101.13	11.21
Well Q	Mar-03	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown[1]	106.59	16.67
Well R	Jun-03	Sch-40 PVC	1	19.0	9.0 - 19.0	Cofferdam[2]	102.35	12.43
Well S[4]	May-03	Sch-40 PVC	2	34.7	24.7 - 34.7	Shallow[3]	99.04	9.12
Well S-V	May-14	Sch-40 PVC	4	85.0	75.0 - 85.0	Vincentown[1]	101.00	11.08
Well V[6]	Jun-03	Sch-40 PVC	2	79.5	69.5 - 79.5	Vincentown[1]	101.72	11.80
Well W[6]	Jun-03	Sch-40 PVC	2	35.0	25.0 - 35.0	Shallow[3]	98.49	8.57
Well AA[4]	Sep-03	Sch-40 PVC	2	36.0	26.0 - 36.0	Shallow[3]	99.07	9.15
Well AA-V	May-13	Sch-40 PVC	2	85.0	75.0 - 85.0	Vincentown[1]	100.80	10.88
Well AB[4]	Oct-03	Sch-40 PVC	2	42.0	32.0- 42.0	Shallow[3]	98.93	9.01
Well AC[4]	Sep-03	Sch-40 PVC	2	24.0	14.0 - 24.0	Cofferdam[2]	98.77	8.85
Well AD[4]	Oct-03	Sch-40 PVC	6	43.0	33.0 - 43.0	Shallow[3]	98.99	9.07
Well AE	Oct-03	Sch-40 PVC	2	27.5	17.5 - 27.5	Cofferdam[2]	101.54	11.62
Well AF	Oct-03	Sch-40 PVC	2	45.0	35.0 - 45.0	Shallow[3]	101.61	11.69
Well AF-V	Nov-16	Sch-40 PVC	4	91.0	71.0 - 91.0	Vincentown[1]	101.38	11.46
Well AG-Shallow	Feb-04	Sch-40 PVC	1	24.2	14.2 - 24.2	Shallow[3]	99.29	9.37
Well AG-Deep	Feb-04	Sch-40 PVC	1	40.0	30.0 - 40.0	Shallow[3]	99.20	9.28
Well AH-Shallow	Feb-04	Sch-40 PVC	1	24.5	14.5 - 24.5	Shallow[3]	102.58	12.66
Well AH-Deep	Feb-04	Sch-40 PVC	1	40.0	30.0 - 40.0	Shallow[3]	102.70	12.78

Table 3. Well Construction Details, Investigation and Monitoring Wells

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	Monitored Hydrogeologic Unit	MP Elevation (feet RPD)	MP Elevation (feet amsl)
Well AI	Jan-04	Sch-40 PVC	4	22.0	12.0 - 22.0	Cofferdam[2]	98.79	8.87
Well AJ	Jan-04	Sch-40 PVC	4	35.3	15.3 - 35.3	Shallow[3]	98.85	8.93
Well AM	Jan-04	Sch-40 PVC	4	20.9	10.9 - 20.9	Cofferdam[2]	98.55	8.63
Well AN	Jun-04	Sch-40 PVC	4	25.0	10.0 - 25.0	Cofferdam[2]	98.76	8.84
Well AO	Jun-04	Sch-40 PVC	4	21.0	11.0 - 21.0	Cofferdam[2]	98.82	8.90
Well AP	Jun-04	Sch-40 PVC	4	40.0	15.0 - 40.0	Shallow[3]	98.65	8.73
Well AQ[5]	Jun-04	Sch-40 PVC	4	45.0	20.0 - 45.0	Shallow[3]	99.05	9.13
Well AR	Jun-04	Sch-40 PVC	4	43.0	18.0 - 43.0	Shallow[3]	99.22	9.30
Well AS	Jun-04	Sch-40 PVC	4	41.5	16.5 - 41.5	Shallow[3]	99.44	9.52
Well AT	Jun-04	Sch-40 PVC	4	44.0	19.0 - 44.0	Shallow[3]	99.25	9.33
Well BW[6]	Dec-06	Sch-40 PVC	1	10.0	5.0 - 10.0	Shallow[3]	101.62	11.70
Well BX[6]	Dec-06	Sch-40 PVC	1	10.0	5.0 - 10.0	Shallow[3]	101.79	11.87
Well BY	Nov-10	Sch-40 PVC	4	40.0	35.0 - 40.0	Shallow[3]	103.36	13.44
Well BZ	Nov-10	Sch-40 PVC	4	36.0	31.0 - 36.0	Shallow[3]	104.29	14.37
Well CA[6]	Dec-06	Sch-40 PVC	4	38.0	28.0 - 38.0	Shallow[3]	101.96	12.04
Well CB[7]	Dec-06	Sch-40 PVC	2	80.0	70.0 - 80.0	Vincentown[1]	98.98	9.06
Well DA[6]	Nov-10	Sch-40 PVC	4	17.0	12.0 - 17.0	Cofferdam[2]	99.04	9.12
Well DB	Nov-10	Sch-40 PVC	4	21.0	16.0 - 21.0	Cofferdam[2]	101.69	11.77
Well DC	Nov-10	Sch-40 PVC	4	22.0	17.0 - 22.0	Cofferdam[2]	100.90	10.98
Well DD	Nov-10	Sch-40 PVC	4	19.0	14.0 - 19.0	Cofferdam[2]	101.23	11.31
Well DE	Nov-10	Sch-40 PVC	4	18.0	13.0 - 18.0	Cofferdam[2]	101.43	11.51
Well DF	Nov-10	Sch-40 PVC	4	19.0	14.0 - 19.0	Cofferdam[2]	101.32	11.40
Well DG	Nov-10	Sch-40 PVC	2	13.5	11.5 - 13.5	Cofferdam[2]	98.98	9.06

Table 3. Well Construction Details, Investigation and Monitoring Wells

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	Monitored Hydrogeologic Unit	MP Elevation (feet RPD)	MP Elevation (feet amsl)
Well DH	Oct-10	Sch-40 PVC	4	21.0	16.0 - 21.0	Cofferdam[2]	101.54	11.62
Well DI	Oct-10	Sch-40 PVC	4	18.0	13.0 - 18.0	Cofferdam[2]	101.64	11.72
Well DJ	Oct-10	Sch-40 PVC	2	11.0	6.0 - 11.0	Cofferdam[2]	99.03	9.11

Notes:

MP Measuring point
bgs Below ground surface
RPD Relative to plant datum
amsl Above mean sea level (NAVD 1988)

1 Monitoring well is screened in the Vincentown Formation.
2 Monitoring well is screened in the shallow, water-bearing unit at a location within the limits of the cofferdam.
3 Monitoring well is screened in the shallow, water-bearing unit at a location outside the limits of the cofferdam.
4 The surface completions of Monitoring Wells S, AA, AB, AC, and AD were converted from above-grade to flush-grade in February 2004.
5 Monitoring well AQ was abandoned in November 2016.
6 Monitoring wells BW, BX, CA, DA, V, and W were surveyed in July/August 2013 following retrofitting or repair activities.
7 Monitoring well CB was abandoned in May 2013

Table 4. Relevant Groundwater Evaluation Criteria, SGS and HCGS

Isotope	RGPP LLD (pCi/L)	PSEG Reporting Level (pCi/L)
Tritium	200	30,000
Total Strontium	2	8
Mn-54	15	1,000
Fe-59	30	400
Co-60	15	300
Zn-65	30	300
Nb-95	15	400
Zr-95	15	400
Cs-134	15	30
Cs-137	18	50
Ba-140	60	200
La-140	15	200

Notes:
LLD Lower Limit of Detection
pCi/L Picocuries per liter

Table 5. Tritium Analytical Results, HCGS RGPP Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL BH	02/03/16	< 189	pCi/L	WELL BN continued	04/04/16	**594**	pCi/L
	05/10/16	< 180	pCi/L		05/02/16	**480**	pCi/L
	08/02/16	< 164	pCi/L		06/07/16	**450**	pCi/L
	11/07/16	< 192	pCi/L		07/05/16	**585**	pCi/L
WELL BI	01/05/16	< 198	pCi/L		08/03/16	**398**	pCi/L
	02/03/16	< 186	pCi/L		09/06/16	**431**	pCi/L
	05/10/16	**263**	pCi/L		10/05/16	**561**	pCi/L
	08/02/16	< 164	pCi/L		11/11/16	**389**	pCi/L
	11/07/16	< 195	pCi/L	WELL BO	01/04/16	**751**	pCi/L
WELL BJ	01/05/16	**1,320**	pCi/L		02/01/16	**342**	pCi/L
	02/03/16	**1,470**	pCi/L		03/07/16	**418**	pCi/L
	03/10/16	**1,340**	pCi/L		04/04/16	< 169	pCi/L
	04/07/16	**1,070**	pCi/L		05/03/16	< 185	pCi/L
	05/11/16	**1,390**	pCi/L		06/07/16	**715**	pCi/L
	06/08/16	**1,040**	pCi/L		08/03/16	**214**	pCi/L
	08/04/16	**977**	pCi/L		11/11/16	< 199	pCi/L
	11/07/16	**1,020**	pCi/L	WELL BP	01/04/16	< 168	pCi/L
WELL BK	05/10/16	< 182	pCi/L		02/01/16	< 181	pCi/L
	11/07/16	< 189	pCi/L		05/03/16	< 182	pCi/L
WELL BL	05/11/16	< 182	pCi/L		11/11/16	< 195	pCi/L
	11/07/16	< 192	pCi/L	WELL BQ	01/12/16	< 200	pCi/L
WELL BM	01/05/16	**366**	pCi/L		02/08/16	< 179	pCi/L
	02/01/16	**276**	pCi/L		05/09/16	< 186	pCi/L
	03/10/16	**313**	pCi/L		08/02/16	< 187	pCi/L
	04/07/16	**207**	pCi/L		11/15/16	< 190	pCi/L
	05/10/16	**289**	pCi/L	WELL BR	01/04/16	< 165	pCi/L
	06/08/16	**290**	pCi/L		02/01/16	< 181	pCi/L
	08/02/16	**242**	pCi/L		05/04/16	< 184	pCi/L
	11/07/16	< 194	pCi/L		11/11/16	< 193	pCi/L
WELL BN	01/04/16	**954**	pCi/L	WELL BS	05/03/16	< 185	pCi/L
	02/01/16	**715**	pCi/L		11/15/16	< 192	pCi/L
	03/07/16	**853**	pCi/L	WELL BT	05/02/16	< 182	pCi/L
					11/10/16	< 193	pCi/L

Notes:

pCi/L	Picocuries per liter
<	Tritium was not detected above the indicated laboratory minimum detectable concentration (MDC).
239	Bold values indicate tritium was detected.

Table 6. Tritium Analytical Results, SGS RGPP Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AL	01/11/16	652	pCi/L	WELL BE	02/04/16	322	pCi/L
	02/09/16	658	pCi/L		05/03/16	184	pCi/L
	03/10/16	686	pCi/L		08/03/16	< 161	pCi/L
	04/07/16	607	pCi/L		11/10/16	< 194	pCi/L
	05/03/16	825	pCi/L	WELL BF	05/03/16	< 179	pCi/L
	06/15/16	716	pCi/L		11/09/16	< 194	pCi/L
	11/08/16	316	pCi/L	WELL BG	01/05/16	325	pCi/L
WELL BA	05/09/16	< 174	pCi/L		02/03/16	378	pCi/L
	11/08/16	< 192	pCi/L		03/09/16	242	pCi/L
WELL BB	05/09/16	< 174	pCi/L		04/07/16	319	pCi/L
	11/08/16	< 197	pCi/L		05/11/16	402	pCi/L
WELL BC	01/07/16	865	pCi/L		06/08/16	256	pCi/L
	02/04/16	776	pCi/L		08/02/16	264	pCi/L
	03/09/16	1,950	pCi/L		11/09/16	< 192	pCi/L
	04/11/16	1,830	pCi/L	WELL BU	05/02/16	< 179	pCi/L
	05/02/16	1,600	pCi/L		11/10/16	< 195	pCi/L
	06/10/16	1,410	pCi/L	WELL T	01/05/16	< 195	pCi/L
	07/11/16	1,830	pCi/L		02/03/16	< 182	pCi/L
	08/03/16	464	pCi/L		03/09/16	< 198	pCi/L
	09/08/16	506	pCi/L		04/12/16	< 182	pCi/L
	10/05/16	487	pCi/L		05/11/16	< 177	pCi/L
	11/10/16	458	pCi/L		06/08/16	< 180	pCi/L
WELL BD	01/11/16	298	pCi/L		08/02/16	< 167	pCi/L
	02/08/16	569	pCi/L		11/09/16	< 197	pCi/L
	03/09/16	497	pCi/L	WELL U	01/06/16	303	pCi/L
	04/06/16	400	pCi/L		02/04/16	528	pCi/L
	05/04/16	520	pCi/L		03/08/16	654	pCi/L
	06/09/16	483	pCi/L		04/11/16	285	pCi/L
	08/04/16	394	pCi/L		05/03/16	348	pCi/L
	11/09/16	436	pCi/L		06/10/16	< 190	pCi/L
					08/03/16	215	pCi/L
					11/10/16	291	pCi/L

Table 6. Tritium Analytical Results, SGS RGPP Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL Y	01/08/16	< 196	pCi/L	WELL Z	01/08/16	**344**	pCi/L
	02/04/16	< 179	pCi/L		02/04/16	**573**	pCi/L
	03/10/16	< 190	pCi/L		03/10/16	**522**	pCi/L
	04/13/16	< 183	pCi/L		04/13/16	**509**	pCi/L
	05/02/16	< 176	pCi/L		05/02/16	**400**	pCi/L
	06/14/16	< 182	pCi/L		06/14/16	**599**	pCi/L
	11/08/16	< 194	pCi/L		11/08/16	**390**	pCi/L

Notes

pCi/L Picocuries per liter

< Tritium was not detected indicated above the laboratory minimum detectable concentration (MDC).

291 Bold values indicate tritium was detected.

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AA	01/06/16	1,300	pCi/L	WELL AC-MT* continued	08/05/16	32,300	pCi/L
	02/09/16	1,430	pCi/L		09/06/16	37,200	pCi/L
	03/10/16	1,160	pCi/L		10/07/16	41,400	pCi/L
	04/05/16	1,010	pCi/L	WELL AD	01/08/16	15,000	pCi/L
	05/03/16	3,740	pCi/L		02/05/16	4,580	pCi/L
	06/15/16	1,230	pCi/L		03/09/16	9,020	pCi/L
	07/06/16	887	pCi/L		04/12/16	2,670	pCi/L
	08/01/16	893	pCi/L		05/05/16	7,430	pCi/L
	09/06/16	981	pCi/L		07/11/16	5,040	pCi/L
	10/03/16	687	pCi/L		08/04/16	10,300	pCi/L
WELL AA-V	01/06/16	1,130	pCi/L		09/08/16	10,500	pCi/L
	02/08/16	588	pCi/L		10/07/16	9,540	pCi/L
	03/07/16	458	pCi/L	WELL AE	01/07/16	5,300	pCi/L
	04/05/16	396	pCi/L		02/08/16	6,900	pCi/L
	05/03/16	270	pCi/L		03/07/16	6,400	pCi/L
	06/06/16	< 182	pCi/L		04/04/16	5,200	pCi/L
	07/06/16	2,660	pCi/L		05/03/16	5,280	pCi/L
	08/01/16	9,030	pCi/L		06/06/16	6,080	pCi/L
	09/06/16	9,000	pCi/L		07/08/16	6,760	pCi/L
	10/03/16	10,800	pCi/L		10/03/16	15,200	pCi/L
	11/08/16	11,500	pCi/L	WELL AF	01/08/16	< 195	pCi/L
	12/06/16	9,080	pCi/L		04/08/16	< 181	pCi/L
WELL AB	01/08/16	15,600	pCi/L		07/07/16	< 173	pCi/L
WELL AC	01/12/16	17,300	pCi/L	WELL AG-D	01/11/16	819	pCi/L
	02/02/16	14,200	pCi/L		02/04/16	887	pCi/L
	03/09/16	14,200	pCi/L		03/10/16	844	pCi/L
	04/06/16	84,000	pCi/L		04/12/16	225	pCi/L
	05/06/16	53,100	pCi/L		05/09/16	875	pCi/L
	06/07/16	46,200	pCi/L		06/14/16	1,080	pCi/L
	07/08/16	38,600	pCi/L		07/12/16	757	pCi/L
	08/05/16	33,400	pCi/L	WELL AG-S	01/11/16	< 194	pCi/L
	09/09/16	34,200	pCi/L		02/04/16	< 181	pCi/L
	10/07/16	33,600	pCi/L		03/10/16	< 191	pCi/L
	11/10/16	41,900	pCi/L		04/12/16	960	pCi/L
	12/07/16	36,300	pCi/L		05/09/16	336	pCi/L
WELL AC-MT*	04/15/16	79,100	pCi/L		06/14/16	449	pCi/L
	05/06/16	48,300	pCi/L		07/12/16	369	pCi/L
	06/10/16	49,600	pCi/L				
	07/08/16	45,600	pCi/L				

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AH-D	01/08/16	343	pCi/L	WELL AJ continued	08/04/16	769	pCi/L
	02/05/16	433	pCi/L		09/08/16	< 180	pCi/L
	03/09/16	277	pCi/L		10/07/16	1,130	pCi/L
	04/08/16	2,320	pCi/L	WELL AM	01/12/16	14,900	pCi/L
	05/02/16	1,040	pCi/L		02/02/16	6,940	pCi/L
	06/15/16	464	pCi/L		03/09/16	3,790	pCi/L
	07/11/16	332	pCi/L		04/05/16	3,330	pCi/L
	08/01/16	417	pCi/L		05/04/16	7,890	pCi/L
	09/08/16	717	pCi/L		06/06/16	5,950	pCi/L
	10/04/16	800	pCi/L		07/06/16	6,390	pCi/L
	11/08/16	799	pCi/L		08/04/16	6,670	pCi/L
	12/08/16	712	pCi/L		09/07/16	6,580	pCi/L
WELL AH-S	01/08/16	1,970	pCi/L		10/04/16	6,390	pCi/L
	02/05/16	1,360	pCi/L		11/10/16	5,780	pCi/L
	03/09/16	464	pCi/L		12/07/16	5,570	pCi/L
	04/08/16	251	pCi/L	WELL AN	08/04/16	848	pCi/L
	05/02/16	1,020	pCi/L		09/08/16	10,200	pCi/L
	06/15/16	5,300	pCi/L		10/07/16	5,550	pCi/L
	07/11/16	3,090	pCi/L	WELL AP	01/11/16	1,520	pCi/L
	08/03/16	3,360	pCi/L		02/09/16	1,560	pCi/L
	11/08/16	2,320	pCi/L		03/10/16	1,790	pCi/L
WELL AI	01/05/16	1,670	pCi/L		04/07/16	1,500	pCi/L
	02/04/16	2,720	pCi/L		05/11/16	1,520	pCi/L
	03/09/16	2,700	pCi/L		06/10/16	1,620	pCi/L
	04/05/16	6,650	pCi/L		07/08/16	1,410	pCi/L
	05/05/16	14,500	pCi/L	WELL AR	01/12/16	11,400	pCi/L
	06/10/16	7,230	pCi/L		02/08/16	13,200	pCi/L
	07/07/16	17,300	pCi/L		03/07/16	12,200	pCi/L
	08/03/16	8,630	pCi/L		04/11/16	15,000	pCi/L
	09/07/16	3,880	pCi/L		05/02/16	16,500	pCi/L
	10/03/16	2,010	pCi/L		06/06/16	17,400	pCi/L
	11/08/16	3,980	pCi/L		07/08/16	16,700	pCi/L
	12/08/16	4,610	pCi/L	WELL AS	01/11/16	1,660	pCi/L
WELL AJ	02/05/16	5,280	pCi/L		02/08/16	1,640	pCi/L
	03/09/16	12,800	pCi/L		03/07/16	1,390	pCi/L
	04/12/16	12,700	pCi/L		04/13/16	1,180	pCi/L
	05/05/16	4,830	pCi/L		05/02/16	1,390	pCi/L
	06/14/16	290	pCi/L		06/06/16	2,300	pCi/L
	07/11/16	13,000	pCi/L		07/08/16	15,500	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL AS continued	09/07/16	10,800	pCi/L	WELL CA	01/06/16	1,840	pCi/L
WELL AT	01/08/16	15,100	pCi/L		02/05/16	2,040	pCi/L
	02/05/16	6,710	pCi/L		03/08/16	1,930	pCi/L
	03/09/16	488	pCi/L		04/11/16	1,820	pCi/L
	04/12/16	2,660	pCi/L		05/10/16	1,960	pCi/L
	05/05/16	1,750	pCi/L		06/07/16	1,800	pCi/L
	06/14/16	356	pCi/L		07/07/16	1,700	pCi/L
WELL BW	02/03/16	982	pCi/L		08/02/16	1,340	pCi/L
	05/05/16	832	pCi/L		09/06/16	1,840	pCi/L
	11/10/16	792	pCi/L		10/06/16	1,540	pCi/L
WELL BX	02/03/16	762	pCi/L		11/11/16	1,230	pCi/L
	05/05/16	979	pCi/L		12/08/16	1,500	pCi/L
	11/10/16	398	pCi/L	WELL DA	01/07/16	5,700	pCi/L
WELL BY	01/04/16	29,100	pCi/L		02/02/16	5,490	pCi/L
	01/12/16	24,100	pCi/L		03/08/16	4,240	pCi/L
	02/01/16	28,800	pCi/L		04/06/16	3,610	pCi/L
	02/09/16	27,100	pCi/L		05/04/16	3,580	pCi/L
	03/07/16	28,000	pCi/L		06/09/16	2,830	pCi/L
	03/11/16	29,600	pCi/L		07/12/16	3,270	pCi/L
	04/04/16	20,800	pCi/L		08/03/16	2,960	pCi/L
	04/13/16	26,000	pCi/L		09/07/16	2,670	pCi/L
	05/02/16	16,200	pCi/L		10/04/16	2,060	pCi/L
	06/07/16	21,200	pCi/L	WELL DB	01/07/16	3,880	pCi/L
	07/05/16	18,600	pCi/L		02/02/16	4,050	pCi/L
	08/02/16	16,900	pCi/L		03/08/16	5,050	pCi/L
	09/06/16	12,900	pCi/L		04/06/16	5,860	pCi/L
	10/05/16	13,700	pCi/L		05/04/16	6,350	pCi/L
	11/11/16	12,100	pCi/L		06/09/16	6,310	pCi/L
	12/06/16	10,900	pCi/L		07/06/16	4,820	pCi/L
WELL BZ	01/05/16	684	pCi/L		10/04/16	3,730	pCi/L
	02/03/16	655	pCi/L	WELL DC	01/07/16	2,860	pCi/L
	03/10/16	612	pCi/L		02/02/16	3,460	pCi/L
	04/07/16	626	pCi/L		03/08/16	2,480	pCi/L
	05/11/16	497	pCi/L		04/06/16	2,020	pCi/L
	06/08/16	577	pCi/L		05/04/16	2,090	pCi/L
	07/12/16	494	pCi/L		06/09/16	1,640	pCi/L
	08/02/16	511	pCi/L		07/06/16	2,770	pCi/L
	11/07/16	954	pCi/L		08/04/16	1,190	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL DD	01/07/16	7,580	pCi/L	WELL DH continued	04/11/16	7,320	pCi/L
	02/02/16	6,180	pCi/L		05/10/16	6,160	pCi/L
	03/08/16	7,150	pCi/L		06/07/16	8,130	pCi/L
	04/06/16	6,750	pCi/L		07/08/16	7,530	pCi/L
	05/04/16	7,660	pCi/L		10/06/16	8,540	pCi/L
	06/09/16	8,540	pCi/L	WELL DI	01/06/16	4,110	pCi/L
	07/06/16	9,750	pCi/L		02/05/16	4,520	pCi/L
	10/04/16	8,770	pCi/L		03/08/16	4,630	pCi/L
	11/10/16	8,170	pCi/L		04/11/16	3,980	pCi/L
WELL DE	01/07/16	14,900	pCi/L		05/10/16	4,390	pCi/L
	02/02/16	14,800	pCi/L		06/07/16	3,990	pCi/L
	03/08/16	15,900	pCi/L		07/07/16	3,390	pCi/L
	04/06/16	13,600	pCi/L		08/02/16	3,260	pCi/L
	05/04/16	14,500	pCi/L		09/06/16	2,840	pCi/L
	06/09/16	15,300	pCi/L		10/06/16	3,470	pCi/L
	07/06/16	13,500	pCi/L	WELL DJ	01/06/16	1,010	pCi/L
	08/04/16	12,200	pCi/L		02/05/16	1,050	pCi/L
	09/07/16	14,100	pCi/L		03/08/16	1,050	pCi/L
	10/04/16	12,600	pCi/L		04/11/16	889	pCi/L
	11/10/16	13,800	pCi/L		05/10/16	1,050	pCi/L
	12/07/16	13,100	pCi/L		06/07/16	805	pCi/L
WELL DF	01/07/16	1,700	pCi/L		07/07/16	1,160	pCi/L
	02/02/16	1,910	pCi/L	WELL K	01/06/16	< 198	pCi/L
	03/08/16	1,620	pCi/L		07/12/16	< 179	pCi/L
	04/06/16	1,850	pCi/L	WELL L	01/07/16	< 198	pCi/L
	05/04/16	1,740	pCi/L		07/11/16	< 181	pCi/L
	06/09/16	1,520	pCi/L	WELL M	01/06/16	8,460	pCi/L
	07/06/16	1,490	pCi/L		02/04/16	8,600	pCi/L
WELL DG	01/11/16	3,100	pCi/L		03/07/16	9,920	pCi/L
	02/04/16	3,270	pCi/L		04/08/16	7,830	pCi/L
	03/08/16	4,310	pCi/L		05/05/16	7,300	pCi/L
	04/06/16	3,950	pCi/L		06/07/16	6,540	pCi/L
	05/03/16	4,200	pCi/L		07/11/16	7,710	pCi/L
	06/09/16	4,160	pCi/L		10/05/16	5,670	pCi/L
	07/06/16	4,800	pCi/L	WELL N	01/07/16	8,570	pCi/L
	10/06/16	3,340	pCi/L		02/02/16	9,620	pCi/L
WELL DH	01/06/16	9,440	pCi/L		03/09/16	6,490	pCi/L
	02/05/16	7,610	pCi/L		04/05/16	6,740	pCi/L
	03/08/16	8,940	pCi/L		05/04/16	18,000	pCi/L

Table 7. Tritium Analytical Results, Investigation and Monitoring Wells

Well ID	Date	Concentration		Well ID	Date	Concentration	
WELL N continued	06/06/16	**5,550**	pCi/L	WELL S continued	06/14/16	< 183	pCi/L
	07/06/16	**15,700**	pCi/L		07/11/16	**15,700**	pCi/L
	08/04/16	**5,630**	pCi/L		08/04/16	**10,100**	pCi/L
	10/04/16	**5,350**	pCi/L	WELL S-V	01/08/16	**579**	pCi/L
WELL O	01/07/16	**10,000**	pCi/L		02/08/16	**912**	pCi/L
	02/08/16	**27,200**	pCi/L		03/07/16	**690**	pCi/L
	03/07/16	**14,800**	pCi/L		04/05/16	**742**	pCi/L
	04/04/16	**12,400**	pCi/L		05/02/16	**596**	pCi/L
	05/03/16	**30,600**	pCi/L		06/06/16	**321**	pCi/L
	06/06/16	**25,200**	pCi/L		07/07/16	**599**	pCi/L
	07/08/16	**47,700**	pCi/L		08/01/16	**2,880**	pCi/L
	08/01/16	**26,800**	pCi/L		09/07/16	**4,210**	pCi/L
	09/06/16	**12,000**	pCi/L		10/04/16	**3,810**	pCi/L
	10/03/16	**15,500**	pCi/L		11/08/16	**5,220**	pCi/L
	11/08/16	**11,200**	pCi/L		12/06/16	**5,460**	pCi/L
	12/08/16	**22,400**	pCi/L	WELL V	01/06/16	< 194	pCi/L
WELL P	01/11/16	< 194	pCi/L		04/12/16	**216**	pCi/L
	07/12/16	< 181	pCi/L		07/05/16	**449**	pCi/L
WELL Q	01/04/16	< 195	pCi/L		09/06/16	**212**	pCi/L
	07/05/16	< 171	pCi/L	WELL W	01/05/16	**4,570**	pCi/L
WELL R	01/12/16	**3,030**	pCi/L		02/04/16	**4,850**	pCi/L
	02/04/16	**2,790**	pCi/L		03/09/16	**5,110**	pCi/L
	03/07/16	**2,590**	pCi/L		04/05/16	**5,530**	pCi/L
	04/08/16	**3,070**	pCi/L		05/05/16	**5,890**	pCi/L
	05/05/16	**2,570**	pCi/L		06/08/16	**4,860**	pCi/L
	06/07/16	**3,170**	pCi/L		07/07/16	**5,510**	pCi/L
	07/11/16	**2,740**	pCi/L		08/03/16	**4,470**	pCi/L
WELL S	01/08/16	**3,530**	pCi/L		09/06/16	**3,050**	pCi/L
	02/05/16	**4,510**	pCi/L		10/03/16	**3,130**	pCi/L
	03/09/16	**1,090**	pCi/L		11/08/16	**3,130**	pCi/L
	04/12/16	**7,650**	pCi/L		12/07/16	**2,120**	pCi/L

Notes:

pCi/L	Picocuries per liter
*	AC-MT samples are collected from a mobile water tank during purge activities associated with well AC.
<	Tritium was not detected indicated above the laboratory minimum detectable concentration (MDC).
216	Bold values indicate tritium was detected.
58,300	Bold and shaded values indicate tritium was detected above its New Jersey Groundwater Quality Criteria (20,000 pCi/L).

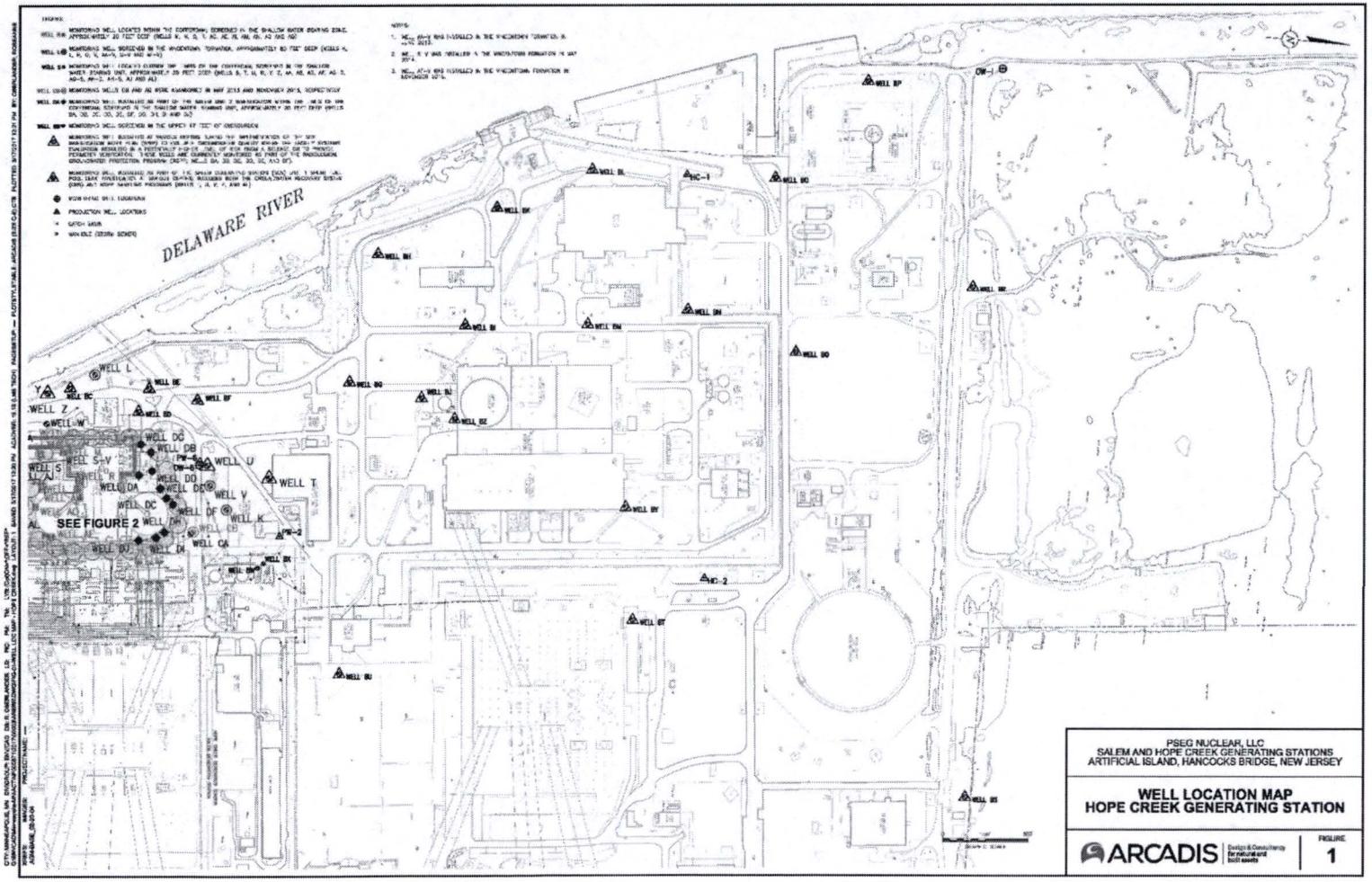

Figure 1. Well Location Map, Hope Creek Generating Station

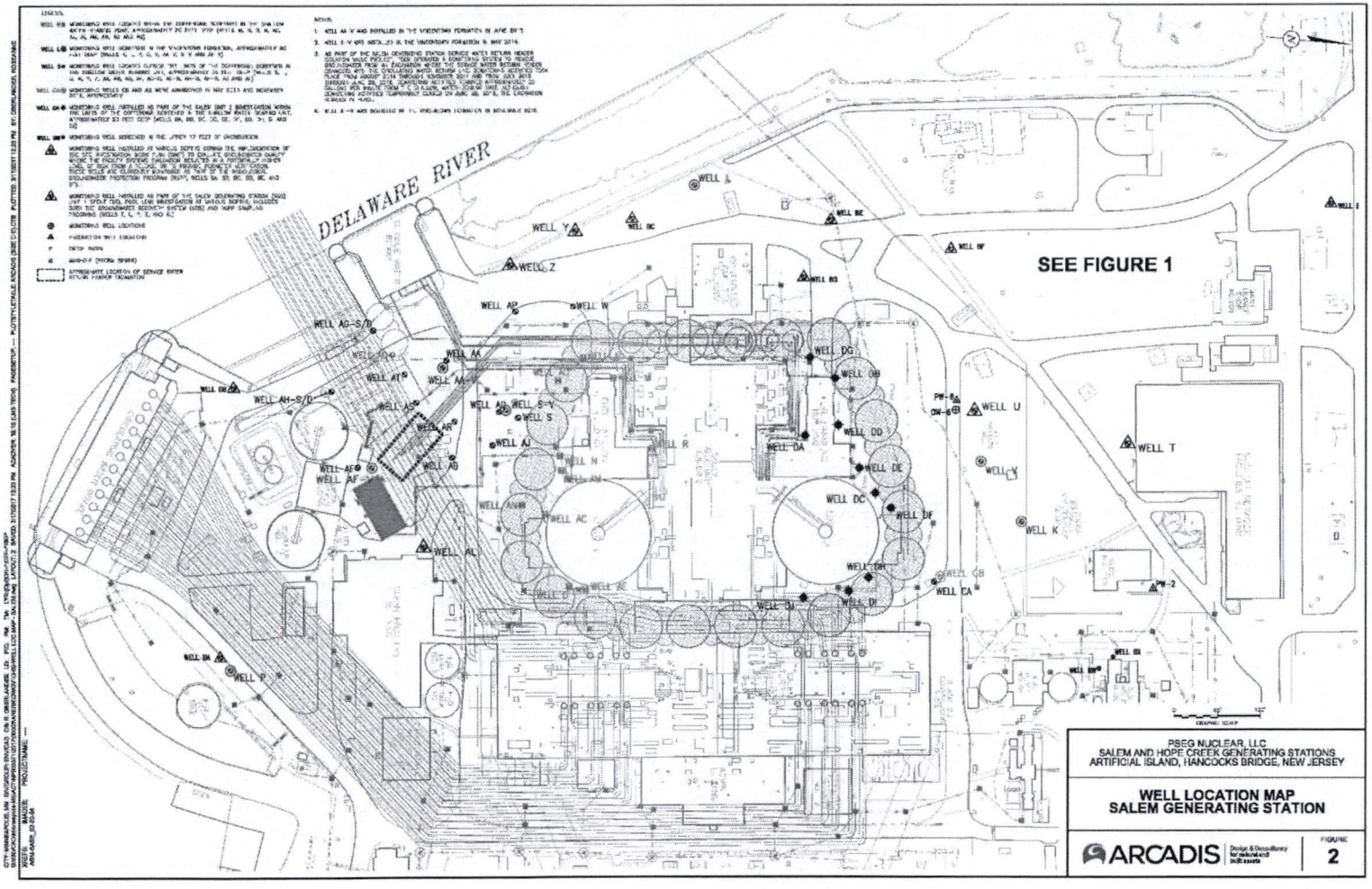

Figure 2. Well Location Map, Salem Generating Station